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Contents

Volume 11, Number 09

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1. Dietary Habits and Drug Pattern Associated with Type 2 Diabetes Mellitus among Urban Population of Eluru City: A Cross-Sectional Study..... 1
Chandrasekhar Vallepalli, K Chandra Sekhar, Ratna Balaraju, U Vijaya Kumar, Ch Rama Mohan, P G Deotale
2. Snoring and Sleep Apnoea as Risk Factors for Type 2 Diabetes Mellitus: A Case Control Study among the Patients attending a Tertiary Care Hospital in North Karnataka 7
Dattatraya D Bant, Raghavendra D
3. Geriatric Depression: A Comparative Study between the Elder Population at Old Age Home and in their Own Home..... 13
Dattatraya D Bant, Raghavendra D
4. The burden, social and economic consequences of Childhood Pneumonia in North Karnataka- A cross-sectional study 18
Dattatraya D Bant, Tewe U Kapfo
5. A cross-sectional Study to Assess the Quality of Life of HIV Infected Individuals Attending ART Centre, KIMS Hubli 24
Dattatraya D Bant, Shiv Kumar
6. Factors Influencing Women's Decision-Making Authority and Autonomy in Rural Rajasthan 30
Goutam Sadhu, Arindam Das, Hemanta Kumar Mishra
7. Coping Strategies in Menopause Women: A Review..... 37
Jayashri.G. Itti, Deelip. S. Natekar
8. Diagnostic Considerations in Breast Disorders and Secondary Bacterial Infection 40
K.Vivekananda Subramanianathan, Rajasekaran.S,D.Euvalingam,E.Prabhakar Reddy
9. Knowledge, Anxiety level and Perceptions on Prevention Protocol of COVID19 among Medical and Dental Graduates 46
Mahima Sophia M, Manavalan Madhana Madhubala, Dakshine Suthakaran, Monica Diana S, Maghizh Jemima M
10. Gingival Biotype- It's Significance in Dentistry..... 53
Marjita Sarma, Nina Shenoy

II

11. A Study to Find Out the Association of Vitamin D Levels with Leiomyoma Uterus 59
Mihir Kumar Sarkar, Arindam Halder, Sudipta Chowdhury
12. Prevalence of Nomophobia and Effectiveness of Planned Teaching Program on Prevention and Management of Nomophobia among Undergraduate Students 64
Namita Batra Guin, Shreya Sharma, Sangeeta Yadav, Deepanshi Patel, Sana Khatoon, Saumya, Savita
13. Food Insecurity and It's Impact on the Dietary Behaviour and Health 70
Nidhi Chauhan, Pratibha Singh
14. A Cross Sectional Study on Assessment of Stress among Auto- rickshaw Drivers in Urban Areas of Raichur..... 74
Palle Satya Reddy, Sujatha N, Bhaskar Kurre
15. Impact of COVID 19 on Health Care Personnel..... 79
Pinky Devi Phougeishangbam, Prempati Mayanglambam
16. Importance of Yoga during Adolescence Period 84
Renukaraj Y. Nagammanavar, Deelip. S. Natekar
17. Pattern of Feeding Practiced by Mothers of Infants Attending Immunisation OPD in a Tertiary Care Centre: A Hospital based Cross-Sectional Study 89
Sambodana Mohanty, Tapas Ranjan Behera
18. Study of Epidemiological Factors Affecting Patients of Hypertension Attending Urban Health Training Centre of Community Medicine of Tertiary Care Hospital, Maharashtra 96
Suchita Narayan Kawale, Manjusha A.Shinde, Prashant Shinde
19. A Cross-Sectional Study of Knowledge about First Aid in Undergraduate Medical Students of Maharashtra..... 102
Suchita Narayan Kawale, Manjusha A.Shinde, Prashant Shinde
20. Quality of Life and Sexual Dysfunction among Patients of Alcohol Dependence Syndrome 107
Abu Raihan Akhtar, Supartha Barua, Paramita Ray, Asim Kumar Mallick
21. Health Status of Assam: A District Level Analysis..... 114
Ajjur Rahman
22. Regional Differential in Diet Diversity Consumption and its Association with Adult Nutrition Status in Urban Areas..... 122
Baldev Singh Kulaste, Bal Govind Chauhan
23. Identification and Removal of Mosquito Breeding Sites Using Whatsapp and Google Maps Replacing Gis in Meerut Cantonment..... 128
HM Kasi Viswanath, Dennis Abraham, Vijaya Kumar Uthakalla
24. Innovative “RK Walker”: Transdisciplinary Multiphasic Observational Experimental Trial..... 133
Rima Jani, Priyanshu Rathod, Kartik Kothari

25. Comparison of Median Urinary Iodine Concentration as an Indicator of Iodine Status among Pregnant and Altered Thyroid Function Women - A Pilot Study 142
Syeda Farha S, Anish Behl, Vijayalaxmi Davalangi, Asna Urooj
26. Mode of Teaching in Anatomy- Perception of 1st Year Medical Undergraduates..... 150
Vijisha Phalgunan, Mahima Sophia, Baskaran.S
27. Effect of Interferential therapy along with McKenzie Extension Bias Exercises on Pain, Disability and Spinal Extensors Muscles Strength among the Patients with Chronic Low Back Pain 155
Anshika Singh, Sumit Raghav
28. Responding to “Covid-19” Pandemic: Quality Management and Preventive Strategies of a Hospital.. 161
Amitesh, Sarita, A. Bharti, S. Gopal
29. Comparison of Outcome of Closed and Open Drainage of Breast Abscess 168
Rajasekaran.S, K.Vivekananda Subramanianathan, D.Euvalingam
30. Convenience Food : An Emerging Trend in India 173
Silky Verma, Gurjeet Kaur Chawla
31. Effectiveness of Stroke Awareness Programme for Accredited Social Health Activists and Auxiliary Nurse Midwives at Ramanagara District of Karnataka State 177
Sreedhara KC, Jayanth Kumar K, Gautham M Sukumar
32. Effects of Therapeutic Weight Loss Exercises on Obese Individuals with Genu Valgum Deformity ... 184
K.Vijayakumar, D.Dineshkumar
33. A Study on Substance Abuse among Male Construction Workers in Tamil Nadu, India..... 190
Vignesh K.S, Abarajitha. A
34. Serum Angiopoietin-1 & Angiopoietin-2 as Serum Biomarkers for Ectopic Pregnancy and Missed Miscarriage 196
Najah Shaker Yassen, Hiyam Jasim Mohammed
35. Maintaining Physical Activity of Elderly through Local Wisdom to Improve Quality of Life of Elderly in Yogyakarta, Indonesia..... 202
Nunuk Sri Purwanti, Nyoman Kertia, Wisjnu Martani, Sri Werdati
36. Assessment of Food Security Status and the Determinants of Food Security in Selected Households from Coastal Area of Noakhali, Bangladesh..... 210
Alam, Mohammad Rahanur, Hossain, Md. Shahadat, Chowdhury, Pinaki, Siddiquee Abid Hasan, Alam, Md. Bashir, Ullah, Md. Sharif, Reza, Somp
37. The Comparison between the Effectiveness of Laughter Therapy and Progressive Muscle Relaxation Therapy towards Insomnia in Elderly Community at St. Yoseph Kediri Nursing Home ... 218
Desi Natalia Trijayanti Idris, Kili Astarani, Srinalesti Mahanani
38. Percentage of Niesseria Gonorrhoea among Symptomatic Women Attending Infertility Clinic of Baghdad Teaching Hospital 226
Rehab Abdulqaderkareem, Hayder B. Al-Shamma'a

IV

39. The Correlation between Thyroid Function Status and Bone Mineral Density among Postmenopausal Women 234
Thura Mahmud Ali, Fadia J. Al-Izzi ; Figure 3.2: Distribution of study patients by duration of menopause
40. The Effect of Soy Milk and Boiled Peas to Waist Circumference in Postmenopausal Women..... 241
Fitriani Yudhi Hastuti, Budiyantri Wiboworini, Lilik Retna Kartikasari
41. Nutrient Content of Traditional Food in the Tourism Area of Buleleng Regency, Bali Province 246
I Gusti Putu Sudita Puryana, Ni Putu Agustini, I Putu Suraoka
42. Epidemiology of Female Infertility among Reproductive Age Women in Tikrit City..... 252
Abid Ahmad Salman Al-Mahmood, Intesar Marhoon Zahwan Al-Ajeely
43. The Chemical Composition of Trigona Honey in Bone, South Sulawesi..... 258
Tri Damayanty Syamsul, Rosdiana Natzir, Suryani As'ad, Veni Hadju, Mochammad Hatta, Sutji Pratiwi, Andi Tenriola
44. Determinants of Rabies Prophylaxis Involvement based on Children's Experiences and Perspectives in An Endemic Area of Indonesia..... 264
Yosi Marin Marpaung, Rachel Monique
45. Burnout Syndrome among Undergraduate Dental Students in Majmaah University, Al Zulfi, Saudi Arabia..... 269
Hidayathulla Shaikh, Abdulrahman A. Al-Atram, Asiya Fatima, Waleed Mutairy, Abid Lankar
46. Liver, Kidney Function Enzymes and Biochemical Parameters Evaluation for Hepatitis B and C in Iraqi Patients 276
Asmaa A. Hussein, Ruqaya M. Al-Ezzy, Raghad A. Ibrahim
47. Gender Effect on Post-Operative Pain after Different Instrumentation Techniques 282
Baidaa M. Zeidan, Abeer A. Abass, Nada A. Mehdi
48. Low Socioeconomic Households are Vulnerable to Stunting: Structural Equation Model Analysis.... 288
Sipahutar Tiopan, Herdayati, Milla
49. Public Awareness for Antimicrobial Resistance from Escherichia coli Isolated from Beef Sold on Several Wet Market in Surabaya, Indonesia..... 295
Mustofa Helmi Effendi, Risi Cicilia, Jola Rahmahani, Wiwiek Tyasningsih
50. Cutaneous Manifestations in Breasts among Patients with Breast Tumors Attending Al-Yarmook Teaching Hospital 301
Farah Qahtan Mahgoob, Besma M. Ali, Mohsin A. A. Sahib, Ahmed Bader
51. Teamsports and Mental Well-Being: Analysis of Demographic Factors 308
Suzila Ismail, Farah Nadia Mohd Faudzi, Mohd Azrin Mohd Nasir, Nor A'tikah Mat Ali, Aizul Firdaus Musa

Dietary Habits and Drug Pattern Associated with Type 2 Diabetes Mellitus among Urban Population of Eluru City: A Cross-Sectional Study

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Abstract

Background: Diabetes mellitus is a highly prevalent and growing chronic disease affecting an estimated 415 million people globally in 2015, and is predicted to affect 642 million people by 2040. India has more than 69 million people with T2DM, and these numbers are expected to rise to 140 million by 2040. Diet constitutes a crucial aspect of the overall management of diabetes, which may involve diet alone, diet with oral hypoglycemic drugs, or diet with insulin. **Objectives:** 1. To identify the various dietary habits in relation to type 2 diabetes mellitus among adults in urban population of Eluru. 2. To study the drug pattern in diabetic individuals of the study population. **Materials and method:** This was a community based cross-sectional study conducted in the urban area of Eluru for a period of one year among 454 adults 30 years and above age group. The data was collected using a pretested semi-structured questionnaire by interview method. Results were analyzed and necessary statistical tests were applied. **Results:** Out of 454 study population 96 were diabetic individuals showing the prevalence of diabetes as 21.1%. Prevalence of diabetes was high (28.1%) among study subjects who were consuming rice as their staple diet ($p < 0.05$). There was a statistical significant association ($p < 0.05$) found between germinating seeds consumption and diabetes mellitus. **Conclusion:** Diabetic individuals should be encouraged to adhere to the strict dietary advice. All the individuals were advised to add the germinating seeds to their daily consuming diet. Simple dietary modifications like avoidance of junk foods will prevent or delay the onset of type 2 diabetes mellitus.

Key words: Diabetes Mellitus, Dietary Habits, Drug Pattern, Urban

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Background

Diabetes mellitus is a highly prevalent and growing chronic disease affecting an estimated 415 million people globally in 2015, and is predicted to affect 642 million people by 2040. Globally, diabetes accounted for 4.9 million deaths in 2014. India has more than 69 million people with T2DM, and these numbers are expected

to rise to 140 million by 2040, and an almost half of them remain undiagnosed.¹ Over the past three decades, diabetes has become a major cause for morbidity and mortality affecting the youth and middle aged and this is alarming as this could have adverse effects on the nation's economy.² Moreover, Asian Indians have one of the highest incidence rates of pre-diabetes and diabetes among all major ethnic groups, and the conversion from pre-diabetes to diabetes occurs more rapidly in this population.³

In recent decades, with nutritional transitions, men and women around the globe have experienced excess body weight gain due to changes in dietary patterns and decreased physical activity levels accompanied by increased diabetes incidence and mortality.⁴ Dietary Habits are the habitual decisions of individuals or group of people regarding what foods they eat. Proper dietary choices require the consumption of vitamins, minerals, carbohydrates, proteins and fats. Dietary habits and choices play a significant role in human health.⁵ Along with urbanization and economic growth, many countries have experienced dietary changes favoring increased caloric consumption.⁶ Economic growth and environmental transitions have led to drastic changes in food production, processing, and distribution systems and have increased the accessibility of unhealthful foods.⁷

Another characteristic of nutrition transition is increased refinement of grain products. Milling and processing whole grains to produce refined grains such as polished white rice and refined wheat flour reduce the nutritional content of grains, including their fiber, micronutrients, and phytochemicals.⁸ Diet is one of the major factors now linked to a wide range of diseases including diabetes. The amount and type of food consumed is a fundamental determinant of human health. Diet constitutes a crucial aspect of the overall management of diabetes, which may involve diet alone, diet with oral hypoglycemic drugs, or diet with insulin.⁹ There is a need to find out the lifestyle factors like dietary habits associated with diabetes mellitus to halt its progression in the community.

Objectives

1. To identify the various dietary habits in relation to type 2 diabetes mellitus among adults in urban population of Eluru.
2. To study the drug pattern in diabetic individuals of the study population.

Materials and Methods

This was a community based cross-sectional study conducted in the urban health centre area of Alluri Sitarama Raju Academy of Medical Sciences (ASRAM), Eluru for a period of one year from May 2013 to April 2014 among adults 30 years and above age group. This urban health centre area has 2487 households with 11,065 population which was divided into 6 areas i.e Ashoknagar, Ameenapeta, Yetigattu, Mothevari thota, Harijana peta and Pathebad. There were 4536 individuals 30 years and above age group in the urban health centre area.

Sample size calculated was 454 individuals 30 years and above age group in the urban health centre area using formula $N=4PQ / L^2$ with P equal to 19.5 per cent taken from ADEPS study¹⁰ with allowable error (L) equal to 20%. 412 was the sample size estimated which is added with another 10% sample to make the sample more representative. Systematic random sampling method was used for the collection of sample in this study. The data was collected using a pretested semi-structured questionnaire. A pilot study was conducted and tested for the appropriateness of study questionnaire and the actual study was started after making necessary corrections and advises in it. Importance of the study was explained and an informed consent was taken from all the study participants before data collection and the study was approved by Institutional Ethics Committee. The data was collected by interview method.

Pregnant women, actually ill subjects and who are not willing to give consent were excluded from the study. All data collected was entered and analyzed using the Microsoft Office Excel 2007 and necessary statistical tests like simple proportions and chi square tests were applied for the categorical analysis of variables. $P \leq 0.05$ was considered as statistically significant.

Results

Table 1: Dietary habits in relation to Diabetes Mellitus in the study population

Dietary habits	DM present n (%)	DM absent n (%)	Total N (100%)	p-value
Food habits				
Vegetarian	6 (16.7)	30 (83.3)	36 (7.9)	0.493 ns
Mixed vegetarian	90 (21.5)	328 (78.5)	418 (92.1)	
Staple diet				
Rice	75 (28.1)	192 (71.9)	267 (58.8)	<0.0001 s
Wheat	1 (11.1)	8 (88.9)	9 (2)	
Mixed	20 (11.2)	158 (88.8)	178 (39.2)	
Germinating seeds intake				
Yes	8 (10.8)	66 (89.2)	74 (16.3)	0.017 s
No	88 (23.2)	292 (76.8)	380 (83.7)	
Preference of oil				
Yes	82 (24)	260 (76)	342 (75.3)	0.01 s
No	14 (1.3)	98 (99.7)	112 (24.7)	
Per capita oil consumption per month				
<0.5 kg	1 (5.6)	17 (94.4)	18 (3.9)	0.43 ns
0.5 – 0.75 kg	50 (21.6)	181 (78.4)	231 (50.9)	
0.75 – 1 kg	28 (22)	99 (78)	127 (28)	
>1 kg	17 (21.8)	61 (78.2)	78 (17.2)	
Frequency of food intake per day				
< 2 times	14 (15.6)	76 (84.4)	90 (19.8)	0.002 s
3 times	55 (18.8)	237 (81.2)	292 (64.3)	
4 times	21 (38.9)	33 (61.1)	54 (11.9)	
> 5 times	6 (33.3)	12 (66.7)	18 (4)	
Leafy vegetables per week				
Never	3 (20)	12 (80)	15 (3.3)	0.47 ns
1 - 3 times	92 (21.6)	334 (78.4)	426 (93.8)	
>3times	1 (7.7)	12 (92.3)	13 (2.9)	
Chicken or Meat intake per week				
Never	6 (16.7)	30 (83.3)	36 (7.9)	0.31 ns
1 - 3 times	83 (20.9)	314 (79.1)	397 (87.5)	
>3times	7 (33.3)	14 (66.7)	21 (4.6)	
Junk food consumption per week				
Never	5 (11.4)	39 (88.6)	44 (9.7)	< 0.0001 s
1 - 3 times	21 (8.9)	215 (91.1)	236 (52)	
>3times	70 (40.2)	104 (92.3)	174 (38.3)	
DM-Diabetes Mellitus; p-probability; n-number; s-significant; ns-non-significant				

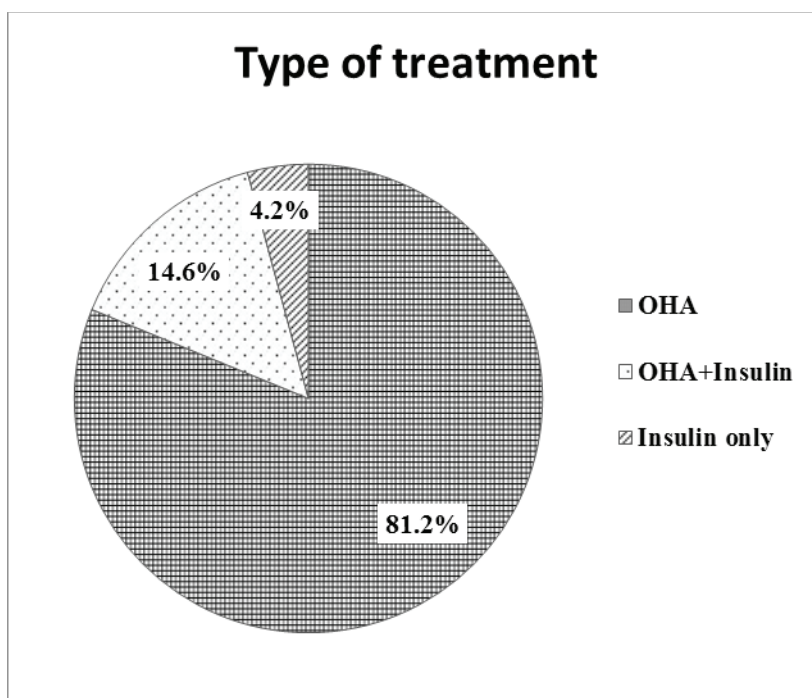


Figure 1: Distribution of diabetic individuals by the type of drug treatment

Figure 1 shows that 81.2% of the diabetic subjects were taking oral hypoglycemic drugs (OHA), 4.2% were completely dependant on insulin alone and 14.6% were taking combination of both oral hypoglycemic drugs and insulin.

Discussion

In the present study, out of 454 study population 96 were diabetic individuals showing the prevalence of diabetes as 21.1%. In the present study 48.9 percent of the study population were males and 51.1 percent were females. Majority of the study subjects belongs to 41 to 50 years age group i.e 33.5%. In the present study, 21.5% of prevalence of diabetes was seen among mixed vegetarians and 16.7% were from vegetarians and the association was not statistically significant ($p>0.05$). 28.1% prevalence of diabetes was observed in the individuals whose staple diet is rice and only 11.2% was seen among mixed diet intake persons and the association was significant ($P<0.0001$). This finding was correlated with the Ferreira SR et al.¹¹ which observed that high amount of carbohydrate diet and deleterious dietary pattern associated with diabetes mellitus.

In the present study the prevalence of diabetes was 24% among the study population who are having

preference of oil in their diet. There was 1.3% prevalence of diabetes in the study population who did not prefer oil in their diet. There was a significant association ($p<0.05$) found between preference of oil in diet and diabetes. The prevalence of diabetes was 23% among the study population who are having per capita consumption of more than one kg of oil per month and it was 5.6% among who are consuming less than 0.5 kg per month. There was no statistical significant association ($p>0.05$) found between quantity of oil consumption and diabetes mellitus. This finding was contrary to the study done by Perry IJ¹² which revealed the direct relation with amount of oil consumption and diabetes.

The prevalence of diabetes was 23.2% among the study population who are not consuming germinating seeds and it was 10.8% in the study subjects who were taking germinating seeds and there was an association ($p=0.017$). This was in accordance with the study done by Villegas R et al.¹³ in the Shanghai Women which showed an inverse association between legumes intake and type 2 diabetes mellitus. In the present study the prevalence of diabetes was 21.6% in the study population who are consuming leafy vegetables one to three times per week and it was 20% in the study population who are not consuming leafy vegetables and there was no

association. Similar findings are seen in the study done by Montonen J et al.¹⁴

Majority of the study population that is 64.3% were taking small and large quantities of food 3 times a day. The prevalence of diabetes was 38.9% among study subjects who were taking small and large quantities of food 4 times a day. There was an association between frequency of food intake and diabetes ($p=0.002$). In the present study prevalence of diabetes was 33.3% in the study population who were consuming chicken or meat more than 3 times per week and there was no association. Where as in a study by Van Dam R et al.¹⁵ showed that frequent consumption of processed meat was associated with a higher risk for type 2 diabetes (RR 1.46, CI 1.14–1.86 for $\geq 5/\text{week}$ vs. $< 1/\text{month}$, P for trend < 0.0001). Whereas Da Silva MS et al¹⁶ in a study among French-canadian population showed that dairy intake is inversely associated with glycaemia.

In the present study prevalence of diabetes was high that is 40.2% in the study population who were taking junk food more than three times per week and there was a significant association ($p<0.0001$). This was in accordance with the study done by Gittelsohn J et al.¹⁷ which found that high consumption of junk foods was associated with substantial increase in risk for diabetes. Van Dam R et al.¹⁸ in a study among U.S men found that the western dietary pattern score was associated with an increased risk for type 2 diabetes ($P<0.001$). CUPS¹⁹ revealed that the ‘fast food culture’ which has overwhelmed our cities and towns is also a major driver of the diabetes epidemic. The ‘fast foods’ that are fat and calorie rich and a majority of the immigrants in Indian cities depend on these unhealthy ‘junk’ foods, this may be a major factor in the rising prevalence of diabetes and cardiovascular diseases in urban slums. In the present study 81.2% of the diabetic patients were taking oral hypoglycemic drugs, 4.2% were completely dependant on insulin alone and 14.6% were taking combination of both oral hypoglycemic drugs and insulin. Study done by Yusuff KB et al.²⁰ in Nigeria depicted 70.3% of patients were on combination therapy and it highlighted the necessity of intensive control of blood glucose level.

The beneficial effect of the dietary pattern on diabetes mellitus and glucose metabolism in general and traditional food pattern was associated with a significant

reduction in the risk of developing type-2 diabetes. The composition of diet is one of the best known dietary patterns for its beneficial effects on human health that may act beneficially against the development of type-2 diabetes, including reduced oxidative stress and insulin resistance.⁹

Conclusion

The present study was conducted among 454 urban population of Eluru in which the prevalence of diabetes was 28.1% among study subjects who were consuming rice as their staple diet and there was a statistical significant association ($p<0.05$) found in relation to diabetes mellitus. There was a statistical significant association ($p<0.05$) found between junk food consumption and diabetes mellitus. Diabetic individuals should be encouraged to adhere to the strict dietary advice. All the individuals were advised to add the germinating seeds to their daily consuming diet. Simple dietary modifications like avoidance of junk foods will prevent or delay the onset of type 2 diabetes mellitus. Regular monitoring of blood glucose levels and dietary counseling sessions especially for diabetic individuals should be conducted at the community level.

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Snoring and Sleep Apnoea as Risk Factors for Type 2 Diabetes Mellitus: A Case Control Study among the Patients attending a Tertiary Care Hospital in North Karnataka

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Abstract

Background: Type 2 Diabetes Mellitus is a major chronic disease with an alarming rise in the prevalence which may be largely attributed to the epidemic of obesity. Excess weight which is also an important factor for Obstructive Sleep Apnoea (OSA), which if persists for long-term results in an unbelievably bad impact on health. Studies have shown that patients with sleep apnoea had the risk of developing Type 2 Diabetes Mellitus and there are very few evidences of some improvement in blood glucose level on correction of sleep apnoea.

Objectives : To know the association of Snoring and Sleep Apnoea with Type 2 Diabetes Mellitus among the patients attending a tertiary care hospital in North Karnataka.

Methods: A case control study was conducted among 150 patients attending Medicine - Out Patient Department (OPD) of KIMS, Hubli, from 5th May to 4th June 2012. Among them, those with Type 2 Diabetes Mellitus were considered as cases and those without Diabetes were taken as controls. A pretested, semi-structured questionnaire was applied to collect the data from the study participants with the verbal informed consent.

Results: Out of 107 cases and 43 controls, majority of the cases had the history of snoring (69.2%) and daytime symptoms suggestive of sleep apnoea such as daytime sleepiness (59.8%), headache (59.8%), dry mouth (65.4%) and impaired memory (57.9%). Although sleeping duration and Epworth Sleepiness Score was found to be more among the cases compared to controls, there was no statistically significant association.

Conclusion: This study reports that a greater number of patients who have snoring history and presence of symptoms suggestive of sleep apnoea were found to be diagnosed with Type 2 Diabetes Mellitus.

Key Words: Risk Factors, Snoring, Sleep Apnoea, Type 2 Diabetes Mellitus

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Introduction

Type 2 Diabetes Mellitus is a major chronic disease with high morbidity, mortality, and economic burden. Previously Diabetes Mellitus was just a disease of the middle aged and the elderly, whereas recently escalated to all age groups including adolescents. It has been estimated that every fifth person is a diabetic, therefore

an economic burden.¹ Transition from traditional to modern lifestyle and consumption of diet rich in calories combined with a high level of mental stress has coupled the problem further. There is an alarming rise in the prevalence of Type 2 Diabetes that may be largely attributed to the epidemic of obesity.²

Excess weight is also an important factor for Obstructive Sleep Apnoea (OSA), an increasingly common sleep disorder that is characterized by repetitive upper airway obstructions leading to intermittent hypoxia and sleep fragmentation. Sleep apnoea is present in about 1 in 5 adults and more than 50% in Type 2 Diabetic patients, but vast majority of people with sleep apnoea are under diagnosed.³ People are not aware of the effect of long-term snoring and sleep apnoea on health.

Studies have showed that patient with sleep apnoea had the risk of developing Type 2 Diabetes and there are few evidences of improvement in blood glucose level on correction of sleep apnoea.⁴ This compelled in generating an hypothesis saying “Snoring and Sleep Apnoea are the risk factors for the development of Type 2 Diabetes Mellitus”. Therefore, this study was conducted to know the association of snoring and sleep apnoea with Type 2 Diabetes Mellitus among the patients attending a tertiary care hospital in North Karnataka.

Methods

A case control study was conducted for a period of 1 month from 5th May to 4th June 2012, to know the association of snoring and sleep apnoea with Type 2 Diabetes Mellitus among the patients attending Medicine - Out Patient Department (OPD) of Karnataka Institute of Medical Sciences, Hubli.

A convenient sample size of total 150 subjects were included in the study. Among the patients attending the Medicine OPD, with waist size greater than 90 cm in males and 82 cm in females, and above the age of 40 years, those who were diagnosed as Diabetic patients were taken as cases. And those with the same characteristics but not diagnosed as Diabetic patients were taken as Controls.

The data was collected by personal interview of the participants with verbal informed consent. A pre-tested, semi-structured questionnaire was used to collect

the demographic information and history of sleep habits and apnoea in cases and controls. In addition, an Epworth Sleepiness Score⁵ was used to measure daytime sleepiness as a result of disturbed sleep.

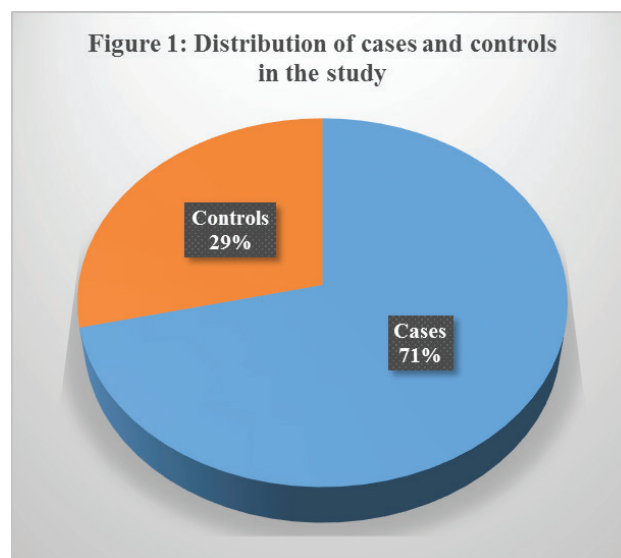
Anthropometric measurements including Height, Weight and Waist Circumference were obtained using standard techniques. Recent fasting blood glucose was obtained from patient records in cases i.e., diabetic patients.

Statistical Analysis

Data was entered in MS-Excel and analysed using SPSS-20 software. The results were expressed in frequencies and percentages in the tables and figures.

Results

Among 150 study participants, about 107 were diagnosed with Type 2 Diabetes Mellitus and hence considered as Cases. Remaining 43 who were not diagnosed with Diabetes, were considered as Controls. (Figure 1)



Among the cases, about 57.9% were Females, whereas among the controls, nearly 53.5% were Males. In case of locality, majority of the participants were from Urban areas among both the cases (77.6%) and the controls (72.1%). (Table 1)

Table 1: Distribution of cases and controls according to gender and locality

Factors		Cases	Controls
Gender	Male	45 (42.1%)	23 (53.5%)
	Female	62 (57.9%)	20 (46.5%)
Locality	Rural	24 (22.4%)	12 (27.9%)
	Urban	83 (77.6%)	31 (72.1%)

Majority of the cases were Females and majority of the controls were Males. However, most of the study participants were from Urban areas.

In the study, mean age of the cases and controls were 56.68 (±9.28) years and 51.84 (±8.42) years, respectively. Whereas there was not much difference in the mean values of the Anthropometric characteristics such as Height, Weight, Body Mass Index (BMI) and Waist Circumference of both the cases and controls. (Table 2)

Table 2: Mean and Standard Deviation of Age and Anthropometric characteristics of cases and controls in the study

Characteristics		Frequency	Mean	Standard deviation	t-test
Age (years)	Cases	107	56.68	9.28	2.965
	Controls	43	51.84	8.42	3.093
Height (cm)	Cases	107	156.86	15.54	-0.745
	Controls	43	158.70	6.91	-1.002
Weight (kg)	Cases	107	83.65	12.29	-1.679
	Controls	43	87.30	11.35	-1.738
BMI (kg/m ²)	Cases	107	33.21	5.47	-1.446
	Controls	43	34.58	4.59	-1.557
Waist Circumference (cm)	Cases	107	102.83	10.28	-1.215
	Controls	43	105.14	11.08	-1.177

There was no statistically significant association with respect to Anthropometric characteristics among the cases and controls.

History of snoring was present in majority of the study participants. However, snoring was more in cases

(69.2%) when compared to controls (60.5%). In case of sleep apnoea, majority of cases (57.0%) agreed the presence of it, whereas majority of controls (53.5%) denied its presence. (Table 3)

Table 3: Distribution of cases and controls according to their history of snoring and sleep apnoea

Factors		Cases	Controls	Chi-Square Value
Snoring	Present	74 (69.2%)	26 (60.5%)	1.043
	Absent	33 (30.8%)	17 (39.5%)	
Sleep Apnoea	Present	61 (57.0%)	20 (46.5%)	1.361
	Absent	46 (43.0%)	23 (53.5%)	

Although majority of the cases had the history of snoring and sleep apnoea compared to controls, there was no statistically significant association ($p > 0.05$) with respect to it.

Among the cases, majority had the history of daytime symptoms that are suggestive of sleep apnoea such as daytime sleepiness (59.8%), headache (59.8%), dry mouth (65.4%) and impaired memory (57.9%). In case of controls, dry mouth was the only symptom seen in majority and remaining symptoms were slightly less. (Table 4)

Table 4: Presence of Daytime symptoms suggestive of apnoea among the cases and the controls

Daytime Symptoms	Cases	Controls	Chi-Square Value
Daytime Sleepiness	64 (59.8%)	19 (44.2%)	3.031
Headache	64 (59.8%)	21 (48.8%)	1.500
Dry Mouth	70 (65.4%)	25 (58.1%)	0.704
Impaired Memory	62 (57.9%)	20 (46.5%)	1.618

Although majority of the cases had the history of daytime symptoms suggestive of sleep apnoea compared to controls, there was no statistically significant association ($p > 0.05$) with respect to it.

In the study, mean values of the sleep duration were found to be almost similar among the cases and controls i.e., 6.57 (± 1.77) hours and 6.67 (± 1.65) hours, respectively. Whereas the Epworth Sleepiness Score was more among the cases (7.73 ± 4.07) compared to controls. (Table 5)

Table 5: Mean and Standard Deviation of Sleep Duration and Epworth Sleepiness Score among cases and controls in the study

Characteristics		Frequency	Mean	Standard deviation	t-test
Sleep Duration (hours)	Cases	107	6.57	1.77	-0.331
	Controls	43	6.67	1.65	-0.341
Epworth Sleepiness Score	Cases	107	7.73	4.07	2.214
	Controls	43	6.16	3.40	2.397

There was no statistically significant association with respect to Sleep Duration and Epworth Sleepiness Score among the cases and controls.

Discussion

Many studies indicate that snoring is indirectly associated with risk of developing diabetes. As a boost to this statement, obesity can cause snoring, apnoea & also insulin resistance which in turn lead to diabetes. Patho-physiology that has been postulated is that snoring & sleep apnoea leads to disturbed sleep & decreased sleep duration this in turn leads to daytime sleepiness which is a stressed state hence cytokines are released and a pro-inflammatory state occurs this leads to insulin resistance.⁶

This study showed that proportion of diabetic patients with snoring history was found to be 69.2% and with history suggestive of sleep apnoea to be 57%. This resembles the study conducted among Chinese patients by Lam DCL et al⁷ where 53.9% of diabetic patients were found to have obstructive sleep apnoea.

The mean Epworth Sleepiness Score was slightly more among the cases (7.73 ± 4.07) compared to controls (6.16 ± 3.40) in this study. This is similar to the study by Zubair et al⁸ where the mean was 6.3 ± 5.29 among patients with diabetes and 1.94 ± 2.34 for patients without diabetes. But this difference is huge compared to the current study. The study also shows reduced duration of sleep and increased daytime sleepiness among diabetic patients just like our study.

Conclusion

This study reports that a greater number of patients who have snoring history and presence of symptoms suggestive of sleep apnoea were found to be diagnosed with Type 2 Diabetes Mellitus.

Limitations

In the study, sleep apnoea was assessed using subjective questions like snoring history and breathing pauses during the night, but the exact way of measuring sleep apnoea would be by subjecting them to an overnight polysomnography.

107 patients were selected as cases and 43 as controls arbitrarily for the study due to the time

restriction.

Assessment of the effect of sleep apnoea on regulation of blood glucose control was not done due to lack of past records.

Recommendations

Recently, snoring & sleep apnoea have been found to be a risk factor for Diabetes. Patients who snore should be evaluated & treated with either inexpensive lubricants to prevent airway obstruction or by continuous positive airway pressure or surgical methods to prevent development or complication of Type 2 Diabetes Mellitus.

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Declaration

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Ethical approval: Not required

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- 12 *Indian Journal of Public Health Research & Development, September 2020, Vol. 11, No. 9*
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Geriatric Depression: A Comparative Study between the Elder Population at Old Age Home and in their Own Home

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Abstract

Background: Geriatric depression is one of the major causes of Morbidity and Disability Adjusted Life Years (DALYs). It is often under diagnosed. The trend now being changed from a joint family setup to that of nuclear family have cost many elderly their homes and secure support structure, thereby affecting their mental health.

Objectives : To assess the prevalence of geriatric depression in Hubli-Dharwad district. To compare the same among the elderly population living with their family, in their homes with those who were living in old-age care facilities.

Methods: A comparative study was conducted among 170 elderly people aged ≥ 60 years selected from old age homes and surrounding areas of KIMS Hubli from 6th May to 5th June 2012. Geriatric Depression Scale (GDS) was used and Direct questionnaire method was adopted to collect the data from the study participants with the verbal informed consent.

Results: Out of 170 people surveyed, 49.5% of them were either mildly or severely depressed, with the depression being higher in females than males. And old age home people are found to be more depressed than those in their own homes.

Conclusion: Nearly half of the study population showed the signs of depression, where education and socio-economic status of the individuals affected the depression level to a significant extent.

Keywords: Geriatric Population, Depression, Old Age Home, Own Home

Introduction

Ageing population is an issue of rising concern in the world and to a greater extent in India. The enormous rise in the elderly population is a result of the rising life expectancy and fall in the birth rates. In India, the elderly

population (i.e. population of people aged more than 60 years), from 5.6% in 1961, is projected to rise to 12.4% of population by the year 2026.¹

In a developing country like India, the fast-growing elderly population poses a mounting pressure in socioeconomic, medical, and psychological fronts. There is a need to cope with this escalating issue with proper, effective programmes and legislature. Care should be taken to ensure their enforcement and effectiveness with regular surveillance.

One of the many psychosocial problems associated with higher dependence among elderly is that of depression. The prevalence rates of geriatric depression

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among Indians are placed between 13% to 25% based on community mental health studies.^{2,3} According to World Health Organization, the factors of depression in old age are genetic susceptibility, chronic disease and disability, pain, frustration with limitations in activities of daily living (ADL), personality trait (dependent, anxious or avoidant), adverse life events (widowhood, separation, divorce, bereavement, poverty, social isolation) and lack of adequate social support.⁴

Higher dependency ratios mean a larger proportion of people tend to burden their near and dear ones, giving way to more neglect and abuse from family. There is an increasing trend among the Indian population, of elderly being evicted from their homes to old-age care facilities, despite the cultural restraints of the Indian family structure. The changes in trend from a joint family setup to that of nuclear family have cost many elderlies their homes and secure support structure.

Thus, this study was conducted with the objectives of assessing the prevalence of geriatric depression in Hubli-Dharwad district, and to compare the prevalence of depression among the elderly living with their family, in their homes and that among elderly living in old-age care facilities. The study also focused on identifying the psychosocial causes for depression and compare the same among the two populations of elderly.

Methods

A comparative study was conducted among 170 elderly people aged >60 years selected from surrounding areas and old age homes near KIMS Hubli from 6th May to 5th June 2012. Out of 170 people, 140 people

were residing with their family in their homes from surrounding areas of KIMS Hubli such as Ashok Nagar, Vijayanagar, Vidyanagar and Lokappana Hakkal. Remaining 30 people were from 3 different old age homes namely Castro Hall - Home for the old aged, Mother Theresa Home for old aged, and Sweet Home for old aged which are located near Keshwapur, Hubli.

Geriatric Depression Scale⁵ consisting of 30 ‘YES’ or ‘NO’ Questions developed by J A Yesavage and his colleagues in the year 1982 which were related to 7 common characters of depression in later life that included Somatic concern, Lowered Affect, Cognitive impairment, Feelings of discrimination, Impaired motivation, Lack of future orientation and Lack of self-esteem. The score was put to each answer as 0 (No) or 1 (Yes) and total score was calculated to categorise each individual as normal (0-9) / mildly depressed (10-19) / severely depressed (20-30). It was also considered that GDS is 84% sensitive and 95% specific for diagnosis of depression.

Statistical Analysis

Data was entered in MS-Excel and analysed using SPSS-20 software. The results were expressed in frequencies and percentages in the tables and figures.

Results

Among 170 study participants, majority were males i.e., about 93 (54.7%) and remaining 77 (45.3%) were females. Considering the participants with respect to the place where they reside, majority of males were staying in their own homes comparatively, whereas most of the females were staying in old-age care facilities. (Table 1)

Table 1: Distribution of participants based on gender with respect to their place of residence

Gender of the participants	Old Age Home		Own Home	
	Count	Percentage	Count	Percentage
Male	14	46.7%	79	56.42%
Female	16	53.3%	61	43.57%
Total	30	100%	140	100%

In the study, about 80% of population staying at old age homes were depressed which is higher compared to those, staying at their own homes which is around 42.8%. (Table 2)

Table 2: Comparison of Depression status between the study population in old age homes and in their own homes

Depression Status	Old Age Home		Own Home	
	Normal	6	20%	80
Mild Depression	11	36.7%	44	31.4%
Severe Depression	13	43.3%	16	11.4%
Total	30	100%	140	100%

The chi square value was found to be 21.68 with the p-value of 0.0001, thereby showing extremely significant association. This shows that people in old age homes in the study were more depressed than those in their own homes.

Among the total population studied, 60.2% of males and 39% of females were found to have normal mental state and 39.8% of males and 61.1% of females have been found to be suffering from depression, showing that females in the study were more depressed than males. Also considering the age factor, the depression state was observed to be increasing as age advances, but slight improvement in mental state was seen above 80 years, which cannot be taken as significant because the population between 80-90 years of age is comparatively less. In the study, 72.8% of mildly depressed and 81.4% of severely depressed population fall into low socioeconomic status, categorised according to Kuppaswamy Scale.⁶ Hence depression was more prevalent among low socioeconomic group than high socioeconomic group in the study population. (Table 3)

Table 3: Comparison of Depression status with respect to Gender, Age and Socio-economic status of the participants

		Normal		Mild Depression		Severe Depression		Chi-square value	p-value
Gender	Male	56	60.2%	27	29.0%	10	10.8%		
	Female	30	39.0%	28	36.4%	19	24.7%		
Age group	60-65	19	52.7%	13	36.1%	4	11.1%	11.617	<0.05
	65-70	19	38.7%	26	53.1%	4	8.2%		
	70-75	9	30.0%	15	50.0%	6	20.0%		
	75-80	5	17.8%	16	57.1%	7	25.0%		
	80-85	6	28.5%	9	42.8%	6	28.5%		
	85-90	3	50.0%	1	16.6%	2	33.3%		
SES	Upper Class	30	37.5%	4	9.1%	2	12.5%	26.515	<0.001
	Upper Middle	22	27.5%	8	18.2%	1	6.3%		
	Lower Middle	14	17.5%	14	31.8%	1	6.3%		
	Upper Lower	11	13.8%	9	20.5%	3	18.8%		
	Lower Class	03	3.8%	9	20.5%	9	56.3%		

Among the study population, depression status was gradually increasing as the education status declined i.e., depression being highest (73.6%) in illiterates. Around 64.2% of people who preferred to avoid social gathering were depressed while only 32.9% of people who did not prefer to avoid social gathering were depressed. About 84.1% of people who did not get

enough attention from their family were depressed while only 35.5% are depressed among those who get enough attention. Among the normal people, none of them felt that they were burden to their family. But almost half of the depressed (both mild and severe) population felt that they are burden to the family. However, all these findings were not found to be statistically significant.

Table 4: Comparison of Depression with respect to Marital status of the participants

		Married		Unmarried		Widowed		Chi-square value	p-value
Depression Status	Normal	45	32.0%	5	38.4	5	27.7	94.003	<0.0001
	Mild	77	55.4	4	30.8	5	27.7		
	Severe	17	12.2	4	30.8	8	44.4		

In the study, the depression status among married, unmarried, and widowed was almost in the range of 60-70%. However, 80% of old age population were either widowed or unmarried and 20% were married but they are neglected or divorced. Hence, the difference in distribution of population as per marital status was found to be extremely significant. (Table 4)

Discussion

The prevalence of geriatric depression from the study was found to be 50% (including mild and severe) which is higher as compared to the study conducted by Nair SS et al.⁷ This difference may be attributed to the small sample size studied and disproportionation between the two sets of population studied.

Similar to the study by Yazdkhasti F et al⁸, the higher prevalence of depression is seen among females almost two times as that of males. Increased prevalence in females may be due to relatively more emotional attachments and they tend to express their feelings more than males.

Though less difference is seen in depression status in relation to marital status, widowed are at a bit higher depressed state which may be attributed to their lonely life. The result is consistent with the study conducted by

Seby K et al.⁹

There exists a significant difference among the depression status which seems to be more prevalent in illiterate and in people belonging to low socioeconomic group. This result is also in consistent with various other studies.^{10,11} Both have interrelationship like illiteracy again may account to low socioeconomic status, unbearable family burden and hence bad impact on psychosocial health.

It is evident that though elder people are unhappy and depressed, they often deny going to old age homes and prefer to stay at home. It is obvious from this fact that people at old age homes would feel very depressed compared to those at their own home as seen clearly in the current study.

Conclusion

Almost half of the study population was observed to be prevalent with geriatric depression. Comparatively depression was significantly higher in old age homes due to the deprivation of homely environments and comfort as well as worry regarding the past. Main social causes for depression were found to be poor socioeconomic conditions, poor educational status, and neglect by the family.

Limitations

- Desired sample size could not be attained.
- Duration of study was less, so less time was spent with every person for interview.
- Only psychosocial factors and no medical factors like chronic illnesses were included.
- Two sets of population were disproportionate, so comparison was not as desired.

Recommendations

- Strengthening of policies for old age persons, which focus on financial security, health care, nutrition, shelter, education, and welfare of elderly.
- Psychosocial education to the community on how to take care of elderly persons should be emphasized.
- Encouragement of elderly population to mingle with others and avoid loneliness.

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Declaration

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The burden, social and economic consequences of Childhood Pneumonia in North Karnataka- A cross-sectional study

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Abstract

Background : Pneumonia is the prominent cause of childhood mortality. The disease accounts for 18 per cent deaths in children < 5 years. Pneumonia kills more children than any other illness, more than measles, malaria and AIDS combined. Caring for children with pneumonia is a daunting task in resource-poor countries where caregivers are required to pay for treatment 'out of pocket' at the point of care.

Objectives: To assess the burden, social and economic consequences of childhood pneumonia and to determine the risk factors associated with it.

Methods : A cross sectional study was conducted among the 15 children admitted in Paediatrics Department of KIMS Hubli, with clinical evidence of pneumonia infections using a pretested, semi-structured questionnaire.

Results: The incidence of childhood pneumonia was more among males (87%) and in rural population (54%). 53% were in the aged group of 1 and 5yrs. Overcrowding was present in 74%, indoor pollution in 80% and outdoor pollution in 33%. 13% had cancelled social gatherings and 54% had other impacts on their socialisation. 53% have taken external financial help for the treatment of pneumonia.

Conclusion: Treatment of childhood pneumonia requires relatively more care and consequently more resources to manage. The high costs of treatment puts a heavy financial burden on the family that necessitate the need for preventive care interventions which could lead to a reduction in the number of disease cases and decreased socio economic burden on the families.

Key Words : *Pneumonia, children, economic burden, childhood mortality.*

Introduction

Pneumonia is the major cause of childhood mortality. The disease accounts for 18 per cent deaths in children less than 5 years. Pneumonia kills more children than any other illness, more than measles, malaria and AIDS

combined ⁽³⁾.156 million new pneumonia cases are reported every year in the developing world. As many as 8.7 per cent of these cases are severe enough to be life-threatening and require hospitalization. India accounts for the maximum 43 million new cases followed by China (21 million cases) and Pakistan (10 million cases) ⁽⁴⁾. In India, pneumonia is responsible for an estimated 410,000 deaths in children under five. Studies have shown that up to 19% of children hospitalized with pneumonia die in India. India tops in global pneumonia deaths of children less than five years of age with 3.97 lakh reported in 2010 (UNICEF) ⁽⁴⁾. The third annual International Vaccine Access Centre's (IVAC) Pneumonia Progress Report 2012 said that almost 1,088

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children under 5 years of age die every day in India, an increase of 6.7 per cent from 2008 IVAC data which pegged the deaths at 3.71 lakh annually⁽⁵⁾.

Caring for a child with pneumonia may be financially burdensome in resource-poor areas, particularly when in-hospital treatment is required for a prolonged period. This is even more relevant in situations where caregivers have to pay 'out of pocket' for patient care⁽²⁾. Estimates show that the average daily cost of in-patient care for under-5 with severe pneumonia in health facilities in developing countries is beyond the reach of average low-income earners if unsubsidised⁽⁶⁾. Many a times, children are discharged against medical advice, often for financial reasons, and sometimes due to burnout on the part of caregivers or a perceived lack of clinical improvements⁽⁷⁾.

In addition to the direct medical costs, composed of expenses on medicines, investigations, consultation, and hospital stay, households of sick children incur non-medical expenses for transportation, food, child care, and lost income in the form of caregiver time and/or lost wages. The provider cost of US\$83.89 and US\$146.59 and household cost of \$41.35 and \$134.62 for inpatient treatment of severe pneumonia in secondary and tertiary level hospitals respectively was estimated in a study conducted in India⁽⁸⁾.

Childhood clinical pneumonia is caused by a combination of exposure to risk factors related to the host, the environment and infection. Possible risk factors include malnutrition, low birth weight, non-exclusive breastfeeding (during the first 6 months of life), immunization status, indoor air pollution, overcrowding, concomitant diseases, mother's education and birth order etc. Poverty and malnutrition underlie both the high incidence and deaths of young children from pneumonia in SEAR countries. But poor access to healthcare services is largely responsible for high mortality⁽⁹⁾. In India, more than 40 per cent of children aged under-3 year underweight and more than half of all children under 6 months are not exclusively breastfed⁽¹⁰⁾. Keeping in view the burden of the disease, this study was conducted with objectives to assess the burden, social and economic consequences of Childhood Pneumonia and to determine the risk factors affecting the development of pneumonia.

Objectives

1. To assess the burden, social and economic consequences of Childhood Pneumonia
2. To determine the risk factors affecting the development of pneumonia.

Methodology

This was a cross sectional study conducted in the paediatrics Department of Karnataka Institute of Medical sciences, Hubli in the month of May and June 2014. Convenient sampling technique was used to collect the data and a total 15 children aged 0-14 years who were admitted with a physician's diagnosis of pneumonia, severe pneumonia or very severe pneumonia noted on their treatment records were included in the study.

Inclusion criteria: All pneumonia cases aged 0 -14 yrs whose parents gave consent to participate in the study.

Case definition: In the context of cough or difficulty in breathing, pneumonia is defined as tachypnoea (respiratory rate more than or equal to 60 breathes per minutes for children under 2 months of age, >50 breathes per min from 2 -11 months of age, or > 40 breaths per minute in children from 1-4 year of age); severe pneumonia is diagnosed if symptoms are associated with lower chest wall indrawing or sub-costal retraction, and very severe pneumonia if there is a danger sign such as central cyanosis, or severe respiratory distress, convulsions, inability to arouse the child or if the child is unable to drink⁽⁹⁾.

Data collection: The participants (parents of the children) were briefed about the purpose of the study and informed verbal consent was taken and data was collected by using pre-designed, pre- tested and semi-structured questionnaire. It consists of Socio-demographic details (age, gender, types of family and per capita income), specific informations (socio-cultural factors, nutritional history, developmental history, environmental factors etc.) and social and economic consequences.

Data Analysis: The data collected was entered in Microsoft Excel and later analyzed using SPSS version 20. Appropriate descriptive statistics and inferential statistics were used for analysis.

Results

Socio-demographic details

Majority of the study population (53%) were in the aged group of 1 to 5yrs. The incidence of childhood pneumonia was more among males (87%) as compared to females and in rural population (54%) as compared to the urban population. 60% were from joint family, 80% from Hindu religion and 80% from class III & IV socioeconomic status according to modified BG Prasad classification.

Table 1: Birth history and other factors influencing the disease

Variables		Number of cases	Percentage %
Birth order	1st	6	40
	2nd	6	40
	3rd	2	13.3
	>3rd	1	6.7
Gestational period during delivery	Preterm	2	13.3
	Term	13	86.7
Birth weight	Low	1	6.7
	Normal	14	93.3
Congenital anomaly	Yes	4	26.7
	No	11	73.3
Exclusive breast-feeding	Yes	14	93.3
	No	1	6.7
Immunization history	Achieved	13	86.7
	Delayed	2	13.3
Developmental milestones	Achieved	13	86.7
	Delayed	2	13.3
Nutrition	Malnourished	12	80
	Well nourished	3	20

It was observed that the incidence of pneumonia was more common in 1st (40%) and 2nd (40%) birth order. 80% of the cases were malnourished (Table 2).

Table 2: Environmental factors influencing the disease

Variables		Number of cases	Percentage %
Type of house	Kuchcha	6	40
	Semi-pucca	7	46.7
	Pucca	2	13.3
Overcrowding	Yes	11	73.3
	No	4	26.7
Separate kitchen	Yes	10	66.7
	No	5	33.3

Cont ... Table 2: Environmental factors influencing the disease

Fuel used	Fire wood	10	66.7
	Gas	5	33.3
Exhaust Ventilation	Present	8	53.3
	Absent	7	46.7
Moulds and damp stains on walls and floor	Yes	5	33.3
	No	10	66.7
Source of water	Borewell	4	26.7
	Corporation	11	73.3
Purification of water	Boiling	4	26.7
	Filter	1	6.7
	None	10	66.7
Indoor pollution	Yes	12	80
	No	3	20
Outdoor pollution	Yes	5	33.3
	No	10	66.7

Overcrowding was present in 74%, indoor pollution in 80%, outdoor pollution in 33% and poor housing in 87% (Table 3) and lack of cross ventilation in most of the houses.

53% have residence within 1km of health care facilities and in most of the cases (93%) it takes less than 1 hour to reach the hospital, only 7% need 1-3 hours.

Table 3: Social and economical impact of the disease

Variables	No of cases	Percentage %	
Psychological impact	Anxious	10	66.7
	Depressed	4	26.7
	No	1	6.7
Impact on socialisation of child	Cancellation of social gatherings	2	13.3
	Others	8	53.3
	None	5	33.3
No. of days of absence from work	>5days	7	46.7
	1-3days	4	26.7
	None	4	26.7
Loss of pays (Rupee)	>1000	4	26.7
	100-300	1	6.7
	600-1000	6	40
	None	4	26.7
External financial help	Taken	8	53.3
	Not taken	7	46.7
Cost of management is affordable	Yes	10	66.7
	No	5	33.3

67% of the parents were anxious and 27% became depressed due to disease. 13% had to cancel social gatherings and 54% had other impacts on their socialisation. In 46% of the cases, parents had to take leave from work for more than 5 days and 27% parents for 1-3 days on account of the child's disease. Attendance of the siblings was not affected due to the sickness. 26.7% people lost an income of more than Rs.1000, 40% lost between Rs. 600 to Rs.1000 and 6.7% lost between Rs. 100-300. 53% have taken external financial help for the treatment of pneumonia. 67% responded that the cost of treatment was affordable but most of them took loans (53%) on accounts of the disease (Table 4).

There was no stigma associated with the disease and the socialization of majority of children was not affected. Time lapse between appearance of symptoms and hospitalization was more in rural areas as compared to urban areas. In 53% cases, the medical intervention was sought within 24 hours whereas in 47% cases, medical intervention was done in 1-2 days.

All females and 66.6% male of the study population were malnourished. Indoor air pollution was seen to same extent in both rural and urban areas whereas, outdoor pollution was more in rural areas (20%) as compared in urban areas (13.3%). As the birth order increased, malnourishment increased from 1st, 2nd and 3rd order births. More than half of the rural and urban residents took external financial support for medical facilities.

Discussion

In our study 93% were exclusively breastfed for 6 months. Whereas in the study conducted by Arifeen et al, the proportion of infants who were breastfed exclusively was only 6% at enrolment, increasing to 53% at 1 month and then gradually declining to 5% at 6 months of age. Compared with exclusive breastfeeding in the first few months of life, partial or no breastfeeding was associated with a 2.23-fold higher risk of infant deaths resulting from all causes and 2.40- and 3.94-fold higher risk of deaths attributable to ARI and diarrhoea, respectively (11).

In our study, male female ratio affected by pneumonia was 6.5. in the study conducted by Hsiu-Lin Chen et al, on childhood pneumonia in Taiwan in 2001-2002, the male female ratio affected by pneumonia was

1.26 (12) and by Christa L Fischer Walker et al. is 1.3 (13).

In our study, 43% of the study population belonged to age group 0-1 years and 50% in the age group of 1-5 yrs. The study conducted by Christa L Fischer Walker et al, showed that 81% cases of pneumonia occurred before 2yrs (13).

In our study, 67% of the study population used solid fuels, whereas in the study by Zheng Xiao Hong et al. in Nanjing, China, 3.5% of the study population used solid fuels (14).

In our study, 33% had previous history of hospitalisation, 80% overcrowding and indoor pollution, 87% poor housing while in the study conducted by W.Fonseca, in Fortaleza, Brazil 5.4 % had previous history of hospitalisation, 20.3% overcrowding and 9.6% indoor pollution, 12% poor housing. Malnutrition, indoor air pollution, overcrowding, day care attendance, humidity and outdoor air pollution were etiological factors for childhood pneumonia (15). The same was observed in our study.

In our study, 80% were undernourished and 7% were not exclusively breast fed, whereas in the study conducted by M Ghimire et al., 40% of the children were underweight and were not exclusively breast fed (9).

Conclusion

Our study concluded that social and economic factors like poor housing, low socioeconomic status play a crucial role in the development of childhood pneumonia. Treatment of childhood pneumonia requires relatively more care and consequently more resources to manage. The high costs of treatment puts a heavy financial burden on the family leading to loss of wages, loans, debts etc. that necessitate the need for preventive care interventions such as exclusive breast feeding, proper nutrition, hygienic practices, proper housing conditions, complete immunisation, control of indoor pollution, which could lead to a reduction in the number of disease cases and decreased socio economic burden on the families. This will also decrease the pressure and cost of treatment on the already overburdened public health system. Apart from the significant costs to the health care providers, families of children with pneumonia diseases incur considerable expenses during the course of treating the sick child.

Limitation

The study had a number of limitations. Firstly, the sample size was less as the study was conducted during the off-season. Secondly, the study was conducted in a single institution, so the findings might not be generalisable. Thirdly, the complications and long term sequelae were not taken into account as the duration of the study was short.

Recommendation

Improved access to preventive and management strategies is needed to reduce the burden of

Childhood pneumonia in resource limited settings. More research on childhood pneumonia is needed to better understand the burden and to develop more effective and cost effective preventive and treatment strategies.

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A cross-sectional Study to Assess the Quality of Life of HIV Infected Individuals Attending ART Centre, KIMS Hubli

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Abstract

Background: Healthful living is the right of every individual. Healthful living is reflected by the quality of life of the people in the community and it is true even in case of people living with HIV. According to the current data the predictors for quality of life in HIV infected individuals are present health condition, antiretroviral therapy, psychological well-being, social support systems, coping strategies and spiritual well-being.

Objectives : To assess the QOL of people with HIV/AIDS and the impact of various domains of quality of life in people with HIV/AIDS.

Methods: A cross sectional was study conducted on 100 HIV infected people attending “KIMS Hubli”. A face to face interview was conducted using a pre-tested, semi-structured questionnaire adopted from WHO QOL Questionnaire. It covers the respondent’s perception of overall quality of life within the six broad domains. The reply was according to the five point Likert scale.

Results: 70.83 % of the illiterates and 68.4% of the literates scored badly in spirituality domain; and, 66.67% of the illiterates have scored well while 63.15% of the literates have scored well in the environment domain. 56.25% of the married participants scored well in social relationship domain.60.42% of the married participants scored well in Environment domain.

Conclusion: Spiritual domain is affected the most in the patients living with HIV. Married people scored well in the social relationship and environment domain. Gender has affected the physical domain and level of independence. In these domains females have scored well when compared to males.

Key Words: People living with HIV, Anti-retroviral therapy, Quality of Life,

Introduction

India ranks three with respect to the largest number of people living with human deficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS).¹ There

are around 2.1 million people currently living with HIV/AIDS in India with an adult prevalence of 0.31% according to 2016 HIV estimates.¹

Quality of life(QOL) depicts the satisfaction with which an individual leads his or her life as a whole.²

The concept of QOL has many dimensions that represents the individual’s perception regarding his or her physical, psychological, social, and cognitive health.² There exists an inverse relationship between QOL and stage of HIV infection, unemployment, perceived health status, stress and medication adverse effects due to ART,

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and depression, and these are linked positively with social support and self-esteem.³

In other words, QOL has been associated with better health and longer survival times in HIV/

AIDS populations⁴. QOL measures the functioning and acclimatization of physical, social, emotional and cognitive domains.⁵

The factors having negative impact on QOL are; fear of social stigma, isolation and discrimination.⁶ The specific problems influencing QOL in People living with HIV/AIDS are physiological, psychological, sociological, as well as economic problems. The major domains related to health related QOL affected mainly by individual's expectations, ideas, thoughts, experiences, beliefs, as well as their perceptions are Physical, psychological, social as well as environmental domains.⁶

The most important consideration in all the situations that results in deviation from normal health is QOL assessment in HIV infected individuals.⁷

This study was conducted to assess the QOL of people with HIV/AIDS and the impact of various domains on quality of life in people with HIV/AIDS.

Methodology

Study design and study participants:

A cross sectional study conducted on HIV infected people attending "Karnataka Institute of Medical Sciences, Hubli" (tertiary care Government Hospital) for a period of six months.

Sample size: 100 HIV infected individuals.

The participants were selected on the basis of few inclusion and exclusion criteria. The inclusion criteria were being 18 years of age or older, being an HIV positive patient and not having cognitive or communicating disabilities or psychotic disorders such as schizophrenia and who were willing to participate in this study. The exclusion criteria included the presence of any obvious co-morbid conditions not associated with HIV/AIDS and who were not willing to participate in this study.

Research instrument:

The questionnaire was developed by adapting "31 items WHO QOL HIV brief instrument".⁸ It is a multidimensional, conceptualized, generic, 31 item QOL instrument. It covers the respondent's perception of overall quality of life within the 6 broad domains: physical, psychological, level of independence, social, environmental and spiritual.

- The physical domain describes 4 facets: pain and discomfort, energy and fatigue, sleep and rest and symptoms related to HIV.

- The psychological domain describes 5 facets: positive feelings, concentration, self-esteem, bodily image and appearance and negative feelings.

- The level of independence domain describes 4 facets: mobility, activities of daily living, dependence of medication and treatment and work capacity.

- The social relationship domain describes 4 facets: personal relationships, social support, sexual activity, social inclusion.

- The environment domain describes 8 facets: physical safety and security, home environment, financial resources, health and social care, accessibility and quality, opportunities for acquiring new information and skills, participation in and opportunities for recreation/leisure activities, physical environment, and transport.

- The spirituality, religion and personal beliefs domain describes 4 facets: personal beliefs, forgiveness and blame, concerns about the future, death and dying.

Items are related on a 5 point Likert interval scale where 1 indicates low, negative perceptions and 5 indicates high, positive perceptions. Domain scores are obtained by adding the facet means in the respective domain, dividing by the number of facets in that domain, and multiplying by 4.

Ethical implication: Informed verbal consent was taken. The respondents were informed about the objectives, purpose of the study and other relevant information of the study. Anonymity and confidentiality were strictly maintained.

Statistical Analysis

Data was entered in MS-Excel and analysed using SPSS 21.

Results

Table 1: Effect of education on different domains of Quality of life

Domain of QOL	Scores	Illiterate	Primary and middle School certificate	High school certificate	Intermediate/Post high school diploma/ Graduate
Physical	4-12	9(21.95)	18(43.90)	12(29.26)	2(4.87)
	13-20	15(25.42)	24(40.67)	13(22.03)	7(11.86)
Psychological	5-15	11(21.56)	21(41.17)	15(29.41)	4(7.84%)
	16-25	13(26.53)	21(42.85)	10(20.46)	5(10.2)
Level of Independence	4-12	7(20)	15(42.85)	10(28.57)	3(8.57)
	13-20	17(26.15)	27(41.53)	15(23.07)	6(9.3)
Social Relationship	4-12	13(27.65)	20(42.54)	10(21.27)	4(8.51)
	13-20	11(20.75)	22(41.5)	15(28.3)	5(9.43)
Environment	8-24	8(22.22)	18(50)	9(25)	1(2.8)
	25-50	16(25)	24(37.5)	16(25)	8(12.5)
Spirituality	4-12	17(24.63)	32(46.37))	15(21.73)	5(7.24)
	13-20	7(22.58)	10(32.25)	10(32.25)	4(12.90)

In the above table, we can see that 69 participants had poor scores in spirituality domain, 70.83 % of the illiterates and 68.4% of the literates scored badly in spirituality domain; and, 66.67% of the illiterates have scored well while 63.15% of the literates have scored well in the environment domain. (Table 1)

Table 2: Impact of Marital status on QOL

Domain of QOL	Scores	Married	Separated	Single	Widowed
Physical	4-12	20(48.78)	9(21.95))	2(4.87)	10(24.4)
	13-20	28(47.46)	5(8.47)	5(8.47)	21(35.6)
Psychological	5-15	28(54.9)	10(19.6)	1(1.96)	12(23.53)
	16-25	20(40.8)	4(8.16)	6(12.24)	19(38.78)
Level of Independence	4-12	17(48.57)	5(14.29)	2(0.57)	11(31.43)
	13-20	31(47.69)	9(13.85)	5(7.69)	20(30.77)

Cont... Table 2: Impact of Marital status on QOL

Social Relationship	4-12	21(44.68)	9(19.15)	1(2.13)	16(34.04)
	13-20	27(50.94)	5(9.43)	6(11.32)	15(28.31)
Environment	8-24	19(52.78)	6(16.67)	1(2.78)	10(27.77)
	25-50	29(45.3)	8(12.5)	6(9.38)	21(32.81)
Spirituality	4-12	34(49.28)	12(17.39)	4(5.79)	19(27.54)
	13-20	14(45.16)	2(6.45)	3(9.68)	12(38.71)

In the above table, 58.3% married people scored poor in psychological domain. 56.25% of the married participants scored well in social relationship domain.60.42% of the married participants scored well in Environment domain. Over all the score of spirituality is poor in majority of the study participants. (Table 2)

Table 3: Effect of age on the different domains of QOL

Domain of QOL	Scores	15-35 Years	36-55 Years	56-75 Years
Physical	4-12	20(48.78)	17(41.46)	4(9.76)
	13-20	19(32.2)	38(64.4)	2(3.4)
Psychological	5-15	21(41.18)	27(52.94)	3(5.88)
	16-25	18(36.73)	28(57.14)	3(6.12)
Level of Independence	4-12	13(37.14)	19(54.29)	3(8.57)
	13-20	26(40)	36(55.38)	3(4.62)
Social Relationship	4-12	20(42.55)	25(53.19)	2(4.26)
	13-20	19(35.85)	30(56.60)	4(7.55)
Spirituality	4-12	27(39.13)	38(55.07)	4(5.8)
	13-20	12(38.71)	17(54.84)	2(6.45)

In the above table, 65% of the total study participants of all the age-groups have scored well in the level of independence domain. Other than participants of 56-75 years age group in other groups' majority of them had poor scores in spirituality domain. (Table 3)

Table 4: Influence of gender on different domains of QOL

Domain of QOL	Scores	Female	Male
Physical	4-12	16(39.02)	25(60.98)
	13-20	31(52.54)	28(47.46)
Psychological	5-15	22(43.14)	29(56.86)
	16-25	25(51.02)	24(48.98)

Cont... Table 4: Influence of gender on different domains of QOL

Level of Independence	4-12	11(31.43)	24(68.57)
	13-20	36(55.38)	29(44.62)
Social Relationship	4-12	23(48.94)	24(51.06)
	13-20	24(45.28)	29(54.72)
Spirituality	4-12	34(49.28)	35(50.72)
	13-20	13(41.94)	18(58.06)

In the above table, 65.95% of the female participants scored well in the physical domain, 54.72% of the male participants had scored well in the psychological domain. 63.16% of the female participants scored well in the level of independence domain. (Table 4)

Discussion

According to this study, majority of the respondents were affected with this disease between 18 to 40 years of age and this finding is congruent with the study conducted by Srivastava K et al.⁷

The mean scores in the six domains of quality of life was maximum for physical domain (13.29) level of independence(13.15) environment (13.065) psychological domain (12.38) social relationships (12.25) and the least being the spirituality domain (11.20).

The highest portion of individuals has low quality of life in spiritual and social relationships domain suggesting the severity of impact of HIV. This is expected as people with HIV infection often experience social isolation, derogation, stigmatization and discrimination.

Women with HIV or AIDS had better overall general health perception than men in most aspects of life.

By reducing poverty, quality of life of HIV patients can be improved. Poverty can be defined as the lack of basic needs such as food, water, shelter, freedom, access to education, healthcare and employment. So in other words, poverty is defined as low quality of life. Therefore, providing employment, financial self-sufficiency and financial assistance for patients and making appropriate job safety for patients are the interventions causing promotions in quality of patient's life.

Asymptomatic respondents of this study enjoyed better quality of life in the domain of physical health and had better perceptions regarding the quality of life and general health than the respondents of the symptomatic and AIDS converted, reflecting the grievous nature of this disease which affects various aspects of patient's quality of life.

Conclusion

Spiritual domain is affected the most in the patients living with HIV. Singles have scored well in almost all domains of quality of life whereas married people scored well in the social relationship and environment domain. Individuals who are separated from their partners have scored badly in all domains of quality of life. Gender has affected the physical domain and level of independence. In these domains females have scored well when compared to males.

Limitations

Individuals like pregnant women, lactating women, children and patients who were not on treatment were excluded who constitute the bulk among the people living with HIV.

The effect of occupation and per capita income was not studied, this could have given us the information about the effect of socio-economic status on the QOL.

Recommendations

- Spiritual domain is affected the most so, personal believes of patients have to be addressed.
- Counseling to build self-confidence and self-esteem.

- Reducing discrimination among people by educating community.
- Providing alternative occupations and a healthy environment.

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Factors Influencing Women's Decision-Making Authority and Autonomy in Rural Rajasthan

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Abstract

Gender equality is a concern for achieving universal health coverage, peace, prosperous and sustainable world. The article attempts to understand women's autonomy and its dynamics and associated elements contribute to decision making for three districts of Rajasthan. Bivariate analysis and multinomial regression analysis suggest that decision making for preparation of food was different for the joint and nuclear family, for purchasing household assets joint decisions were taken by husband and wife. Variables namely marital duration, educational level, media exposure, religion, and standard of living index were significantly associated at with decision making whereas marital duration, educational level, caste, religion and exposure to media found statistically significant with autonomy. The multinomial regression analysis shows that the probability of such an occurrence was 15.5 percent. Policymakers and practitioners must consider two factors i.e., decision-making capability of women and their autonomy, while designing the policy and intervention plan.

Keywords: *Women Decisions making, Autonomy, Empowerment, SDG 5, Rural.*

Introduction

Women's active involvement at every level of decision-taking is essential to accomplish egalitarianism and reconciliation in the households and at the Nation¹. Regardless of significance of women's involvement in deciding for the households, in developing nations, their decision-making capacity is limited². Muzamil concluded in his study that the participation of the females in decision-making procedure is largely affected through wisdom they have and understanding between spouses³. Both of these factors are contributing to the collective growth of autonomy⁴.

Women's decisions making authority and autonomy is controlling their desires, setting their own priorities in life, helping each other for a fruitful result and to generate demand for the support from the society⁵. Safilios found that taking a decision by the women within the households should be looked through two different lenses⁶. First may impact on the wellbeing of the households while the second is the significance of joint judgment with each other. It is concluded in the studies that the second factor have a greater women's autonomy as compared to the earlier⁷. The National Family Health Survey-4 revealed that 59 percent women participated in decision-making.

The article attempts to understand the women's decision-making authority, autonomy and factors associated in three districts of rural Rajasthan. It tries to understand a Four-Dimensional Model of women's autonomy to integrate as a multifaceted process as:

1. Family structure and the restrictions imposed on her.

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2. Involvement purchasing household's major assets.
3. Decisions on own health-seeking and children's education.
4. Freedom of movement in public by family and society.

Methods

To understand variability in women's status and independence i.e. autonomy, explorative study design with pretested schedule was used. Multistage sampling was used; districts and blocks were selected randomly. Villages were selected through population proportionate to size (PPS), and households by systematic random sampling. A total 2160 sample was calculated using the formulae $X = Z\alpha^2 * p*(1-p)/MOE^2$ where prevalence of decision making from a previous study in India was reported 65.2 percent. Analysis was made with the help of SPSS 21.0 version. Chi-square and multinomial regression were conducted to find influence on decision-making and autonomy with socio-demographic characteristics. Two indices namely decision-making, and autonomy were constructed by giving scores (Cronbach's alpha 0.88 and 0.82 respectively).

Results

Socio-Demographic Profile

The result shows that majority (89.8 percent) of women belonged to Hindu family and Other Backward Caste (48 percent). Around 35 percent families had BPL card and 45 percent were nuclear family. Interestingly, the number of nuclear families in Muslim community was more than their Hindu counterparts. Seventy percent of the respondents had any media exposure. Two-fifth (38 percent) of the respondents were illiterate and 12 percent educated for more than 12 years. Two-fifth (43 percent) were from low Standard of Living Index (SLI), half from medium, and remaining in the high SLI category. Results related to duration of marriage revealed that 43 percent married for fewer than 5 years, 33 percent for 6-10 years and 24 percent for more than 10 years.

Decision-making authority

Further, analysis shows around three-fifth women

had a say to decide food to be prepared for the family. Women of nuclear family had more say (71 percent) than women staying in a joint family (48 percent). Husband played a major role in purchasing daily household needs. It was found that in a nuclear family, women reported decided jointly with husbands (43 percent), whereas in a joint family (39 percent) decisions about the same were taken by parents in law. Pertaining to purchase of household assets, in joint family, 68 percent of the decisions were taken by both the spouse compared to 25 percent in nuclear family.

The analysis also reflects that around two-thirds (65 percent) households, it was a joint decision with their husbands to register their children in school. Results regarding decisions for treatment-seeking of children show seven percent respondents took the decision, joint decision with husbands for 65 percent, 10 percent husbands alone, while in eight percent of households' parents in law made decisions on the health-seeking of their grandchild. Three-fifth of the households (60 percent) in case of nuclear and 70 percent in joint family, women consulted with the husband for health care of herself. The decision regarding visiting relatives and kin was mainly taken jointly with husband (49 percent), additionally, in almost one-fourth (22 percent) cases parents in law took the same decisions. In a joint family, 39 percent respondents reported that decisions were taken by parents in law. More than half of the respondents (51 percent) could take their decisions on their own about working outside the home in nuclear families. Overall, 34 percent women said they had to take permission from family elders, another 21 percent required the permission of the husband.

Women's Autonomy

Analysis pertaining to autonomy reflects that one-fifth (20 percent) of the respondents could go to the market alone, but in 69 percent households, women were not permitted to go to the marketplace, health institutions and any other areas alone. In the nuclear family, the women found having little more autonomy, however, 59 percent of women could go outside the home with someone. In a joint family the majority (76 percent) of the females could go outside their community with someone else only. However, women age more than thirty years could go outside the home more while

comparing with women < 30 years. Forty three percent respondents reported spending money on their own. Further, caste wise analysis suggests that restriction in going to the market was more for general category women in comparison to other castes like SC, ST, and OBC.

Relationship between “decision making” and “autonomy” with characteristics of the respondents presented by chi-Square test. It was observed, there was a relationship between decision-making authority of women with duration of marriage, educational level, media exposure, religion, and standard of living index of the respondents (Table1). Similarly, there exists a relationship between autonomy of women with the

duration of marriage, educational level, caste, religion, and media exposure (Table2). Multinomial regression was performed to find the predictors for autonomy of women in the study area. The findings revealed that females who were not engaged in decision making process found having low to moderate autonomy as compared to those who were making decisions. It was also envisioned that education and tenure of marriage in completed years emerged out as significant predictors with low and medium autonomy, implying that less educated women and recently married women within five years were not been able to achieve their autonomy at their households and were primarily depending on others. Exposure to media played a crucial role in developing autonomy.

Table 1: Factors associated with women’s decisions making authority

Indicators		Low Authority	Moderate Authority	High Authority	Total	Chi square test value	P-value
Type of house	Pucca	259 (43.5)	664 (45.9)	41 (34.7)	964 (44.6)	7.287	0.121
	Semi-pucca	215 (36.1)	472 (32.6)	48 (40.7)	735 (34.0)		
	Kachha	121 (20.3)	311 (21.5)	29 (24.6)	461 (21.3)		
Religion	Hindu	555 (93.3)	1281 (88.5)	105 (89.0)	1941 (89.9)	12.593	0.013**
	Muslim	39 (6.6)	163 (11.3)	12 (10.2)	214 (9.9)		
	Other	1 (0.2)	3 (0.2)	1 (0.8)	5 (0.2)		
Caste	SC	128 (21.5)	304 (21.0)	29(24.6)	461(21.0)	3.052	0.802
	ST	120 (20.2)	268 (18.5)	24(20.3)	412(19.1)		
	OBC	283 (47.6)	697 (48.2)	50(42.4)	1030(47.7)		
	General	64 (10.8)	178(12.3)	15(12.7)	257(11.1)		
Education	Illiterate	209 (35.1)	561 (38.8)	51(43.2)	821(38.0)	13.942	0.03**
	Primary	96 (16.1)	290 (20.0)	15(12.7)	401(18.6)		
	Secondary	210 (35.3)	432 (29.9)	36(30.5)	678(31.4)		
	More than Secondary	80 (13.4)	164 (11.3)	16(13.6)	260(12.0)		

Cont... Table 1: Factors associated with women’s decisions making authority

Indicators		Low Authority	Moderate Authority	High Authority	Total	Chi square test value	P-value
Marriage Duration	0-5 Years	337 (56.6)	561 (38.8)	34(28.8)	932(43.1)	85.204	0.000*
	6-10 Years	179 (30.1)	503 (34.8)	37(31.4)	719(33.3)		
	>=11 Years	79 (13.3)	383(26.5)	47(39.8)	509(23.6)		
Media Exposure	No	159 (26.7)	460 (31.8)	30 (25.4)	649 (30.0)	6.420	0.040**
	Any	436 (73.3)	987 (68.2)	88 (74.6)	1511 (70.0)		
SLI	Poor	237 (39.8)	653 (45.1)	46 (39.0)	936 (43.3)	8.629	0.071***
	Medium	308 (51.8)	705 (48.7)	66 (55.9)	1079 (50.0)		
	High	50 (8.4)	89 (6.2)	6 (5.1)	145 (6.7)		
Total		595 (27.5)	1447(67.0)	118(5.5)	2160(100.0)		

* p<.01, ** p<.05, *** p<.1

Table 2: Factors associated with women’s autonomy

Indicators		Low Autonomy	Moderate Autonomy	High Autonomy	Total	Chi square test value	P-value
Type of house	Pucca	627 (44.0)	208 (44.4)	129 (48.5)	964 (44.6)	2.821	0.588
	Semi-pucca	490 (34.4)	165 (35.3)	80 (30.1)	735 (34.0)		
	Kachha	309 (21.7)	95 (20.3)	57 (21.4)	461 (21.3)		
Religion	Hindu	1286 (90.2)	408 (87.2)	247 (92.9)	1941 (89.9)	8.982	0.062***
	Muslim	136 (9.5)	60 (12.8)	18 (6.8)	214 (9.9)		
	Other	4 (0.3)	0 (0.0)	1 (0.4)	5 (0.2)		
Caste	SC	297 (20.8)	83 (17.7)	81 (30.5)	461 (21.3)	25.468	.000*
	ST	255 (17.9)	100 (21.4)	57 (21.4)	412 (19.1)		
	OBC	696 (48.8)	236 (50.4)	98 (36.8)	1030 (47.7)		
	General	178 (12.5)	49 (10.5)	30 (11.3)	257 (11.9)		

Cont... Table 2: Factors associated with women's autonomy

Education	Illiterate	533 (37.4)	199 (42.5)	89 (33.5)	821 (38.0)	31.041	.000*
	Primary	297 (20.8)	75 (16.0)	29 (10.9)	401 (18.6)		
	Secondary	434 (30.4)	144 (30.8)	100 (37.6)	678 (31.4)		
	More than Secondary	162 (11.1)	50 (10.7)	48 (18.0)	260 (12.0)		
Marriage Duration	0-5 Years	697 (48.9)	158 (33.8)	77 (28.9)	932 (43.1)	75.285	.000*
	6-10 Years	458 (32.1)	170 (36.3)	91 (34.2)	719 (33.3)		
	>=11 Years	271 (19.0)	140 (29.9)	98 (36.8)	509 (23.6)		
Media Exposure	No	456 (32.0)	116 (24.8)	77 (28.9)	649 (30.0)	8.844	.012**
	Any	970 (68.0)	352 (75.2)	189 (71.1)	1511 (70.0)		
SLI	Poor	629 (44.1)	203 (43.4)	104 (39.1)	936 (43.3)	2.904	0.574
	Medium	706 (49.5)	230 (49.1)	143 (53.8)	1079 (50.0)		
	High	91 (6.4)	35 (7.5)	19 (7.1)	145 (6.7)		
Decision-making	Low	487 (34.2)	88 (18.8)	20 (7.5)	595 (27.5)	250.191	.000*
	Moderate	917 (64.3)	341 (72.9)	189 (71.1)	1447 (67.0)		
	High	22 (1.5)	39 (8.3)	57 (21.4)	118 (5.50)		
	Total	1426 (66.0)	468 (21.7)	266 (12.3)	2160 (100.0)		

* p<.01, ** p<.05, *** p<0.1

Discussion

Sustainable Development Goal-5 proclaimed that “Gender equality is not only a fundamental human right but a necessary foundation for a peaceful, prosperous and sustainable world will nurture sustainable economies and benefit societies and humanity at large”. This study showed a considerable impact on the intensity of women's judgment-making authority and autonomy among the educated women, belonging to nuclear family, exposed to media, religion, having higher SLI, and higher duration of the marriage. Nigatu and others, in their study, indicated that older women (35–39 years) were possess 4 times higher autonomy than women less than 20 years⁸.

The current study depicts that women who were not involved in decision-making process found having low to moderate autonomy compared to those who were deciding on their own. Similarly, for low autonomy, Schedule Caste and Schedule Tribes, were significant as compared to medium autonomy for Schedule Caste. It was also emerged that less educated women and recently married women within five years were not been able to achieve their autonomy at their household and primarily depends on others. The study reflects the considerable association between decisions making authority of women's and their independency. A similar observation was also noted where women autonomy measured in various ways are inspired by social status along with

education and economic activity⁹.

Lower autonomy is seen among the women who are less educated, younger in age and attached to mother in law¹⁰. The current study findings also exhibit the same result suggesting education, young age and low economic condition of the women influence women's autonomy. The overall R-square value shows that probability of such occurrence is 15.5 percent of the studied population and the same was noted by Muzamil that decision-making process is commonly dominated by the level of knowledge and the probability of such occurrence is 15.5 percent³. NFHS-4, Rajasthan report stated that one-third women did not take part in judgement about individual health care, major household purchases and trips to their own family members and loved ones. Only 10, 5, and 7 percent of women are permitted to go alone to market, a health institution, and areas out of the village, respectively. Mullany and others in their study advocate that lower the age, partner goes along with her to healthcare, to the market and during a visit to outside the village, less is the probability of women's independency¹¹.

Conclusion and Suggestions

Involving women in decision making is yet restricted to a large extent in rural Rajasthan. Decision-making authority was more among the educated women, women belonging to the nuclear family, exposed to media, having higher SLI and longer duration of marriage. Women who did not participate in decision making having low to moderate autonomy than who were not dependent on others for decision making. In a nuclear family, the women had marginally more autonomy, but still could not go outside home alone, they had to take someone with her. There is a significant association between women's decision-making authority and their independency, therefore, while policymakers and practitioners designing the policy and intervention plan the factors listed in the study should be considered.

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Coping Strategies in Menopause Women: A Review

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Abstract

Menopause is one of the stages of life for women that cause a wide variety of symptoms, effects and limitations. Menopause is described as a period of psychological difficulties that changes the life style of women in multiple ways. Menopausal women require more information regarding different coping strategies. The aim of this study was to review the coping strategies in menopause women. **Method and Materials:** Menopausal women experiences the different symptoms. These symptoms can be subicided by practising the healthy diet, healthy behaviour and through the exercise and yoga. **Result:** According to research studies most interventions for menopause women have focused on educational intervention, exercise, healthy diet, healthy behaviour and yoga. Health education intervention strategy is one of the alternative strategies for improving women's coping with menopause symptoms. **Conclusion:** Menopausal women face physiological and psychological problems, they also adopt coping strategies to overcome these problems.

Keywords: Menopause, Menopausal symptoms, Quality of life.

Introduction

Menopause is the permanent cessation of menstruation results in the loss of ovarian follicle development. Age at menopause appears to be genetically determined and is unaffected by race, socioeconomic status, age at menarche or number of prior ovulations¹.

The average menopause age worldwide is 51yrs, ranging from 45 to 55yrs. Where as in India it is 50 yrs².

Classification

According to the world health organization (WHO) classification, premenopausal women are those who have experienced regular menstrual bleeding within the last 12 months, perimenopausal women are defined as those women who have experienced regular menopause within the last 12months or the absence of menstrual bleeding for more than 3 months but less than 12 months,& postmenopausal women are those who have not experienced menstrual bleeding for 12months or more³.

Symptoms and Consequences of Menopause

Women with iatrogenic menopause are those for whom periods have stopped as a result of medical or surgical intervention, for e.g., due to chemotherapy or radiation of ovaries, hysterectomy or oophorectomy or both. Post-menopausal women experience so many psychological problems like depressive disorders, anxiety, poor self-image fatigue due to insomnia reduction in self-confidence faced by postmenopausal women⁴.

Natural menopause is part of natural aging process that causes a variety of physiological symptoms and various complaints. The main symptoms are flushing ,mobility, memory loss, sleep problems, urogenital & psychological symptoms as well as sexual dysfunction⁴.

COPING STRATAGIES TO OVERCOME MENOPAUSAL SYMPTOMS.

Ø EXERCISE

There are different ways to overcome these

problems. The coping strategies to overcome these problem is exercise. The crucial way to control these conditions is exercise. Due to exercise bones, joints, osteoporosis and arthritis. It reduces the risk of heart disease by stimulating circulation, controls weight & increases emotional wellbeing⁵.

Kirsi mansikamali et al (2016) conducted a study on physical training & quality of life among women during menopause suggest that, the exercise like brisk walking, jogging, aerobics, swimming, cycling at least three times per week. This can lower the somatic symptoms sleep problems & anxiety. Exercise will reduce the hot flushes & night sweats. However regular exercise reduces the risk of osteoporosis and cardiovascular disease & improves the muscle strength⁶. Another study conducted by Ahn s, (2007) on effects of walking on cardiovascular risk factors & psychological outcomes in postmenopausal obese women. The study suggested that 3 months of moderate-intensity exercise training can improve psychosocial outcomes & walking exercise improves psychological variables among post menopausal obese women⁵.

Ø HEALTH EDUCATION

Health education intervention strategy is one of the alternative strategies for improving women's attitudes & coping with menopause symptoms. Understanding the physical, psychosocial, & lifestyle changes that arise following menopause is a way to accommodate to the psychological event⁷.

Parisa parsa et al (2017) conducted a study on effect of group counselling on QOL among postmenopausal women. & The study findings suggested that consulting & training may improve QOL in menopause period. Considering the necessity for menopausal care, it is recommended that consulting methods are used in health care centres as a routine care for menopausal women⁷.

Shoberi F conducted a study on the effect of educational program on QOL in menopausal woman. & The study suggested that there was a significant difference in the mean of QOL scores between the two groups in immediately after the intervention and 3 months after the intervention in dimension of vasomotor, psychosocial, sexual & physical. The study recommended that a unit in health and treatment centres

be established for training menopausal women about health care by holding didactic classes⁹.

An efficient method called support group assists groups in objective based decision making by creating positive & constructive relationships among them. It also changes the attitudes & beliefs of the participants, increases their knowledge, & promotes their critical thinking & verbal skills. Fahimeh sehhatie shafaie et al found that education through support group was effective in reducing the early symptoms of menopause. Thus, this educational method can be used as an appropriate strategy for enhancing women's health and their dealing with annoying symptoms of menopause⁷.

Ø HEALTHY DIET

Maintaining a healthy diet is an way for postmenopausal women to remain problem free. Can dyce H hroehe et al. concluded that weight loss as part of a healthy dietary modification may help to eliminate vasomotor symptoms among postmenopausal women⁵.

Another study conducted by mahshid soleymani et al on dietary patterns and their association with menopausal symptoms. The study demonstrated that there is an inverse association between vegetable & fruits dietary pattern and menopausal symptoms. In contrast, the mayonnaise, liquid oils, sweets, & desserts (MLSD) & solid fats & snacks (SFS) dietary patterns were correlated to an increased risk of menopausal symptoms¹⁰. phytoestrogens are plant substances functionally similar to 17 β -estradiol or that produce estrogen effects. Soy food is an important contributor of the isoflavones which play beneficial role in prevention of peri menopausal symptoms & have positive health effects on plasma lipid concentrations. Soy foods are also often used for treating the climacteric syndrome¹¹.

Ø YOGA

Yoga, exercise meditation & life style modification have relieved stress & enhanced the quality of life. Sudarshan Kriya (SK) is a rhythmic breathing technique with 4 breath components. It has varied effects on body essentially acting by relief of stress. The study conducted by Jacobs, R on yoga relaxation techniques for sleep disturbances & activities of daily living for the elderly & the study revealed that, small improvements

in some areas of quality of sleep & activities of daily life for participants over 55 who presented with sleep disturbances following participation on yoga relaxation techniques.

Another study conducted by Rajeshree tukaram patil et. al on study of effects of Sudarshan kriya postmenopausal symptoms among women term central India .The study found that women doing SK were found to be happier & content as compared to controls SK with vegetarian diet was found effective in lowering the scores . Combining SK with exercises & yoga together can reduce the score to the lowest level & concluded that initiating SK into the lives of postmenopausal women at the right time can assure a less morbid, more comfortable and a better quality of post menopausal life¹².

Another comparative study was conducted by H. Geetha et .al on QOL after menopause, Effects of hormone replacement therapy ,vit E & Sudharshan Kriya Yoga practice, suggest that ,a high significant increase in SOD & GSHpx level with a corresponding decrease in serum MDA were evident in the subjects who were exposed to SKY compared to the subjects who had HRT or vitamin E, The study demonstrated that practice of SKY could be beneficial to the menopausal women by increasing in vivo levels of antioxidant¹³.

Ø Ethical clearance is obtained from the institution BVVS Sajjalashri institute of nursing sciences Bagalkot

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Diagnostic Considerations in Breast Disorders and Secondary Bacterial Infection

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Abstract

Breast abscess is an acute inflammatory process resulting in the formation and collection of pus under the skin in breast tissue. Abscesses associated with lactation usually begin with an abrasion or tissue at the nipple, providing an entry point for bacteria. The infection often presents in the second postpartum week and is often precipitated in the presence of milk stasis. There is an increase in the incidence of methicillin-resistant Staphylococcus aureus (MRSA) breast abscess which is susceptible to antimicrobials such as trimethoprim-sulfamethoxazole, fluoroquinolones, and clindamycin. Avoidance of repeated aspiration was the advantage of antibiotics into abscess cavity is probably beneficial. Furthermore Residual abscess, Secondary infection, time for complete healing and hospital stay is better with closed drainage of breast abscess.

Key words: Breast abscesses, Staphylococcus, Bacterial infection, Antibiotics,

Introduction

Breast abscess is an acute inflammatory process resulting in the formation and collection of pus under the skin in breast tissue. Breast abscesses are most common in young lactating women. The incidence of abscesses in young women during their lactational period ranges from 0.4 to 11%. Mostly researchers reported Staphylococcus aureus is among the common cause for the infection. For the treatment of the breast abscess, options include open incision and drainage, incision and drainage with negative suction drain. surgical incision and drainage are usually carried out under a general anaesthesia, is a traditional method of treatment.

Breast abscesses can be classified according to clinical presentation, location, or pathogenic organism. Most abscesses result from secondary bacterial infection from skin contamination. Although Staphylococcus aureus is by far the main pathogen, other microorganisms can be encountered, for example Staphylococcus epidermidis, Streptococcus pyogenes, and anaerobes such as Peptostreptococcus and Bacteroides. A sterile culture with absent growth of bacteria is reported in 21%–45% of cultures, although this may be a false-negative finding due to previous treatment with antibiotics. Less commonly, in specific clinical settings, breast infections secondary to tuberculosis and other mycobacteria, fungi, or parasites can occur. For clinical relevance and treatment management, it is most useful to classify abscesses according to clinical presentation. Puerperal Abscesses Mastitis is a complication most often encountered in primiparous women and develops in 1%–24% of breast-feeding women. Breast abscesses develop as a complication of mastitis in 5%–11% of cases, generally in the first 12 weeks after birth or at the time of weaning, and are referred to as puerperal or lactational abscesses. They are caused by bacteria—most

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often *S. aureus*—that enter via a small skin laceration and proliferate in the stagnant lactiferous ducts. This type of abscess is more frequent in primiparous mothers (65% of cases)¹⁻² and responds well to drainage and antibiotics. Women should be encouraged to continue breast-feeding throughout treatment to disengage the ducts. Cessation of breast-feeding is necessary only when treatment with an antibiotic contraindicated for the newborn is prescribed (eg, tetracycline, ciprofloxacin, or chloramphenicol) or if surgical drainage is performed. The treatment of breast abscess is a clinical dilemma which ranges from conservative treatment to surgical intervention. The conventional treatment of breast abscess has been surgical incision and drainage.³ Drainage of breast abscess has undergone a gradual change from invasive to minimally invasive procedure in keeping with the current philosophy of surgery. The standard surgical approach (invasive) of incision and drainage (I and D), breaking loculi and insertion of a drain under general anesthesia or daily gauze packing has yielded to minimally invasive approach of percutaneous placement of suction drain and aspiration/repeated aspiration of the abscess.³⁻⁴ The Incision and Drainage method entails certain morbidity and cessation of breast function. A recently highlighted approach is drainage of pus by percutaneous drain placement under antibiotic cover.⁵ This approach has advantages of complete resolution without scar formation and patient can continue breast feeding.

Material and Methods

The patients attending out patient department & admitted to Aarupadai veedu medical college and hospital, with diagnosis of breast abscess will be taken for this study By period sampling for the period October 2017 to October 2019. All cases coming to AVMC & H with diagnosis of breast abscess during the study period in October 2017 to October 2019. Minimum of 60 cases will be taken up for study following inclusion and Exclusion criteria. By period sampling. The patients selected for this study are those who are with primary diagnosis of breast abscess .Based on detailed history, thorough clinical examination, the diagnosis of breast abscess will be made. These patients will be subjected to the required preoperative investigations. Patients will be alternately undergoing incision drainage and percutaneous placement of suction drain. Each case will be analysed with reference to post operative complications like post operative pain (based on visual analog scale), residual abscess, duration of hospital stay, time required for complete healing and appearance of scar and cost spent for treatment. Each patient will be followed up in the outpatient department at 1 week, 2 weeks and 4 weeks after discharge with regard to wound healing. A minimum of 60 cases with the following inclusion and exclusion criteria will be selected for the study and will be allocated alternatively to each of the comparative study groups.

Results

Table.1 Shown Side of abscess

Side	Closed		Open		Total		Chi-square test	p-value
	N	Percentage	N	Percentage	N	Percentage		
Left	10	33.3%	17	56.7%	27	45.0%	3.300	0.069
Right	20	66.70%	13	43.3%	33	55.0%		
Total	30	100.0%	30	100.0%	60	100%		

Table.2 shown Residual abscess

Residual	Closed		Open		Total		Chi-square test	p-value
	N	Percentage	N	Percentage	N	Percentage		
No	30	100.0%	18	60.0%	48	80.0%	15.000	<0.001
Yes	0	.0%	12	40.0%	12	20.0%		
Total	30	100.0%	30	100.0%	60	100%		

Table.3 Shown Secondary infection

Sec infection	Closed		Open		Total		Chi-square test	p-value
	N	Percentage	N	Percentage	N	Percentage		
No	30	100.0%	12	40.0%	42	70.0%	25.714	<0.001
Yes	0	.0%	18	60.0%	18	30.0%		
Total	30	100.0%	30	100.0%	60	100%		

Table.4: Shown Culture

Culture	Closed		Open		Total		Chi-square test	p-value
	N	Percentage	N	Percentage	N	Percentage		
E.coli	15	50.0%	6	20.0%	21	35.0%	42.857	<0.001
MRSA	0	.0%	18	60.0%	18	30.0%		
Proteus	9	30.0%	0	.0%	9	15.0%		
S.aureus	6	20.0%	0	.0%	6	10.0%		
S.epidermis	0	.0%	6	20.0%	6	10.0%		
Total	30	100.0%	30	100.0%	60	100%		

Table.5 Shown Culture

Culture	Closed		Open		t-test test	p-value
	N	Percentage	N	Percentage		
E.coli	15	50.0%	6	20.0%	2.4360	0.0149
MRSA	0	.0%	18	60.0%	5.0709	<0.001
Proteus	9	30.0%	0	.0%	3.2540	0.0011
S.aureus	6	20.0%	0	.0%	2.5820	0.0098
S.epidermidis	0	.0%	6	20.0%	2.5820	0.0098

Discussion

Abscesses associated with lactation usually begin with an abrasion or tissue at the nipple, providing an entry point for bacteria. The infection often presents in the second postpartum week and is often precipitated in the presence of milk stasis. The most common organism known to cause a breast abscess is *S. aureus*, but in some cases, *Streptococci*, and *Staphylococcus epidermidis* may also be involved. Women are encouraged to continue breastfeeding or using a breast pump to continue draining milk from the affected ducts. Breast Duct Ectasia: Metaplastic change of the duct cells can cause duct ectasia. This change causes widening of the ducts lining which leads to thickening of the ducts and obstruction. The ducts become filled with fluid which leads to nipple discharge and infection by the entrance of the bacteria and can form pus and abscess as a final result.⁶

Secondary infection ensues with stagnation, leading to abscess formation and development of cutaneous fistulas that involve the periareolar region and form as a means to release pressure from pus distending the ducts. It is speculated that smoking may have a direct toxic effect on the epithelium of retroareolar. The organism most commonly implicated is *Staphylococcus aureus*, which gains entry via a cracked nipple. Occasionally, the infection is hematogenous. In the early stages, the infection tends to be confined to single segment of the

breast, and it is relatively late that extension to other segments may occur. Milk provides an ideal culture medium, so bacterial dispersion in the vascular and distended segment is easy. The pathological process is identical to acute inflammation occurring elsewhere in the body, although the loose parenchyma of the lactating breast and the stagnant milk of an engorged segment allow the infection to spread rapidly both within the stroma and through the milk ducts, if unchecked. The bacteria are excreted in the milk. Benson and Goodman in a study found that majority of hospital-acquired infections were due to *S. aureus*, and of these, only 50 % had penicillin-sensitive organisms⁶. Breast abscess associated with methicillin-resistant *S. aureus* (MRSA) has been reported and is likely to be an increasing problem. A wide variety of organisms may occasionally be encountered. Typhoid is a well-recognized cause of breast abscess in countries where this disease is common. This is a particularly important diagnosis to make because the organism is secreted in the milk. *Staphylococcus aureus* commonly causes breast abscess, followed by coagulase-negative *Staphylococcus epidermidis*, *Streptococcus viridians*, *Streptococcus pyogenes*, and anaerobes such as *Pepto streptococcus* and *Bacteroides*.⁷⁻¹⁰ In India, abscesses can occur due to typhoid, tuberculosis, other mycobacteria, and parasites.¹⁻³ Lactational breast abscess may occur due to polymicrobial infections.⁸ These bacterial agents can arise any place from the nasopharynx of the baby to the

skin of the mother. Fifty percent of *Staphylococcus aureus* causing breast abscess are penicillin-sensitive.^{3,11} There is an increase in the incidence of methicillin-resistant *Staphylococcus aureus* (MRSA) breast abscess which is susceptible to antimicrobials such as trimethoprim-sulfamethoxazole, fluoroquinolones, and clindamycin.

In the study the youngest patient was 18 years old and oldest patient was 42 years old. The mean age was 34 years in the patient of study groups. The mean age was different in various studies (mean age – 32) in the study. In the study right sided breast abscess is of 55% (33 patients) and left sided breast abscess is of 45% (27 patients). In present study post operative pain is measure according to visual analogue scale and analgesic requirement. In group I (closed drainage) has reduced post operative pain (80%) when compared to patient underwent open drainage 40% with significant in P value of less than 0.001. similar findings were observed in other study⁸ and also co-relates with other studies⁷⁻⁸. In post-operative period open incision and drainage had more pain give to due repeated dressings and closed drainage were void of it. Tewari M et al⁴ described a minimally invasive palpatory method of drainage of breast abscess i.e., percutaneous placement of suction drain but in trochar only so there were still chances of remaining loculi and recurrent abscess. Avoidance of repeated aspiration was the advantage of antibiotics into abscess cavity is probably beneficial. Resolution time is faster in percutaneous drain placement as compared to incision and drainage. Moisture is maintained and antibiotic instillation in cavity can be done. In 1998 Tan. SM et al¹² described about the non operative treatment of breast abscess-needle aspiration and oral antibiotics as a viable alternative to conventional incision and drainage. Nineteen out of twenty one patients were successfully treated by needle aspiration and antibiotics.¹²

In the study mean duration of hospital stay and time required for complete healing is of significance < 0.001. Similar finding was observed in a study conducted by Abraham et al. they found that hospitalization was reduced by 40-60% in closed drainage (group I). In the study closed drainage group I had no secondary infection when compare to open drainage Group II which is due to exposure of tissues to external environment. With a secondary infection of 30% in the open drainage with significant P value 0.001. Culture and sensitivity

shown *E.coli* (50%) 15 patients, proteus species (30%) 9 patients and *S. aureus* (20%) 6 patients in group-1 (closed drainage). In open drainage *E.coli* (20%) 6 patients MRSA (60%) 18 patients *S. epidermidis* (20%) 6 patients. Overall 65% of patients who underwent procedure for breast abscess either closed or open drainage had follow up.

Conclusion

Closed drainage is effective alternative method of treatment to incision and drainage in properly selected patients. Conventional incision and drainage of breast abscess leads to more pain, delayed healing and prolonged cessation of breast feeding. Furthermore Residual abscess, Secondary infection, time for complete healing and hospital stay is better with closed drainage of breast abscess.

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Knowledge, Anxiety level and Perceptions on Prevention Protocol of COVID19 among Medical and Dental Graduates

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Abstract

Aim To study the knowledge, anxiety level and perceptions on prevention protocol towards COVID19 among medical and dental students.

Methodology: The study population was under graduate and post graduate students of medical and dental colleges of India whose conventional academic curriculum was withdrawn due to COVID19 lockdown. An online semi-structured questionnaire was developed based on Current interim guidelines for Disease Control and Prevention (CDC) and WHO and circulated. This online self-reported questionnaire contained the following three sections related to knowledge anxiety and perception on prevention protocol among medical and dental students. . There were 7 multiple choice questions in the knowledge section. Anxiety related section and perception on prevention protocol related to novel coronavirus contained 9 items that were to be rated in the 5-point Likert scale. The data was statistically analysed.

Result: Around 52% of the students have good knowledge about COVID19 transmission and diagnosis. Most of the students (55.7%) are comfortable with their virtual classrooms and around 54.5% of students showed self-interest to volunteer patient care without more anxiety. Over 42.2% of students needed faculty supervision and other health professionals acting within their scope of practice and around 82% of students wanted to follow strict preventive protocols to protect themselves from COVID19 infection.

Conclusion : Most of the students are having good knowledge about COVID19 even though they are anxious about their academic curriculum and risk of exposure at present situation. The perception on prevention protocol evaluation showed that there should be strong need to implement infection control measures for COVID19 across all healthcare institutions.

Key Words: Coronavirus, dental students, medical students, India, COVID19

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Introduction

Coronavirus disease 19(COVID19) was initially reported at Wuhan city of Central Hubei province of China in the month of December 2019^[1] and the infection spread across the globe rapidly with increasing mortality rates ^[2], after which WHO declared it as a Public Health Emergency of International Concern on

30th January 2020^[3].

Coronavirus has outer fringe of envelope proteins resembling crown so it is named as “corona” meaning ‘crown’ in Latin. They are generally pathogenic to mammals and birds and it causes mild upper respiratory tract infections in humans.^[4] COVID19 outbreak and the subsequent social lockdown has brought about unexpected lifestyle changes across the people globally and made them to stay indoors and work from home. This event even had a memorable impact on academics of graduating students from the medical and dental schools. They are facing a very different time line now. COVID19 lockdown has led to rescheduling of course curriculum from offline to online mode which resulted in clinging of medical and dental students to their technical gadgets. Usually, the health professional students are rewarded for how well they mastered their chosen field, and how efficiently handle the patients. Recently, COVID19 pandemic had a great influence on their progress of academic curriculum due to sudden long time lock down. And also the panic prevails among the students to resume on their routine hospital postings and academic classrooms.

Mode of transmission of SARSCoV-2 put forth not only healthcare workers but also health care students among the highest risk of population for being exposed to infection.^[5] The highly contagious virus is going to be an additional hazard for the healthcare students in addition to their extended work hours, physical and psychological academic stress in management of this COVID19 situation. Hence the aim of the present study was to study the knowledge, anxiety and their perception towards prevention protocol of COVID19 among medical and dental students.

Materials and Methods

Study Design: Cross sectional study

Study Setting: Medical and Dental Students residing in their homes due to COVID19 lockdown

Study Population: Undergraduate Medical and Dental students

Sampling Technique: Convenient Sampling

An online semi-structured questionnaire (Fig.1-4) was prepared and the questionnaire was circulated using google forms, with a consent form attached to it. The questionnaire link was informed through various social media. On the whole, the survey was sent to 430 potential responders. After the demographic details, a set of several questions appeared sequentially, in which participants have to answer session wise. The data collection was initiated on 24th May 2020 at 4 PM IST and closed on 30th May 2020 at 4 PM IST. The socio-demographic variables included age, gender, education, domicile. This online self-reported questionnaire contained the three sections related to knowledge, anxiety and perception on prevention protocol among medical and dental students. There were 7 multiple choice questions in the Knowledge section. Anxiety and Perception on prevention protocol section related to COVID19 had 10 and 8 items respectively. The completed survey was obtained with a response rate of 75.1%.The data was tabulated and analysed descriptively.

Results

A total of 237 responses were received out of 430 circulated forms. Among various sub-groups, 36.4 % of the medical students and 63.6% of the dental students completed the survey.

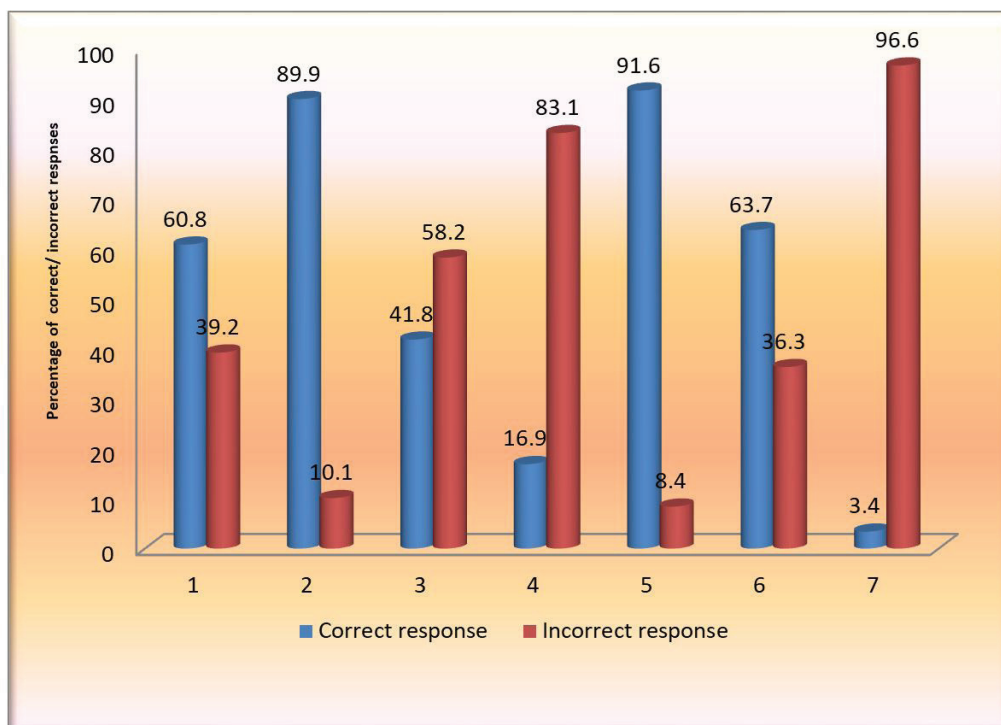


Fig.1 – Percentage of correct & incorrect response on knowledge towards COVID19

On analysing the results of knowledge towards COVID19, about 52.5% of students gave correct option and 47.4% of them opted for various incorrect options. The percentage of correct/incorrect options for each question was shown in Fig.4.

Extension of virtual classrooms would be better to decrease the anxiety towards COVID19 among 55.7% of students and 32.1% of students are not anxious about absence of direct classrooms. Only 34.6 % and 5.1% of them agreed and strongly agreed that they are effective in decreasing their anxiety towards time lapse on completion of academic curriculum and they were equivalent to direct classroom for understanding and interaction. On resuming normal postings, only 47.3% of students would feel comfortable to attend hospital wards with proper precautions. On coming to protection, they strongly (15.2% and 30.8% respectively) disagree with the fact that simple wearing of face mask in college campus would be highly effective in protecting them from COVID19 infection. Most of the students (46.4%) believed they would be safer with PPE kits while

attending outpatient disposal while 35.4% and only 3% of them stated that they are confident without any form of protection. Most of the students (84.4%) stated that they would insist on the susceptible and suspicious person to be screened in the hospital and quarantine while 7.6% and 5% would be more anxious to move out and to avoid those patient suspected of COVID19 immediately. About 69.7% worry about their vulnerable family members and friends of catching the infection while 13.9% were worried about self-infection. In spite of that, half of the students wanted to participate in direct care of patients in this COVID19 outbreak for public service or humanitarian reasons only, while only 21.5% of students wanted it to be curriculum to have better knowledge and 8.4% did not want to take part in it. If the college resumes towards this lockdown, only 32.9% of students wanted to attend on self-interest while 11.4% of student’s parents were not comfortable to send their ward. Equal percentage of students (32.6%) did not want to attend due to COVID scare and also could not decide anything. (as shown in Table – 1)

Table 1 - Percentage of given different options in the Anxiety section of questionnaire

Q.No	A	B	C	D	E
1	55.7	12.7	32.1	-	-
2	8.9	16	35.4	34.6	5.1
3	17.7	47.3	13.9	9.7	11.4
4	14.6	29.6	21.9	25.5	8.5
5	1.3	16.9	35.4	46.4	-
6	3.0	5.1	7.6	84.4	-
7	21.5	20.3	8.4	49.8	-
8	32.9	23.6	11.4	32.1	-
9	41.4	13.9	16.5	28.3	-
10	10.1	26.1	24.1	39.7	-

On analysing the perception towards prevention protocol students towards COVID19 sacting within their scope of practice, 54.4% accepted to volunteer if there is a critical or emergency health care worker need for patients. On volunteering, 54.5% of students wanted them to be fully trained for clinical management as they were self-interested to take care of patients. Majority of the students (39.7%) wanted to wear PPE and 10% wanted to limit patient volume and 26.2% did not even want to attend postings whereas 10.1% opted to attend

alternate days of posting to minimize the exposure. Among these, 83.5 % of them strictly needed PPE supplies to be accessed in all situations Majority of the students (81%) felt fumigation and wide area spraying are must to be done on hospital premises. Majority of students (80-84%) needed that PCR testing to be readily available to medical students, patients, and all health care provider in college campus and could be closely monitored among students to check the incidence.(as shown in Table - 2)

Table 2: Perception among students towards prevention protocol section of questionnaire

Q.No	Strongly disagree	Disagrees	Neutral	Agrees	Strongly Agrees
1	11.8	30.4	30	21.5	6.3
2	3.4	5.5	36.7	46.0	8.4
3	0.4	1.3	13.5	46.8	38.0
4	0.8	1.7	18.1	51.9	27.4
5	24.1	26.6	25.3	16.5	7.6
6	20.3	34.2	11.3	22.8	5.5
7	3.3	1.7	13.2	40.1	41.7
8	1.3	5	15.6	46.8	34.2

Discussion

As global measures are being taken to have timely control over the transmission of COVID19, good knowledge, less anxiety and prevention practices among students are the need of an hour. Most of the medical and dental students will be in the line of highest risk to exposure once they resume their academic curriculum. This study helps to gain deeper understanding about the anxiety level towards COVID19 and measures that are necessary for protection from COVID19.

Knowledge can influence the perceptions of students towards this pandemic. It helps in easy recognition and careful handling of potential COVID19 patients after resuming to work. However, the level of knowledge and perceptions on COVID19 remain unclear. In this regard, we aim to explore knowledge, anxiety and perception towards COVID19 prevention prevailing among the medical and dental students during this peak period.

Bats are the natural reservoir of a wide variety of coronaviruses, including those that caused SARS in 2002 and Middle East Respiratory Syndrome (MERS) in 2012. SARS-CoV-2 was identical to a bat CoVRaTG13^[7]. Most (60.8%) of students opted the correct source. The common signs or symptoms include fever, fatigue, respiratory difficulty and sore throat which have highest transmission rate in its early phase.

Its transmission is primarily through the droplet nuclei, however, SARS-CoV-2 viron particles have also been found in blood and fecal swabs^[6]. The contact and non-contact mode of transmission was known to only 41% of students. Immediate hospitalization is needed only for the patients with recent onset of respiratory problems or cough or difficulty in breathing within the past 14 days which was opted by only 63.7% of the students. RT-PCR testing is a commonly used technique that can detect the presence of SARS-CoV-2 in a biologic specimen^[7]. Eventhough RT-PCRs testing uses fluorescent dyes; its sensitivity seems to be low^[8] which are not known to 70% of the students.

The sudden transition from on-campus learning to distance learning approach requires a great deal of mental and technical challenge. Most of them (55%) were comfortable with extension of virtual classrooms

to decrease the anxiety towards COVID19 and some (32.1%) were not so anxious about lack of direct classrooms. So, most of the academic timing can be converted and utilised for clinical posting as college reopens after COVID era. Few of them were only scared to attend hospital postings as others were comfortable with proper precautions (47.3%) as they accept it as their profession. Preventive measures such as wearing mask, providing PPE and following strict disinfection protocol as given by US Centres for Disease Control and Prevention(CDC) ^[9] would help in reducing the anxiety of students on attending outpatient disposal and ward rounds. Provision of PPE kits would be safer while attending outpatient disposal or during meeting patients alone and it has to be made mandatory for most of the students as very less number of them only are confident without any form of protection. Most of the students (84.4%) were seem to be responsible on prevention they would insist on the susceptible and suspicious person to be screened in the hospital and quarantine. Very few seemed not to do anything on seeing suspected patients which shows their irresponsible professionalism. The hindrance factor to resume their work may be due to their worry about vulnerable family members while only 13.9% were worried about self-infection. This attitude of students shows integrity towards their family members and to their profession. Our survey results showed that 50% students liked to participate in direct care of COVID19 patients as public service or humanitarian reasons. Several governments also have instructed that health care students can be volunteered in promoting health systems affected by COVID19. The factors such as self-interest, personal and parents scare also play an equally important role in resourcing the healthcare students in managing the situation.

On analysing the prevention protocol, faculty or any experienced health care worker supervision is must on offering opportunities to students to execute direct COVID19 patient care. Perception towards prevention protocol seem to be secured (42.2%) only on faculty supervision and other health professionals acting within their scope of practice. This shows that students need faculty supervision for both physical and mental support whereas 36.7% could not decide anything shows their ignorance and lack of knowledge on prevention protocol. On volunteering, majority of the students opted to undergo complete training for

clinical management of COVID patients as they were self-interested while 28.3% relied on self- observation from other health careworkers (HCW). Limited patient volume per day (10%) and alternate days of attending posting schedule and also be good option to reduce the risk of exposure of students. PPE supplies have to be available and to be accessed in all situations as most of the students are interested in patient care with equal importance on their safety. PPE creates an efficient block against transmission of virus and dangers of aerosols produced especially from the operative area in dentistry [10]. Fumigation and fogging have no role in the modern operation room[9]. Results inferred that most of the students were not aware that fumigation actually causes activation of airborne particles[11]. The N95 respirator is preferred over face mask when performing or presents for aerosol-generating procedures [12]. A clean gown with goggles or disposable face shield and clean non-sterile gloves are recommended on working of patients [9].

Providing availability of PCR testing to all medical students, patients, and all health care providers in college campus can be useful for easy reduction of causalities among students. The availability of testing kits should be easily accessible as most of the students were keen on their regular monitoring and early prevention of COVID19 infection. These measures would help in reducing the incidence of disease and give assurance to the students to be in safer environment.

Conclusion

Students showed adequate knowledge of COVID19 and are ready to volunteers for emergency patient care inspite of their anxiety about COVID panic. Their perception showed that there is a strong need to implement infection control measures for COVID19 and conducting periodic webinars, educational interventions and training programs could be a safe tool to create awareness among them.

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Gingival Biotype- It's Significance in Dentistry

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Abstract

This review provides an overview about gingival biotype, its characteristics and various methods available for its determination. In recent years, gingival biotype has become a subject of considerable interest in the era of esthetic-driven dentistry. Gingival biotype is a genetically determined trait that describes the faciopalatal thickness of gingiva. Various methods for measuring biotype have been suggested. Routine dental procedures subject the gingiva to various insults and the biotypes behave differently to it. Therefore, gingival biotype can provide clinicians with an insight into the precautions that are necessary during tissue handling to avoid undesirable treatment outcomes.

Keywords- Biotype, Gingiva, Probe, TRAN, CBCT, Thick, Thin.

Introduction

The gingiva is the part of oral mucosa that covers the alveolar processes of jaws and surrounds the neck of teeth. [1] One of the pillars of a beautiful smile is a well scalloped margin at the cemento-enamel junction (CEJ). Most dental procedures inevitably result in handling of gingival tissue. Hence, it is of utmost importance in the era of esthetic-oriented dentistry that clinicians be aware of factors that can influence the esthetic consequence of a procedure. The long term success of esthetic restorations and other dental procedures depend on a number of factors such as gingival biotype, gingival tissue architecture and anterior teeth shape. With the increase

in literature on the topic, it is now recognized that under similar clinical conditions different gingival biotypes behave differently. In addition, treatment considerations differ for individuals with different biotypes.

GINGIVAL BIOTYPES AND THEIR CHARACTERISTICS-

Gingival biotype, a genetically determined trait [2] describes the thickness of gingiva faciopalatally. Several terms such as “gingival” or “periodontal biotype”, “morphotype” or “phenotype” have been used by various authors. [3] In the most recent literature, [4] it was referred to as periodontal biotype and overall distinction among different biotypes was said to be based upon anatomic characteristics of components of the masticatory complex, including gingival biotype (which included in its definition gingival thickness and keratinized tissue width), bone morphotype (BM); and tooth dimension.

Thick gingival tissue characterizes thick biotype and is generally related with good periodontal health. It is dense in appearance and has sufficient zone of attached gingiva. Ample evidence indicates that thick tissues withstand trauma and subsequent recession, enable

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manipulation of tissue, encourage creeping attachment, enhance esthetics of implants, exhibit less clinical inflammation and also provide predictable surgical outcomes. [5,6,7]

Thin biotype characterizes thin gingival tissues. They are almost translucent and delicate with minimal zone of attached gingiva. Such tissues are highly accentuated suggesting the presence of thin or minimal bone. Evidence suggests that thin gingiva is less resistant to insults that are inflammatory or surgical in nature and more predisposed to gingival recession. [8,9]

Methods to Assess Gingival Biotype-

Many methods for measuring gingival biotype such as direct approach, probe transparency method (TRAN), ultrasonic method, and cone beam computed tomography (CBCT) have been suggested. [3,10] A simple and reliable method in clinical practice would be advantageous to help clinicians modify the treatment plan and produce more predictable results.

i) VISUAL EXAMINATION

A routinely used simple and non-invasive method in clinical practice. Here the tissues are examined visually and evaluated on the basis of the general appearance of gingiva. However, the degree of gingival thickness cannot be assessed by this method. Also the accuracy was found to be low with high inter examiner variation. [11]

ii) DIRECT METHODS

a) TRANSGINGIVAL PROBING-

The thickness of the tissue is determined using a periodontal probe and the biotype is categorized as thick and thin, thick being more than 1.5 mm and thin less than 1.5 mm. This method has the advantages of being simple and inexpensive. Disadvantage includes its invasive nature as the procedure requires administration of local anesthesia. [12]

b) ENDODONTIC REAMERS, FILES-

After the gingiva is anesthetized, it is pierced perpendicular to a point lying in the center of gingival margin and mucogingival junction with an endodontic reamer/file with a rubber stop. The measurement is

then recorded against a digital caliper. It yields a precise measurement but is invasive in nature. Ronay et al. [13] 2011 stated that such techniques could lead to an increase in local volume and potential patient discomfort due to local anesthesia administration.

c) MODIFIED CALIPER TECHNIQUE-

In 2010 Kan et al. [14] first used a tension-free caliper to measure the gingival thickness of maxillary anterior teeth on the facial aspects. He compared the results with that obtained using a probe and concluded that the two methods did not show any statistically significant difference. Disadvantage of using this caliper is that it cannot be used for pretreatment evaluation and can be used only at the time of surgery.

d) PROBE TRANSPARENCY METHOD-

Sulcus sampling is performed on the midfacial aspect of the tooth. Based on the visibility of the underlying periodontal probe through the gingival tissue, the biotype is defined as thick or thin (probe visible indicates thin biotype and probe not visible indicates thick biotype). (Figures i & ii)

This method was found to be highly reproducible with about 85% intra examiner repeatability for assessment of gingival thickness in a clinical trial of 100 periodontally healthy subjects. The advantages of this method include good accuracy, simple, rapid and minimal invasiveness. [3]

More recently, a color-coded probe (Colorvue® Biotype Probe, Hu-Friedy) has also been used for the purpose of determination of gingival biotype. [15]

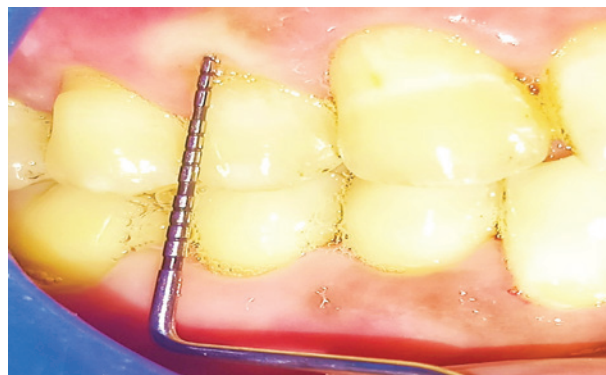


Figure i : A thick gingival biotype

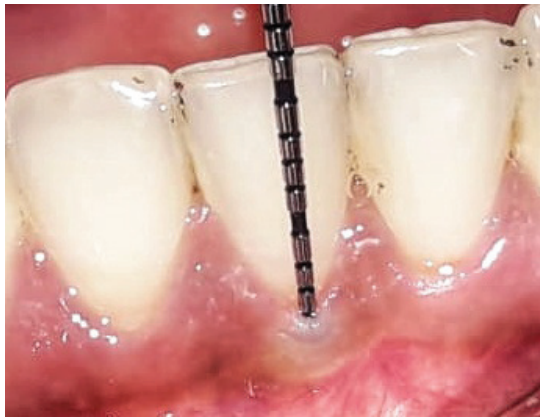


Figure ii : A thin gingival biotype

iii) MODIFIED IWANSON'S WAX GAUGE WITH ATTACHED WILLIAM'S PERIODONTAL PROBE CALIBRATED TIP -

A Modified Iwanson's wax gauge with attached William's periodontal probe calibrated tip have also been used for gingival biotype measurement. [16] The method was a combination of TRAN technique and direct measurement. The technique proved to be highly reproducible. The benefits of this method include assessment, biotype categorization, and simultaneous measurement of gingival thickness.

iv) ULTRASONIC METHOD-

This method uses an ultrasonic device to which is attached a sensitive thin probe. It utilizes the concept of pulse echo to determine the thickness of biotype. This method offers precise measurement, digital display, eliminates inter examiner variability and is non-invasive, but it is less feasible due to high cost of equipment and limited availability. [17]

v) CONE BEAM COMPUTED TOMOGRAPHY-

The thickness of both hard and soft tissues can be visualized and measured using CBCT. Highly accurate results can be achieved using this method. Also there is no inter examiner variability. Limitations include exposure to radiation and increased costs for patients. [18]

CLINICAL IMPLICATIONS OF GINGIVAL BIOTYPE-

The two biotypes respond differently when subjected to clinical/surgical insults. In an event of inflammation

or any other type of insult, soft tissues in a thick biotype responds by more fibrotic changes and pocket formation, however in thin biotype, more inflammatory changes and recession of gingiva are observed. [19]

Gingival biotype and periodontal reconstructive surgeries-

The effectiveness of esthetic reconstructive surgery showed a strong correlation with gingival biotype. At the surgical site, thickness of gingival tissue acts as a primary determinant of the effectiveness of treating mucogingival defects. A flap thickness of 0.8-1.2 mm was found to be associated with a more predictable prognosis. Also, flap margins can be inadvertently thinned, thus increasing the risk of post-operative recession, especially in thinner tissues. [20] Therefore, clinicians must handle flaps carefully in such situations to avoid unesthetic or undesirable results. Patients with thinner biotype can ideally be treated with connective tissue graft technique combined with a coronally advanced flap that will produce a pseudo-thick biotype. [21]

Crown lengthening procedures –

Determination of biotype is an important factor to be considered during crown lengthening procedures. Following full thickness flap procedures, there is bone resorption of 0.5-0.8 mm. [12] Hence, it is difficult to predict the final hard and soft tissue position. This could cause undue chances of gingival recession after the completion of procedure specially in thin biotype. Permanent restorations are recommended after a healing period of 6 months specially in anterior esthetic region. Tissue thickness may be improved by soft tissue grafting 6-8 weeks prior to crown lengthening procedures. [22]

Prosthetic perspective-

Thin periodontal biotypes being friable, the possibility of recession increases after crown preparation. Over contoured restorations particularly lead to gingival recession. It is advisable to position the margins of prepared restorations supragingivally in thin biotype cases. Failing to do so especially in PFM restorations may cause a grayish hue of the restorative margin to be visible through the thin and translucent gingival tissues,

ultimately compromising esthetics specially in anterior esthetic regions. Thicker biotype has greater resistance to tissue recession and can better mask the margins of restorations that are even placed subgingivally. [6]

Care must be taken in thin biotypes to prevent soft tissue injury during placement of retraction cords. Thin cords are usually advised for retraction. More chances of recession exist if cord is kept for more than 15 minutes. Gingival retraction can be carried out more easily in a thick biotype. [6]

Implant dentistry-

Thick tissues are preferred around dental implants as they conceal titanium of implants better and also are more accommodating to different implant positions. [23,24] Significantly less bone resorption is seen in thick biotypes after implant placement compared to thin biotypes. Hence, an immediate implant placement can be considered in thick biotype with predictable outcomes as it can help to preserve the osseous structures. [25,26] However, a delayed implant placement is preferable when thickness of surrounding tissue is not sufficient. Additional hard tissue augmentation using various bone grafts and soft tissue augmentation using modified roll technique, split finger technique and acellular dermal matrix may be required in such cases to achieve the best esthetic outcomes. [27-29]

Preventing alveolar bone loss after teeth extraction is equally important in ensuring success of implants. Thin biotype is associated with thin alveolar plate and hence undergoes more ridge remodeling in contrast to thick biotype associated with thick alveolar plate. [30] Therefore, the placement of grafts and membranes in the socket can minimize alveolar bone loss after tooth extraction.

Orthodontic Perspective-

Understanding gingival biotype is also important in the field of orthodontics. Perforation of cortical plate may occur during orthodontic treatment especially in thin biotype leading to soft tissue recession and exposure of root. [31]

Therefore, non- surgical periodontal therapy and/or surgical correction of soft or hard tissue defects using membranes and grafts may be required to prevent

breakdown of periodontal tissues during orthodontic phase. These procedures can be carried out before or during orthodontic therapy to modify thin periodontal tissues to pseudo thick type thereby avoiding tissue collapse. In cases of malaligned tooth leading to thin gingiva, pre orthodontic soft tissue augmentation procedures are not needed. [32]

Oral surgery-

In comparison to thin biotypes, thick biotypes are associated with minimal ridge atrophy after extraction. Excessive force can lead to fracture of buccal alveolar plate in thin biotype resulting in bone resorption and unpredictable bone healing. [33]

METHODS TO ENHANCE GINGIVAL BIOTYPE-

A thin gingival biotype can inhibit desired esthetic outcome of many therapies. In such scenarios, gingival biotype can be enhanced. When a thin biotype is surgically converted to a thick one, it is termed as “pseudo-thick gingiva”. This can be done to achieve more stable results that is functionally and esthetically acceptable. Procedures that can be performed to enhance gingival biotype include-

- 1) Connective tissue grafts [34] that is harvested from palate or tuberosity and then placed subepithelially at the thin biotype site. It is the most reliable and frequently documented method of enhancing gingival biotype.
- 2) As an alternate to connective tissue, acellular dermal matrix can also be used. The procedure of matrix placement and healing mechanism is similar to that of connective tissue grafts.
- 3) Placement of platelet rich fibrin membrane (PRF)- Platelets release several growth factors such as platelet-derived growth factors and endothelial growth factor. [35]
- 4) Recently, fetal membranes such as amnion and chorion membranes have been used to enhance gingival biotype. [36] These membranes are allografts derived from human placenta. They can be placed under a tunnel/pouch/coronally advanced flap and sutured.

Conclusion

Gingival biotype can dictate the diagnosis and treatment planning in patients as they behave differently when exposed to inflammation, trauma or surgical insults. Present day periodontal surgical techniques have provided the scope of improving tissue quality that can augment the restorative environment. Therefore, biotype assessment in routine examination of patients can provide clinicians with an insight into the precautions necessary during tissue handling. Also, biotype when considered during inter- and multi-disciplinary treatment approaches can aid in avoiding undesirable treatment outcomes.

Ethical Clearance- Individual consent was taken from patients for the photographs.

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A Study to Find Out the Association of Vitamin D Levels with Leiomyoma Uterus

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Abstract

Objective: To find out the the association of vitamin D levels with leiomyoma and to study its role as a risk factor for development of leiomyoma.

Materials & Methods: Total 50 patients, belonging to age group 18-50 years, attending gynaecology OPD of CSS Hospital, were included in this study. Those diagnosed with leiomyoma on ultrasound scan, were labeled as case group. Control group comprised of 50 women whose pelvic ultrasound was normal and there was no fibroid. Volume of each fibroid was measured by transvaginal sonography. The quantitative detection of serum vitamin D levels was performed using chemi-luminescence assay. Statistical analysis was performed using suitable tests of significance.

Results: The mean level of vitamin D in the case group was 12.9±3.09 ng/ml while in the control group was 18.1±4.72 ng/ml (p = 0.001). Out of 50 cases, 32 (44%) cases were deficient i.e.vitamin D levels were less than 10 ng/ml, while in controls, 15 (14%) were deficient with p value <0.001. In our study 24 cases (48%) were vitamin D insufficient i.e. vitamin D levels between 10-20 ng/ml while 16 (32%) controls were insufficient .

Conclusions: In this study low levels of vitamin D were associated with a higher risk of uterine fibroids. So vitamin D may be a potential protective factor against the development of leiomyoma. Cohort and Interventional studies are however pressingy needed to confirm a causal relationship and to investigate the potential therapeutic benefits of vitamin D supplementation. Vitamin D could be a potential safe, nonsurgical therapy for the treatment of uterine fibroids.

Keywords: *Vitamin D; Leiomyoma uterus; Cell proliferation; Extracellular matrix production; Antifibrotic factor*

Introduction

Uterine fibroid represents a localized proliferation of smooth muscle cells surrounded by a capsule of compressed muscle fibers. Vitamin D is known as the main regulator of calcium homeostasis. Functional effects of vitamin D include reduced cell proliferation, increased apoptosis, enhanced differentiation, and regulation of biological processes including

angiogenesis, extracellular matrix production, and immune response.¹ The pathogenesis of fibroids has been hypothesized to involve a positive feedback loop between extracellular matrix production and cell proliferation and vitamin D might act to block the positive feedback.² Vitamin D is an antifibrotic factor and inhibits growth as it is found to induce apoptosis in cultured human leiomyoma cells through the down-regulation of the genes PCNA, CDK1, and BCL-2 and suppression of catechol-o-methyltransferase expression and activity in human leiomyoma cells.³⁻⁵ Laboratory studies of fibroid tissue in culture that were treated with calcitriol, the active form of vitamin D, demonstrate reduction in cell proliferation and extracellular matrix

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production.⁶ Additionally, recent studies have demonstrated that vitamin D is a potent anti-tumor agent that effectively inhibits human uterine fibroid cells in vitro and shrinks fibroid lesions in preclinical animal studies.⁷ So study of vitamin D levels in women having leiomyoma was planned to establish their association.

Materials & Methods

The study was conducted in the Department of Obstetrics and Gynaecology at Chittaranjan Seva Sadan College of Obstetrics, Gynaecology and Child Health, Kolkata after ethical informed consent was taken from all the recruited patients.

Case group comprised of 50 women belonging to age group 18-50 years who were diagnosed with leiomyoma of more than 10 mm at transvaginal ultrasound with mean clearance from the Institutional Ethical Committee.

Control group comprised of 50 women belonging to age group 18-50 years whose pelvic ultrasound was normal and there was no fibroid.

Following patients were excluded from the study :

- Pregnant women, menopausal women, women on hormonal treatment (including oral contraceptive) during the last 3 months.
- Vitamin D supplementation in last 6 months.
- Patients currently lactating or lactating in last 6 months.
- Patients having history of prior myomectomy.
- Women diagnosed with Adenomyosis and other causes of abnormal uterine bleeding.
- Patients reporting chronic medical problems.
- Patients having malignancy, multiple sclerosis, autoimmune disorders.
- Women having leiomyoma less than 10mm on transvaginal sonography (TVS).

Detailed history of clothing, outdoor activity, and fish intake was taken followed by basic investigations like haemogram, blood sugar, LFT, KFT and routine urine examination were done. Three perpendicular diameters were measured for each myoma in cases, and

the volume of each of them was recorded on transvaginal sonography (TVS). Then the total fibroid volume was recorded by adding all the individual fibroids volume. All the selected women provided a venous blood sample for the quantitative detection of vitamin D levels. Serum concentration of vitamin D was measured. The quantitative detection of vitamin D levels was performed using a commercially available kit based on a chemiluminescence technology. Women were grouped into three different groups, according to World Health Organization recommendations: 25-hydroxyvitamin D3 deficiency (<10 ng/mL), insufficiency (10-19.9 ng/mL), and sufficiency (>20 ng/mL). Statistical analysis was done using suitable tests of significance.

Results

The mean age of the 50 cases enrolled in the study was 35.79+7.97 years while mean age of controls was 37.60+6.78 years. The mean age of menarche in cases was 13.26+1.06 years and in controls was 13.12+1.08 (p=0.820)

The median parity of our cases and controls was 2 and hence there was no difference in the parity of both groups. Family history of fibroid was positive in 5.7% of cases and 4.3% of controls (p = 0.719). The mean BMI in cases was 25.2+4.38 while in controls it was 23.08+12.6 (p 0.145). There was no statistical difference between the incidence of confounding high risk factor of age, parity, age at menarche, family history of fibroids and BMI in cases and controls.

In 50 cases of leiomyoma and in 50 controls the values of serum vitamin D were estimated. The mean level of vitamin D in cases was 12.58±4.09 ng/ml while in controls it was 18.99±5.72 ng/ml. The levels of vitamin D were significantly less in cases than in controls (p < 0.001). Thus there was statistically significant difference in cases and controls.

On using the WHO criterion, out of our 50 cases 22 (44%) were deficient i.e. vitamin D levels less than 10ng/ml while in controls they were 7 (11%) with p value <0.001 and odds ratio of 13.5 (95% CI). Thus, the risk of having a fibroid in vitamin D deficient individuals was 13.5 times more than individuals having Vitamin D sufficient levels.

In our study 24 cases (48%) were vitamin D insufficient i.e. vitamin D levels between 10-20 ng/ml while 16 (32%) controls were insufficient with p value 0.001 and OR 13.5 (95%CI). Thus, the risk of having a fibroid in vitamin insufficient individuals was 13.5 times more than individuals having sufficient vitamin D levels.

Table 1. Distribution of Vitamin D Levels in Case and Control Group

Vit D levels (ng/ml)	Cases		Controls		P Value
	Frequency	%	Frequency	%	
5 – 10	22	44%	7	14%	<0.001
10 - 15	17	34%	1	2%	
15 – 20	7	14%	15	30%	
20 – 25	3	6%	23	46%	
25 – 30	1	2%	4	8%	
Total	50	100%	50	100%	

Table 2. Distribution of vitamin D status in case and control groups according to WHO criterion

WHO classification	Cases (n=50)		Controls (n=50)		P value	OR
	Frequency	%	Frequency	%		
Deficient	22	44%	7	14%	<0.001	13.5
Insufficient	24	48%	16	32%		
Sufficient	4	8%	27	54%		

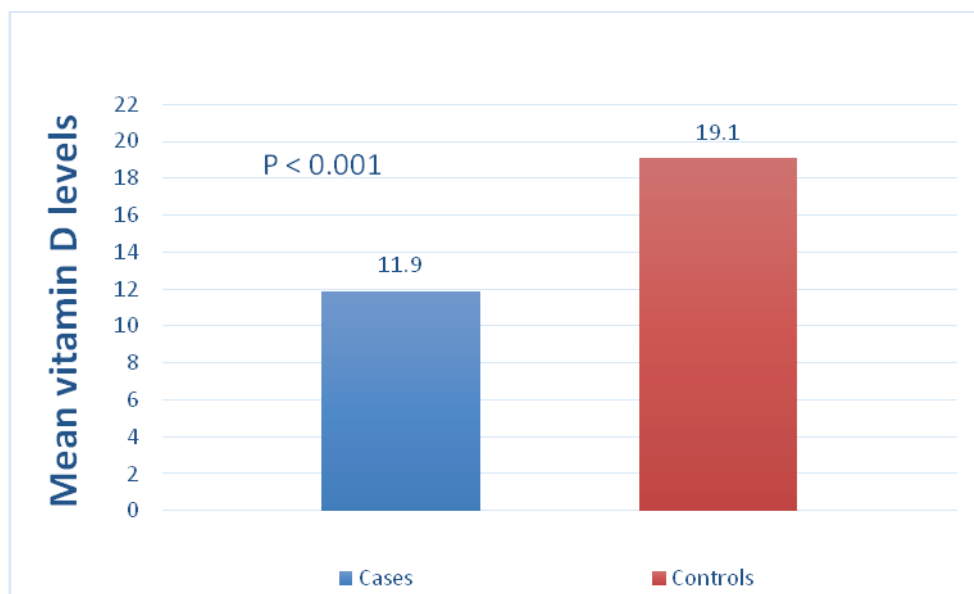


Figure 1. Mean vitamin D level (ng/ml)

Discussion

Vitamin D has emerged to be an important regulator of uterine leiomyoma development. The mean value of vitamin D levels in cases was 12.58 ± 4.09 ng/ml while in controls it was 18.99 ± 5.72 ng/ml with p value < 0.001 . Thus, it was statistically significantly lower in cases than in controls. Vitamin D levels were divided according to WHO i.e, vitamin D deficient (< 10 ng/ml), vitamin D insufficient ($10-20$ ng/ml) and vitamin D sufficient (> 20 ng/ml). It was observed that 44% of our cases were vitamin D deficient, while 48% of cases were vitamin D insufficient. However, 54% of our controls were vitamin D sufficient, 32% of controls were vitamin D insufficient and only 14% of controls were vitamin D deficient.

Hence, it was observed in our study that vitamin D deficiency was more common in the case group and it was statistically significant. Thus, vitamin D deficiency is a risk factor for development of leiomyoma.

In vitamin deficient cases odds ratio was 13.5 (95% CI). Thus the risk of having a fibroid in vitamin deficient individuals was 13.5 times more than in individuals having sufficient vitamin D levels.

Bläuer et al, were the first few to determine the effect of $1,25(\text{OH})_2\text{D}_3$ and $25(\text{OH})\text{D}_3$ vitamin D derivatives on the growth of leiomyoma and myometrial cells in vitro in 2009 and observed that their growth in vitro was effectively inhibited by $1,25(\text{OH})_2\text{D}_3$ hence concluded that vitamin D may play a role in the growth of uterine leiomyomas.⁸

Our findings were similar to a study by Alessio Paffoni in 2013 who conducted a case-control study of women referring to two infertility units in Italy, in which all the 128 cases of fibroid had mean value of vitamin D levels of 18 ± 7.7 ng/ml and 256 controls had mean value of vitamin D levels of 20.8 ± 11.1 ng/ml with p value of 0.010 which was statistically significant.⁹

Similar study was done by Mohamed Sabry in 2013 in which the mean level of serum vitamin D, was found to be significantly lower in 104 cases with leiomyoma of value 19.7 ± 11.8 ng/mL than in healthy 50 controls of value 22.3 ± 6.5 ng/mL with p value of 0.01 which was statistically significant.¹⁰ A total of 154 premenopausal women were recruited for this cross sectional study. The control group comprised 50 subjects with a normal,

fibroid-free uterine structure, confirmed by transvaginal ultrasonography. The 104 case subjects had at least one fibroid lesion that was 2 cm^3 in volume or larger, confirmed by transvaginal ultrasonography. For each case subject, total uterine volume and total volume of all existing fibroids were measured in three perpendicular planes, with volume determined according to the prolate ellipse formula ($a \times b \times c \times 0.523$), where a is height, b is width, and c is depth. Serum Vitamin D levels were measured by radioimmunoassay. The independent t-test was used to compare serum Vitamin D levels across groups. Correlations were assessed by Spearman's rank correlation test. Lower serum 25-(OH) Vit D levels were significantly associated with the occurrence of fibroid ($P = 0.01$). A statistically significant inverse correlation was also observed between serum Vitamin D levels and total uterine fibroids volume ($r = -0.31$; $P = 0.002$) within the case cohort. Subjects with larger fibroid volumes had lower serum Vit D levels and vice versa. Thus, vitamin D deficiency was observed to be a possible risk factor for the occurrence of fibroid.¹⁰

Micha Ciebierain 2016, enrolled 188 women, including patients admitted for uterine fibroid surgery ($n=105$) as the study group and healthy women of similar age ($n=83$) as controls. Comparative analysis demonstrated that the mean vitamin D serum concentration was statistically significantly different in both groups (Student's t-test with the grouping variable $t=3.15$, $df=186$; $P=0.0019$). The mean vitamin D serum concentration in patients with fibroid was 21.91 ± 8.87 ng/mL, which was statistically significantly lower than the mean vitamin D serum concentration in the control group. In the latter group, the mean concentration of vitamin D was 26.68 ± 11.89 ng/mL. An increase in serum vitamin D concentration by one unit decreases the risk for fibroid by 1.04 (OR 0.96; 95% CI, 0.93-0.99).¹¹

Oskovi Kaplan in 2017 enrolled sixty-eight women with at least one uterine leiomyoma of 10mm and 56 healthy controls. Serum vitamin D levels were measured by electro-chemiluminescence immunoassay. The groups were similar in terms of age, BMI, gravidity and parity numbers. In his study documented the mean level of vitamin D were 7.28 ± 4.94 ng/ml and 78% of patients ($n=97$) had severe vitamin D deficiency (< 10 ng/mL). The mean level of vitamin D in cases were 6.54 ± 4.66 ng/ml and in controls were 8.18 ± 5.16 ng/ml.

It was significantly lower in the study group compared to control group (p 0.009).¹²

These studies were in agreement with our results that vitamin D deficiency is a common finding in patients with fibroid and vitamin D deficiency has emerged as one of the major risk factors.

Conclusion

Low levels of vitamin D were associated with a higher risk of uterine fibroids in our study. Hence, vitamin D may be a potential protective factor against the development of leiomyoma. Vitamin D is an emerging regulator of uterine leiomyoma development. Cohort and RCT studies are however needed to confirm a causal relationship and to investigate the potential therapeutic benefits of vitamin D supplementation. Vitamin D could be a potential safe, nonsurgical therapy for the treatment of uterine fibroids. Because fibroids constitute a considerable burden on health budgets of all countries, the solution for the future may be to identify high-risk patients before they develop leiomyoma.

Vitamin D could become a new generation drug that is cheap, safe, and with additional effects in prevention and treatment of leiomyoma.

Conflict of Interest: There was no conflict of interest. Ethics approval and consent to participate was taken from all the patients recruited in this study. This study was approved by Institutional Ethical Committee.

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Prevalence of Nomophobia and Effectiveness of Planned Teaching Program on Prevention and Management of Nomophobia among Undergraduate Students

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Abstract

Background: Mobile phone makes life convenient and comfortable, at the same time the pose a threat in terms of psychological dependence. Nomo- phobia is a catchy contraction for “no mobile phone” and mobile phone addiction. Nomo- phobia refers to discomfort, anxiety, nervousness or anguish caused by being out of contact with a mobile phone. The feeling of panic and desperation is observed in people who lost their phones. The problem is prevalent among young mobile users, as they use mobile phone for various purposes. Studies have found that the students with stronger addiction to mobile phones have higher possibility of decreased learning and concentration problems. **Objectives:** 1. To determine the prevalence of Nomo- phobic undergraduate students. 2. To assess the level of knowledge of undergraduate students regarding prevention and management of Nomo- phobia. 3. To evaluate the effectiveness of planned teaching programme on the level of knowledge among undergraduate students regarding prevention and management of Nomo- phobia. 4. To find association between the level of knowledge of undergraduate students and the selected demographic variables. 5. To find the association between the prevalence of nomophobia among undergraduate students and the selected demographic variables. **Methods and Materials:** An experimental research approach with quasi-experimental design was adopted for the study. The study was conducted on 200 undergraduate students studying and residing in a selected university campus in Kanpur. The prevalence of nomophobia was determined by using NMP-Q scale developed by Yildrin and Correia, while knowledge level was assessed by using structured knowledge questionnaire regarding prevention and management of nomophobia. **Result:** The study reveals that 57% undergraduate students had moderate nomophobia, while 21.5% had mild and 21.5% had severe nomophobia. The knowledge levels of the undergraduate students ranged between poor to moderate. 85% of the undergraduate in both the groups had poor knowledge and 15% had moderate knowledge regarding prevention and management of nomophobia. The planned teaching program was effective in increasing knowledge of undergraduate students. **Conclusion:** Nomophobia is prevalent in undergraduate students. Planned teaching program is effective strategy in increasing the knowledge levels of undergraduate students.

Keywords: *Nomophobia, undergraduate students, prevalence, PTP, effectiveness*

Introduction

Mobile phones have become an important tool of communication and also an integral part of our life. They have become a basic requirement as they provide

innumerable benefits like internet, social networking, personal diary and e-mail dispatcher etc.¹ Mobile phone makes life convenient and comfortable, at the same time, extreme mobile phone usage lead to poor health which includes tiredness, stress, headache and concentration difficulties.² New operating systems like android are helpful, but on the flipside, mobile phones pose a threat in terms of psychological dependence.³

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India is the largest market for mobile phone users in the world. There are about 980.81 million mobile phone subscribers in India.⁴ According to Cisco’s 13th annual Visual Networking Index (VNI), by the year 2022, there will be 829 million smartphone users in India, accounting for 60% of the population.⁵ The younger generation is the latest consumer of the mobile phones, and a majority of college students, from varied socioeconomic background use mobile phones more frequently for different purposes.

Many disorders have been associated with excessive use of mobile phones that affects young adults. Nomophobia (no mobile phobia), is the fear, an individual gets if he is out of mobile phone contact due to no network; has run out of balance or run out of battery; the persons gets anxious, which adversely affects the concentration level of the person.⁶ The term was coined during a 2010 study by the UK Post Office who commissioned YouGov, a UK-based research organization that sampled 2163 people to look at anxieties suffered by mobile phone users.⁷ Prevalence of nomophobia is high among university students with varying levels of nomophobia.⁸ It is found that students having stronger addiction to mobile phone tend to have higher possibility of decreased learning ability and academic performance.^{9,10,11} The present study was done with the objectives of finding out the prevalence of Nomo- phobia among undergraduates and determine the effectiveness of planned teaching programme on knowledge regarding prevention and management of Nomo-phobia among undergraduates.

Material and Methods

An experimental research approach with quasi-experimental design was adopted for the study. A total of 200 undergraduate students residing in girl’s hostel of university campus were selected from two hostels, designated as experimental and control group

respectively. The girls available and those willing to be part of the study were selected as subjects under their respective groups. The research tool consisted of three sections: A,B and C. Section A included items related to socio-demographic profile of the subjects. Part B included a standardised tool -NMP-Q scale developed by Yildrin and Correia¹², to determine the prevalence of nomophobia among undergraduate students. Part C included structured questionnaire to collect data regarding knowledge regarding prevention and management of nomophobia.

Interpretation of the NMP-Q scale was done as no nomophobia with score < 20, Mild nomophobia with score 21-59, Moderate nomophobia with score 60-99 and severe nomophobia with score 100-140 respectively. The knowledge level were interpreted as Good (>75%), Moderate(50%-75%) and Poor (<50%). Before the data collection an informed consent was taken from the subjects. The confidentiality and privacy of the subjects was maintained throughout the study. The data was analysed by using descriptive and inferential statistics.

Results

The study was conducted on 200 undergraduate students residing in selected girl’s hostel in university campus. The study data revealed that 64.5% subjects were 18-23 years old. 62% subjects were in their first year of their graduation. 89% undergraduate students started using mobile phones after 15 years of age. While 2% undergraduate students started much earlier i.e. before 10 years of age. The data revealed that, 52% had more than Rs. 20,000 monthly family income. 52.5% undergraduates spent below Rs.200 to Rs.400 per month on their mobile phones. It was found that around 27.5% undergraduate students used two mobile phones. 65% undergraduates had one mobile phone with smart features.

Table No:-1 Prevalence of Nomophobia among undergraduate students n=200

Sr. No	Prevalence/level of nomophobia	Frequency (f)	Percentage (%)
1.	No nomophobia	0	0
2	Mild nomophobia	43	21.5%
3.	Moderate nomophobia	114	57%
4.	Severe nomophobia	43	21.5%

The prevalence of nomophobia has been calculated on the basis of scores obtained by the undergraduate students through NMP- Q scale. According to the data in table No.1, approximately 21.50% of undergraduate students had Mild level of Nomo- phobia, 57% of undergraduate students had Moderate level of Nomo- phobia and 21.5% of the undergraduate students had Severe level of Nomo- phobia.

The findings of the study revealed that approximately 22.5% of undergraduate students “feel uncomfortable

without constant access to their phone”. Approximately 35% undergraduate “feel scared if the phone battery runs out. 40% “feel desire to check mobile phone constantly”. 26.5% undergraduate students “feel nervous if they get disconnected from their online identity”. 30% undergraduate “feel anxious if they are not able to check email or messages”. 44.5% undergraduates “feel anxious if they are not able to communicate to their loved ones, instantly.”

Table No:- 2 Level of Knowledge among undergraduate students under experimental and control group n=200

S No.	Level of Knowledge	Experimental Group		Control Group	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
1.	Poor Knowledge	97	97%	73	73%
2.	Moderate Knowledge	3	3%	27	27%
3.	Good Knowledge	0	0%	0	0%

The knowledge level has been calculated on the basis of pre-test marks obtained by the undergraduate students in structured knowledge questionnaire. Table No. 2 reveals that about 73% of the undergraduate students of control group have ‘Poor Knowledge’ and 27% of the undergraduate students have ‘Moderate Knowledge’. In experimental group,93% of the undergraduate students have ‘Poor Knowledge’ and 3% of the undergraduate students have ‘Moderate Knowledge’. None of the undergraduate students in both the groups have ‘Good Knowledge’, regarding prevention and management of Nomo- phobia.

Table No.-3 Effectiveness of Planned teaching program regarding prevention and management of nomophobia

n=200

Knowledge Scores				
	Pre test (Mean score)	Post test (Mean score)	t-value	p-Value
Experimental Group	7.91±3.12	13.09±2.45	1.26	0.1
Control Group	11.67±4.23	10.99±3.48		

To determine the effectiveness of planned teaching program, t-value was computed. The data in the table no. 3 revealed that the mean post test knowledge scores of experimental group (13.09±2.45) was significantly higher than the mean post test knowledge scores of control group (10.99±3.48) at (p< 0.1). Thus, the planned teaching program was effective in increasing the knowledge of the undergraduate students in experimental group.

The study data also revealed that none of the variables were found to have significant relationship with the level of knowledge regarding prevention and management of nomophobia. However, it has been found that variables like age, course year, age at which subject started using mobile phone and monthly family income had significant relationship with the prevalence of nomophobia among undergraduate students.

Discussion

The study was aimed at determining the prevalence of nomophobia and effectiveness of planned teaching program regarding prevention and management of nomophobia among undergraduate students. The present study revealed that 21.5% university students had mild nomophobia, 57% had moderate nomophobia and 21.5% had severe nomophobia; when measured by using NMP-Q scale. It means that all the subjects under the study had some level of nomophobia present.

The result are consistent with the findings of another study conducted on MBBS students where it was found that approximately 19% had nomophobia while others were at risk of developing nomophobia as 73% students responded that they keep their mobile phones with them while sleeping. 39% responded that they keep checking their phones frequently for messages and mails. Moreover 20% said that they lose their concentration and become stressed when they do not have their mobile phones with them.¹³ In another study conducted on students, it was found that 61.5% were having moderate, 6.1% having severe nomophobia and only one participant was not suffering from nomophobia.¹⁴ In another study conducted on medical students of Western Gujarat, it was found that 36.2% had mild nomophobia, 51.6% had moderate nomophobia and 11.4% had severe nomophobia. The study also revealed that severity of nomophobia was higher in male students while overall prevalence of nomophobia was higher in female students.¹⁵

The present study revealed that 22.5% undergraduate students “feel uncomfortable without constant access to their phone”. Approximately 35% undergraduate “feel scared if the phone battery runs out. 40% undergraduate students “feel desire to check mobile phone constantly”. 26.5% undergraduate “feel nervous if they get disconnected from their online identity”.

30% undergraduate “feel anxious if they are not able to check email or messages”. 44.5% undergraduates “feel anxious if they are not able to communicate to their loved ones, instantly.” Significant higher means was observed among engineering students for the factor “giving up convenience” and individual variables like “scared due to running out of battery,” “nervous due to disconnection from online identity,” “uncomfortable when unable stay up-to-date with social media” and “anxious when unable to check E-mails.”¹⁶ Another study revealed that 83% students responded that mobile phone is a necessary tool to help them keep connected with their family members. The study highlighted that 56% students kept their mobile phones either in the pocket of shirt or jeans close to their body so that they can have a feel of constant touch with their mobile phone.¹³

The present study revealed that the knowledge level of undergraduate students ranged between poor to moderate level. None was found to have good knowledge regarding prevention and management of nomophobia. A study conducted on college students revealed similar findings where majority i.e. 89.5% of the degree college students had poor knowledge regarding nomophobia. The study emphasized on sensitization of the young adults regarding nomophobia to prevent further risks from nomophobia.¹⁷ A study conducted on student nurses also revealed similar findings where majority of the subjects had poor knowledge regarding nomophobia.¹⁸

There was no significant association found between level of knowledge regarding nomophobia and selected demographic variables. While a significant relationship was found between prevalence of nomophobia and demographic variables like: age, course year, monthly family income and age at which undergraduates started using mobile phones. In a study done on medical students in West Bengal a Higher proportion of nomophobics were females who had been using smartphone beyond 2 years and had their monthly phone bill was above Rs.200.¹⁶ However many studies have found no relationship between gender, place of residence, amount of money spent on mobile phones, academic sessions, place of origin and prevalence of nomophobia.^{8,13,19} In a study conducted on dental students, a statistically significant difference among preclinical, clinical, interns and postgraduates regarding the usage and effect of mobile phone on them was found.²⁰

The study found that planned teaching program is an effective strategy in increasing the knowledge of undergraduates regarding prevention and management of nomophobia.²¹ However individual counselling, group counselling, awareness programs, psycho-behavioural therapy may be some of the other strategies suggested to increase knowledge and reduce prevalence respectively among young adult.^{16,17,18,22}

Conclusion and Recommendations

The present study concludes that the mild to severe form of nomophobia is prevalent among undergraduate students. Age, course year, age of student at which they started using mobile phone and monthly family income can affect the prevalence of nomophobia among undergraduate students. Undergraduate students have poor to moderate knowledge regarding prevention and management of nomophobia. However this knowledge level can be increased by planned teaching program developed for prevention and management of nomophobia. The study recommends guidelines for prevention against nomophobia and promotion of de-addiction centres equipped with multi-therapy approach; in order to reduce the burden of nomophobia among young adults.

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Conflict of Interest: Nil

Ethical Clearance: Obtained from the Institutional Ethical Committee.

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Food Insecurity and It's Impact on the Dietary Behaviour and Health

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Abstract

Food insecurity can be considered as, “the non-availability of safe, sufficient and nutritious food or the limited access to a sufficient quantity of affordable nutritious food in a safe and socially acceptable manner”. Food insecurity is multifactorial problem as it has four components 1) food availability 2) food access 3) food utilization 4) stability so need multi-sector support to solve the problem. Food insecurity is also a significant public health concern. Food insecurity has been linked with the faulty dietary pattern, nutrient intake which gives negative health consequences. Food insecurity may associate with the low intake of fruit and vegetables and higher intake of fat and sugar. The purpose of the present paper is to review currently available information about the relationship between food insecurity and dietary pattern this will help future researchers to include more important parameters such as food insecure individual's education about healthier food choices, food preparation methods and attitudes related to safe food.

Key Words: Food insecurity, dietary behaviour, dietary pattern, diet, health.

Introduction

Food insecurity can be considered as, the availability of nutritious and secure foods or the acceptability of foods in socially acceptable ways is limited or uncertain.¹ It is a prime public health matter. Many researchers have seen that FI is more likely associated with financially challenged families and households with the children.²⁻³ It has been shown that Food insecure individuals consume high calorie food such as fat and sweets, which are cheap than the fruits- vegetables, lean meats and fibre rich food. The risk of certain chronic diseases is high in food insecure individuals from the food insufficient households because of lower nutrient and fruit-vegetable intake.⁴⁻⁸ Food insecurity comprises a wide range of scenario, such as hunger and also consider the worry about food that it will run out soon. Food insecurity measurement varied across the literature.

Currently 11% of the world's population are undernourished, i.e. 820 million people globally are undernourished, 9% of the world population it means around 697 million people are severely food insecure.⁹

According to WHO in 2016, more than 1.9 billion adults aged 18 and older were overweight. Overall, about 13% of the world's adult's population (11% of men and 15% of women) were obese in 2016.¹⁰

Pioneer research on the FI and dietary behaviour linked them as the lower consumption of fruit-vegetables and poor diet quality. Faulty dietary habits and unhealthy life-style increases the risk of many chronic diseases such as cardiovascular diseases and diabetes.¹¹ High intake of energy dense foods and poor nutrient foods such as sweets, desserts, salty snacks is responsible for the nutrition related diseases increasing in youth.¹²⁻¹³ Results from studies showed that the children which belongs to food insecure household showed optimal development and poor health and also have impact on their academic.¹³⁻¹⁸

FOOD INSECURITY AND DIETARY BEHAVIOUR- FI may consider as the factor that influence the nutritional status or health of the individual. Several hypotheses relate the FI and dietary behaviour as the intake of cheap and nutrient deficient foods. It

has been seen that FI individuals rely on the cheap and energy dense food items due to budget constraints.¹⁹⁻²⁰ These food items are highly processed and rich in fats and added sugar which may causes weight gain. Repetitive episodes of FI may results in the disruptive eating behaviour. Which further results in the micronutrient deficiency and increase the risk of the eating disorder.²¹

Food insecurity may also associate with the poor development and health. It is assumed that the specific underlying mechanism of experience food insecurity is associated with the diet quality, or inadequate nutrient intake.²² A study conducted in 2014, on food insecurity and diet quality showed that the food insecure adults consume less fruit-vegetable and dairy products than the food secure adults. This study showed strong association between diet quality and nutrient intake in adults.²⁰

The consumption of fruit-vegetable is important for growth, good health and prevention from the diseases.²³⁻²⁴ In low income youth inadequate access to food is the barrier in proper growth and development.²⁵⁻²⁶ Many studies have shown that food insecurity is related with undernutrition and obesity/overweight. Some studies have shown positive association between the food insecurity and indicators of malnutrition.

A Study conducted on 4th-5th grade children in California which include 24 hr diary assisted recalls, questions from child food security status assessment and physical activity to assess the association between child food insecurity with child diet and physical activity. Data analysis has been done by the using logistic and regression models which showed 60% of the children was food insecure. They also included all aspects of food insecurity- cognitive, emotional, and physical activity. Study conclude that child food insecurity is associated with both the nutritional and non-nutritional (PA) pathway.²⁷ Many cross-sectional studies support to the present hypothesis in children as well as in the adults.

A study on 2,084 children aged between 13-17, found that food insecurity is associated with inadequate intake animal source food, fruits, dairy products and less protein rich source foods.²⁸ In their study, Mello et al. found that food insecure individuals have shown higher consumption of fruits (with juice) and a reduced frequency of fat lowering related behaviors as FI is related to income status.²⁹

Women

related with food-insecure households consume less fruits-vegetables than the women living in food-secure households.⁵ On the other hand there are several studies which has been showed that there is no association between food insecurity and dietary behavior.³⁰ A study done by Ramsey et al. found that there is no relationship between FI and fruits, vegetable or meat consumption but this study is done by mail-survey which can be consider as the limitation of the study.³¹

Methodology

A literature search has been conducted to recognize the recent articles on the association between food insecurity and dietary behaviour. Several online databases such as (PubMed, Medline, Springer, google scholar) used for the literature. Many terms such as food insecurity, food inadequacy, food hardship, quality food, hunger, malnutrition, dietary behaviour, and diet pattern used in combination to search article for the review. After that these papers was reviewed by the abstract to confirm applicability. Additional papers were also extracted from the bibliography of the papers.

Discussion

The review study revealed the high prevalence of food insecurity. Literature provide the sufficient quantity of evidence to establish the impact of food insecurity on the dietary pattern and health. Food insecure individuals tends to consume high amount of fat, salt and sweetened drinks. Consumption of lower intake of fruits and vegetables also reported in food insecure individuals. These dietary behaviour have direct impact on health. Food insecurity consist wide range of situation: hunger and also include the worry about that food will run out soon due to lack of money or resources. Many recent researches also showed that social environment and physical environmental factors also influence the eating behaviour of food insecure individuals. Food insecure population having diets of low quality and have faulty dietary pattern which have negative impact on health. Therefore food insecurity have direct impact on diet and health.

Measurement of food insecurity is varied across the literature yet majority of studies used USDA Food Security Survey Module which includes a ranged from a single question to all 18 items. Further qualitative

etiological studies needed to understand the impact of food insecurity on diet and health.

Conclusion

There is significant gap exist in exploring proverbial dimension of food insecurity. Further research is required for understanding the impact of food insecurity on dietary behaviour and health as the fewer longitudinal studies are present. Many researches gave information about the nutrient intake but not about the dietary behaviour (food preferences, preparation methods). Further research will help the food insecure individuals to make healthy food choices and reduce the risk of being malnourished. Further research is also needed to determine the influence of food insecurity.

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Source of Funding- Self

Ethical Clearance- Not applicable

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A Cross Sectional Study on Assessment of Stress among Auto-rickshaw Drivers in Urban Areas of Raichur

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Abstract

Introduction: Auto rickshaw is one of the main mode of public transport in the urban and semi urban regions. Auto rickshaw drivers may suffer from some kind of stress due to following reasons like finance, driving, health related issues, family issues, marital issues etc., all this may pose risk to the driver and fellow passengers. **Objectives:** The present study was conducted to determine the stress and its association with various factors. **Methodology:** A cross-sectional study was conducted in the urban areas of Raichur. Different auto-rickshaw stands were randomly selected from different parts of the city. 206 auto-rickshaw drivers were selected by simple random sampling technique. The present study was carried out from April to July 2019. Stress was assessed using perceived stress scale technique. Data was analysed using Epi info V7.0 software. **Results:** Out of 206 auto-rickshaw drivers, the prevalence of stress among auto-rickshaw drivers was 29.61%, in which majority (17.96%) had moderate stress, followed by 11.65% had mild stress. Stress has highly significant association between age group and years of driving. **Conclusion:** This study shows that the majority of risk factors are modifiable and preventable. Hence creating awareness is essential.

Keywords: Auto-rickshaw drivers, Stress prevalence, Moderate stress.

Introduction

Auto-rickshaws are an important part of urban mobility and a step to improving sustainable transportation, as well as quality of life in Indian cities. Integrating auto-rickshaw services as a feeder mode complements public transportation systems, ensuring connectivity and easy access throughout the city. Auto-rickshaws also bridge the gap between public transport and door-to-door services, providing an alternative to private vehicles.⁽¹⁾ Stress is a feeling of strain and pressure or any unpleasant emotion and feeling. About

43% of adults suffer adverse effects from stress. Stress plays an important role in almost all diseases. ⁽²⁾ An “occupational disease” is any disease contracted primarily as a result of an exposure to risk factors arising from work activity. “Work-related diseases” have multiple causes, where factors in the work environment may play a role, together with other risk factors, in the development of such diseases.⁽³⁾ Auto-rickshaw driver is exposed to many kinds of risks owing to his profession, such as stressful occupational conditions, environmental pollution and substance abuse such as smoking, tobacco and alcohol use.⁽⁴⁾ Increased workloads, overtime, hostile work environments, and shift work are just a few of the many causes of stressful working conditions.⁽⁵⁾ Auto rickshaw drivers may suffer from some kind of stress due to following reasons like finance, driving, health related issues, family issues, marital issues etc., all this may pose risk to the driver and fellow passengers. Many studies are available in India, regarding Auto-rickshaw drivers. Therefore this study was carried out.

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Objectives

The present study was conducted to determine the stress and its association with various factors.

Methodology

A descriptive cross-sectional study was conducted in the urban areas of Raichur. Different auto-rickshaw stands were selected from different parts of the city, which included the heart of the city, where there is high traffic flow as well as places at the outskirts of the city. Study Subjects from different auto-rickshaw stands were selected by simple random sampling technique. Sample Size was calculated based on a previous study conducted by Sinha A and Shashikala M (2015), showing prevalence of stress among auto-rickshaw drivers was 31.8 %. Using sample size formula

$$n = \frac{Z\alpha^2 * (P) * (1-P)}{L^2}$$

considering precision 0.2 and estimated sample size was 206. The present study was carried out from April to July

2019. Stress was assessed using perceived stress scale technique. After taking verbal consent, auto-rickshaw drivers were interviewed using a semi-structured questionnaire. It was one-to-one type of interaction. The results were presented in terms of frequency and percentages. Chi square test was applied. Data was entered in Ms Excel 2010 and analysed using Epi info V7.0 software.

Results

The study results shows, majority 114(55.34%) of auto drivers belonged to 21-30 years of age group. All of them were males. Majority 117(56.80%) of them were Hindus. Majority 137(66.50%) of them belonged to upper lower class (class IV), according to Modified Kuppuswamy Classification 2019. Majority 141(68.45%) of them were married. Majority 114(55.34%) of drivers were smokers. Majority 109(52.91%) of them were alcoholic. Majority 106(51.46%) of them were tobacco chewers. Majority 146(70.87%) of them were driving for more than or equal to 12 hours per day. Majority 122(59.22%) of them were in this profession for less than 10 years.

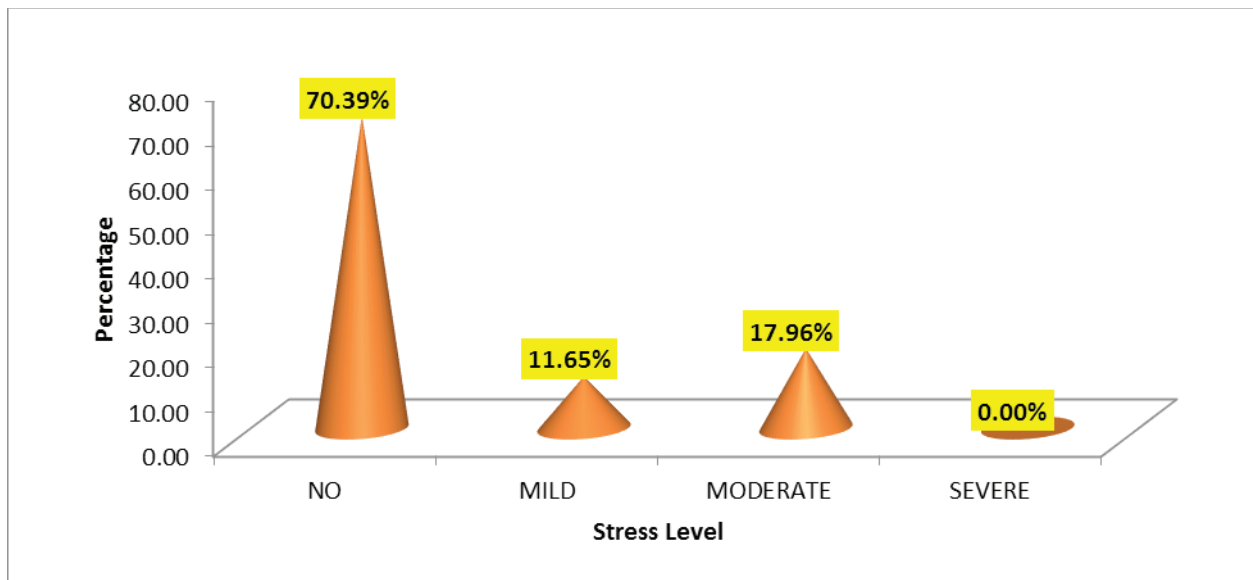


Figure – 1: Magnitude of stress among auto-rickshaw drivers.

Figure - 1 shows that out of 206 auto-rickshaw drivers, majority 145(70.39%) have no stress, 24(11.65%) have mild stress and 37(17.96%) have moderate stress. The present study shows that the prevalence of stress among auto-rickshaw drivers is 61 (29.61%).

Table – 1: Distribution of stress due to various components.

STRESS COMPONENT	NO STRESS		MILD		MODERATE		SEVERE		TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%
Due to Finance	147	71.36	11	5.34	46	22.33	2	0.97	206	100
Due to Driving	144	69.90	13	6.31	49	23.79	0	0.00	206	100
Due to Health	181	87.86	8	3.88	17	8.25	0	0.00	206	100
Due to Customers	197	95.63	0	0.00	9	4.37	0	0.00	206	100
Due to Marital Status	201	97.57	0	0.00	5	2.43	0	0.00	206	100
Due to Family	197	95.63	1	0.49	8	3.88	0	0.00	206	100
Due to Keeping up timing	203	98.54	0	0.00	3	1.46	0	0.00	206	100

Table – 1 shows that the stress due to finance include moderate stress 46(22.33%) followed by mild 11(5.34%) and severe 2(0.97%) stress. Stress due to driving include moderate stress 49(23.79%) followed by mild 13(6.31%) and no severe stress. Stress due to health include moderate stress 17(8.25%) followed by mild 8(3.88%) and no severe stress. Stress due to customers include moderate stress 9(4.37%), no mild and severe stress. Stress due to marital status include moderate stress 5(2.43%), no mild and severe stress. Stress due to family include moderate stress 8(3.88%) followed by mild 1(0.49%) and no severe stress. Stress due to keeping up timings include moderate stress 3(1.46%), no mild and severe stress.

Table - 2: Association between stress and various factors.

FACTORS		STRESS				TOTAL (n =206)		χ^2	P VALUE
		STRESS (n = 61)		NO STRESS (n =145)		No.	%		
		No.	%	No.	%				
AGE	21 – 30	21	34.43	93	64.14	114	55.34	15.893	0.000 <0.001**
	31 – 40	31	50.82	37	25.52	68	33.01		
	> 40	9	14.75	15	10.34	24	11.65		
SES	CLASS III	19	31.15	50	34.48	69	33.49	0.214	0.643 >0.05
	CLASS IV	42	68.85	95	65.52%	137	66.50		
YEARS OF DRIVING	<= 10 YRS	15	24.59	107	73.79	122	59.22	43.044	0.000 <0.001**
	> 10 YRS	46	75.41	38	26.21	84	40.78		
HOURS OF DRIVING	<12hrs	9	14.75	51	35.17	60	29.13	8.672	0.003 <0.05*
	>=12 hrs	52	85.25	94	64.83	146	70.87		

* Significant ** Highly significant p>0.05 Not significant

Table – 2 shows that the majority (50.82%) stress was found to be more among 31 - 40 years age group as compared to 21 to 30 years(34.43%) age group and this difference between the age group was found to be highly statistical significant($p < 0.001$). Stress was found to be more among class IV (68.85%) socio-economic status according to Modified Kuppaswamy's Socioeconomic classification 2019 as compared to class III(31.15%) and this difference was not statistically significant i.e., $p > 0.05$. Stress was found to be more among those who were in this profession from past 10 years or more(75.41%) as compared to those who were in this profession from past 10 years or less(24.59%) and this difference was found to be highly statistical significant($p < 0.001$). Stress was found to be more among those who were driving 12 hrs per day or more (85.25%) as compared to those who were driving less than 12 hrs per day (14.75%) and this difference was found to be statistically significant ($p < 0.05$).

Discussion

Prevalence of Stress

In our study, the prevalence of stress among auto drivers was found to be 29.61%. In the study conducted by Sinha A et al⁽⁵⁾, the prevalence of stress was 31.2%, while in the study conducted by Chaudhary et al⁽⁶⁾, the prevalence of stress was 27.6%.

In the present study, majority (70.39%) of auto drivers had no stress, followed by 17.96% had moderate stress and 11.65% had mild stress. While in the study, conducted by Sinha A et al⁽⁵⁾, 29.2% of auto drivers had mild stress, followed by moderate stress. In the study conducted by Chaudhary et al⁽⁶⁾, majority(72.64%) of auto drivers had no or mild stress, followed by moderate stress.

Socio-demographic profile of Auto-rickshaw drivers

In the present study, the majority (55.34%) of auto drivers belonged to 21-30 years of age. Similar results were seen in the studies conducted by Kaul S et al⁽⁴⁾ and Sinha A et al.⁽⁵⁾ Whereas, in other studies majority of auto drivers belong to 25- 40 years.^(3,7,8,9) In the present study, majority (56.8%) of auto drivers were Hindus followed by Muslims(33.01%). Similar results were

noted from several other studies.^(3,5,7,8,9) In the present study, majority (66.50%) of auto drivers belong to Upper Lower Class (Class IV) which is consistent in the studies conducted by Sinha A et al⁽⁵⁾ and Chaudhary et al.⁽⁶⁾ Whereas, in the studies conducted by Melwani V et al⁽³⁾, Kaul S et al⁽⁴⁾ and Mahadik VJ et al⁽⁷⁾ majority of the auto drivers belonged to Class III. In our study, majority (68.45%) of the study participants were married, similar results were noted in several other studies.^(3,4,5,6,7,8,9)

In the present study, majority (55.34%) of the auto drivers were smokers. Whereas, in the studies conducted by Melvani V et al⁽³⁾ and Chaudhary et al⁽⁶⁾ the majority of them were non-smokers. In our study, majority (52.91%) of the auto drivers were alcoholics, while in the study conducted by Chaudhary et al⁽⁶⁾ only 34.12% were alcoholics. In the present study, majority (51.46%) of the study participants had the habit of chewing tobacco, while in the study conducted by Chaudhary et al⁽⁶⁾ only 40.20% of them chewed tobacco.

In our study, majority (70.87%) of auto drivers worked for more than 12 hours per day. Similar results were noted in the studies conducted by Sinha A et al⁽⁵⁾ and Subendiran S.⁽⁸⁾ Whereas, the studies conducted by Kaul S et al⁽⁴⁾ and Mahadik VJ et al⁽⁷⁾ showed that majority of the auto drivers worked for less than 10 hours per day. In the present study, majority (59.22%) of the auto drivers were in this profession for less than 10 years. Similar results were seen in the studies conducted by Sinha A et al⁽⁵⁾ and Rajesh Rajan.⁽⁹⁾ While in the studies conducted by Kaul S et al⁽⁴⁾ and Mahadik VJ et al⁽⁶⁾ majority of the auto drivers were in their profession for more than 10 years.

Factors associated with stress

In the present study, highly statistical significant association of stress was noted with age and years of driving. Statistical significant association of stress was noted with number of hours of driving per day with $p < 0.05$ and there was no association of stress with socio-economic status. Similarly in the study conducted by Sinha A et al⁽⁵⁾, highly statistical significant association of stress was seen with age and years of driving.

Conclusion

In the present study the prevalence of stress among

auto-rickshaw drivers was found to be 29.61%. This study also showed that the majority of risk factors are modifiable and preventable. Hence measures like periodic health examinations, health education regarding stress management and awareness regarding health insurance and social security schemes should be provided.

Ethical Clearance : The ethical clearance was obtained from Institutional research ethical committee, Navodaya Medical College, Raichur.

Source of Funding : Self

Conflict of Interest : Nil

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Impact of COVID 19 on Health Care Personnel

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Abstract

The outbreak of COVID 19 is highly challenging for the frontline worker that is health care personnel. This novel virus originated from Wuhan China, December 2020, as this deadly virus is highly contagious it affected all globally. WHO declared pandemic on March 2020, and also published guidelines to be followed by the HCP while providing patient care. HCP face multiples issues continuously which develop while providing patient care such as occupational burnout due to shortage of manpower. HCP also faced physical and psychological violence during delivering patient care which is again too stressful. Many HCP works overtime of 12 to 13 hrs due to shortage of manpower and also many patients got admitted daily. Those health workers who got contacted without proper PPE, they used to keep quarantine. Due to this HCP are kept separation from family members and this is again stressful for the concern person especially lady HCP having small children at home. Apart from these many issues, HCP also faced imbalance nutrition, deprive sleeping pattern, racism issues especially to north east Indian HCP, transports issue due to lock down, lack of PPE, impaired coping mechanism with children.

Key words: HCP, WHO, PPE, COVID 19, Stress, burn out

Introduction

A new coronavirus that previously has not been identified in humans emerged in Wuhan, China in December 2019. Signs and symptoms include respiratory symptoms and include chill, fever, cough, tiredness, sore throat, muscle aches, Headache, shortness of breath, loss of taste and smell and chest pain. In more severe cases, infection can cause pneumonia, severe acute respiratory syndrome and sometimes death. World health organization has announced COVID-19 outbreak as a pandemic in March 2020.¹

The rapid spread of the Coronavirus Disease 2019 (COVID-19) pandemic poses unprecedented challenges throughout the world. Health-care providers are vital

resources for every country. Their health and safety are crucial not only for continuous and safe patient care, but also for control of any outbreak in today's world. Unfortunately, Health care personnel are the one who is facing one of the main challenges on caring COVID 19 patient in health sectors across the country. Physicians, nurses, nursing assistants, therapists, technicians, emergency medical service personnel, dental personnel, pharmacists, laboratory personnel, autopsy personnel, and contractual staff all come under HCP category.

As the pandemic accelerates, access to personal protective equipment (PPE) for health workers is a key concern. Medical staffs are prioritised in many countries, but PPE shortages have been described in the most affected facilities. Some medical staff are waiting for equipment while already seeing patients who may be infected or are supplied with equipment that might not meet requirements. Alongside concerns for their personal safety, health-care workers are anxious about passing the infection to their families. Health-care workers who care for elderly parents or young children will be drastically affected by school closures, social

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distancing policies, and disruption in the availability of food and other essentials.² Health care personnel (HCP) who are routinely exposed to viral respiratory infections in the workplace may transmit infection to others. WHO is working closely with global experts, governments and partners to rapidly expand scientific knowledge on this new virus and to provide timely advice on measures to protect people's health and prevent the spread of this Outbreak? Hazards include pathogen exposure, duration of working hours, psychological distress, coping mechanism with patients and with their family members. fatigue, occupational burnout, stigma, and physical and psychological violence.

Following are the areas of concern for health personnel during covid 19³ :

1. Occupational burnout
2. Physical and psychological violence
3. Separation from family members
4. Imbalance nutrition
5. Deprive sleeping pattern
6. Social problems specially racism issue
7. Transport
8. Lack of PPE
9. Impaired coping mechanism with children

Occupational Burnout

Healthcare workers and caregivers are desperately needed during the global response to the outbreak, but represent one of the most vulnerable populations in terms of contracting the highly virulent disease. Many of them infected as evidence, more than 100 doctors, 30 Nurses and Nursing Assistance in Italy have died from COVID -19 since the outbreak began. **Prashasti Awasthi (2020)**. The virus has infected more than 548 doctors, nurses and paramedics across India. **Harshit Sabarwal (2020)**. These all create panic atmosphere to everyone and lots of pressure on the left over few HCP to provide holistic care. HCP are the one who are actively involved in screening and providing COVID 19 patient care. As they themselves are not immune to this deadly virus, HCP develop insecure and stress. Many hospitals

are facing the shortage of manpower as if any HCP exposes to such patient without proper PPE knowingly or unknowingly, they have to go for quarantine. Due to this shortage of manpower and many infected cases goes on increasing in COVID 19 wards and ICU, there are sudden changes in management of situations with patient care. All the HCP got workover loaded some nurses are doing 12 Hours duty continuously. These all developed stress, anxiety, depression, helplessness, frustration, maladjustment. HCP are facing many issues concerning of patient care, as this is a deadly virus every individual especially patient family member, media person, political leaders, NGO are very much vigilance on the pattern of patient care and updating the conditions of the COVID 19 patient's situation. These all provide much more stressful platform for all the HCP. As this is a novel virus, all the HCP are also developing new habits of providing care to patient following the guidelines of WHO, and developing new habits takes times, during this periods many HCP face stressful life. HCP also face a problem for the lack of PPE in many hospitals. Staff nurses given resignation from their duty as they have been instructed to used one PPE in a day, sometime not available.

Physical and Psychological Violence

Nurses are being forced to work overtime, shave their heads for hygiene purpose in China as published in (The New York times) Nurses are also struggling to get necessary menstruation supplies, menstruation has become an occupational hazard for female nurses, they were provided adult diapers. Staff nurses are finding it hard to use bathroom with all their PPE that is not fitting or adequate, the diapers just add one more layer of frustration.⁴

After working mandated shifts, nurses are then being quarantined away from their families for two-week incubation period to ensure they aren't passing the virus on them. Doctors and nurses find difficulty for separate changing room, bathroom, removal of shoes and separate shoes rack in the hospital. This all create mentally disturb and obsess on the sensation of presence of virus in all the object surrounding them. As these practices are not habitual by the health personnel they keep forgetting or mistakenly skips some or the other precautionary protocols given by WHO, therefore it

really gives psychologically disturb and increase anxiety to all the care providers. It results today that many of the health personnel got infected with deadly COVID 19. Stones were pelted on doctors and nurses who went for surveillance in areas where cases were detected for contact tracing as evidence from video shown in TV news and many social media. Two teams comprising doctors and Accredited Social Health Activist (ASHA) and Auxiliary Nurse Midwife (ANM) workers were visiting the locality, when locals started pelting them with stones in Indore, MP ⁵

Separation From Family Members:

As COVID 19 is highly contagious, frontline health personnel especially lady doctors and staff nurses faced many problems such as separation from their children. Due to overtime working of 12hrs to 13 hrs continuously and family separation, it gives stress environment to the health care personnel. As they are frontline care provider many of them got infected while providing care. Figures from China's National Health Commission show that more than 3300 health-care workers have been infected as of early March and, according to local media, by the end of February at least 22 had died. In Italy, 20% of responding health-care workers was infected, and some have died. Reports from medical staff describe physical and mental exhaustion, the torment of difficult triage decisions, and the pain of losing patience and colleagues, all in addition to the infection risk. **(The lancet,2020)**⁶

According to NDTV, 30 March 2020, 14 medical staffers, including doctors and nurses, which was treating COVID-19 patients at RML Hospital, has been sent into home quarantine. Home quarantine is too difficult to follow all the guidelines. Children need their mother while sleeping, during lunch but during quarantine period it is really stressful. It is just like away from home inside the home. After return back from duty, they will keep themselves quarantine for at least 5 to 6 hrs before coming contact with family members. While HCP often accept increased risk of infection, as part of their chosen profession, they often exhibit concern about family transmission, especially involving family members who are elderly, immunocompromised, or have chronic medical conditions. While the CDC and Occupational Safety and Health Administration provide clear recommendations, it is evident that more

is required to optimize safety in the current environment. Ensuring care of HCP's family members would enhance workforce confidence and availability, but the feasibility and advisability of family priority is yet to be determined. For front-line caregivers, the concerns about transmitting the virus to family members will need to be addressed.

Imbalance Nutrition

Although we do not have concrete evidence regarding specific dietary factors that can reduce risk of novel virus COVID-19, we do know and accepted that eating a healthy diet, maintaining physically active, managing stress, and getting enough sleep boost our immune system strong. Deficit or imbalance nutrition can land us to various physical and mental disturbances. Balanced diet helped us keep the immune system strong and thus make our body to fight against micro organism. Therefore, it is imperative for all of us to pay attention to our diet and nutritional status during the ongoing COVID-19 pandemic. As HCP are overburdened with COVID 19 patients they hardly eat their meal on time and skip the same many at times. It is another big task and challenging for all the HCP to remove PPE before having foods. Many HCP got obsess about the presence of this deadly virus in their pantry also in their surroundings. These mental disturbed added losses of appetite, which again leads to nutrition imbalance. In some countries, restaurants and take-away offers are being limited and some items in supermarkets are becoming less available.

Limited access to fresh foods may lead to an increased consumption of highly processed foods, which tend to be high in fats, sugars and salt. Such changes in eating behaviour could have a negative effect on the immune system, overall physical and mental health, and the well-being of HCP.

Deprive Sleeping Pattern

Nurses get nearly 90 minutes less sleep before a shift compared with days off, posing a potential risk to patient safety, researchers in the US have warned long before COVID -19 outbreak. Sleep deprivation increases as HCP provide their services in shift. Up to 75% of shift workers experience some degree of fatigue and sleepiness while on duty. As nurses are on shifts duty which last longer than 12 hours, nurses work overtime, or nurses do not receive adequate rest breaks.

We must emphasize that regular sleep and rest help to increase the stamina of HCP which he or she can work effectively with 100% efficiency. Study was conducted on 1563 health workers and analysis has been done on sleep deprivation. Study result shows that 87.1 % of the sample suffer from Insomnia related problem due to work stress & depression (Chenxi Zhang 2020)⁷. As all the HCP are currently facing stress due to shortage of manpower as well as panic situation observing daily patient are dying, these factors enable HCP sleep deprive problem and hence poor immune system.

Social Problems Specially Racism Issue

On the onset of this deadly virus many HCP especially who are from north eastern India faced problem of Racism during this pandemic. They have been treated like this because COVID 19 originated from Wuhan, China. Many incidents are reported in INDIA itself that health care workers were attacked, harassed and humiliated by their neighbors and landlord. They were asked to vacate the room by landlords as they fear that it will lead to further spread of COVID-19. Nurses and doctors while returning back to their homes were not allowed by the villagers and society in which they were residing. HCP the frontline workers are truly worrier, they are still continuing to take care of patients with such an annoying situation. Racism against north eastern staff nurses is very pathetic, due to stress and insecure environment many north east staff nurses resign from their job. Quantitative studies have shown that frontline health-care providers treating patients with COVID-19 have greater risks of mental health problems, such as anxiety, depression, insomnia, and stress. Staff nurse in Siliguri was not allowed to enter her rented accommodation by her neighbors and house owner landlord and neighbors due to her Mongolian look and her profession (Thongkholal Haokip 2020)⁸

Transport

Another big challenge faced by the health personnel include transportation facility. In an amid of lockdown due to pandemic all the govt and private transportation facility were completely suspended. Many HCP don't have their own private vehicles, and they faced many problems during handing over and taking over. Due to this i.e. failure of timely reporting in hospital, it creates a stressful atmosphere in the workplace. And as social

distancing was the Rhyme of the hour, asking lift from someone known or unknown also a problem. But later on some govt transport facilities were provided but it was also not adequate enough to meet everyone's requirement. As the number of cases were increasing, interstate and intra state movement of HCP were also restricted. They were asked to stay back in their workplace area and not to come back to home (another state) as seen in Delhi and UP state.

Lack of Personal Protective Equipment.

Worldwide data shows that most patients are asymptomatic or mildly symptomatic. They can infect others. The demarcation of Covid and non-Covid areas coupled with scarce testing put health care workers at risk," General Secretary, Resident Doctors' Association, AIIMS. Prevention of infection to HCP is of utmost importance in the war against COVID 19 because they are the first and last line of defence.

Lack of supply of PPE Kits has led to increase number of health workers being infected. Even without proper PPE they are sent to the containment zone for screening and case finding. Liberal use of PPE and increased testing on an urgent basis alone can protect health care workers and patients from infection. Many doctors' associations have urged the government to provide proper protection to health care providers. The Federation of Resident Doctors' Association (FORDA) of India has demanded a separate treatment facility for Covid-19 positive doctors and other medical staff. "Rather than admitting doctors in various hospitals, there needs to be a uniform policy for admission and a designated Covid-19 hospital for doctors and other medical staff."⁹

Impaired Coping Mechanism with Children

In a bid to stem spread of the virus, schools in India are being shut indefinitely. It's been a longest holiday for all children and parents. But for the health workers its difficult to handle and take care of children with their work stress and fear of contracting COVID 19 to their children .In the beginning children don't understand the situation of why they are being house arrested for. These all provide another stressful life for health care providers.

Summary

Hospital personnel, including caregivers, support staff, administration, and preparedness teams, all will be stressed by the challenges of a prolonged response to COVID-19, and leadership must emphasize the importance of self-care as the center of the response. Transparent and thoughtful communication could contribute trust and a sense of control. Ensuring that workers feel they get adequate rest, are able to tend to critical personal needs (such as care of an older family member), and are supported both as health care professionals and as individuals will help maintain individual and team performance over the long run. Provision of food, rest breaks, decompression time, and adequate time off may be as important as provision of protocols and protective equipment as days turn into weeks, then months. Frequent information and feedback sessions with local managers and the broader facility community, complemented by clear, concise, and measured communication, will help teams stay focused on care and secure in their roles.

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Importance of Yoga during Adolescence Period

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Abstract

Mental health problems affect one in every five young people at any given time, says Cornell university of New York. Since to face all the problems such as: strain, tension, depression, anxiety and more our intellectual level adolescents are targeted first. Yoga in its original sense was devised as a method of spiritual awakening but of late it is being accepted as a science of health. Currently yoga is being taken as a therapeutical agent for health. It not only prevents and cures the disease but also helps in maintenance of positive health. Yoga lays great emphasis on strengthening inherent defensive mechanisms of human body and mind rather than attaching and eradicating individual offending factor. It develops immunity and resistance in human body and helps the body and mind in attaining homeostatic balance. The strengthening of defense mechanism and harmony between mind and body prevents onset of disease. The aim of yoga therefore is also the attainment of physical, mental, social and spiritual health¹.

Key words: Yoga, Physical and Mental Health, Adolescents, Body and mind, Asanas, Pranayama, Mantra.

Introduction

“Pleasure and suffering arise as a result of the drawing together of the sense organs, the mind and objects. When that does not happen because the mind is in the self, there is no pleasure or suffering for one who is embodied. That is yoga”

Adolescence is a transition period from childhood to adulthood. This tender age is considered to be between 12 and 19 years and usually is riddle with difficulties. This is the time when our youth is most prone to mental diseases like depression and anxiety. Did we ever ask ourselves why? Estimated 20% of youth (12-19) in developed countries are affected by mental illness (depression and anxiety). According to W.H.O. by 2020, 50% of youth with mental challenges will be under-served. Therefore, there is an urgent need to take appropriate steps so that the adolescents can attain normal, healthy growth and become productive and positive contributors' to the society. Adolescence is a time of confusion for a child who is usually not prepared for dramatic changes happening in his/her body. Physiological and endocrine system changes create imbalances in the body and mind.

Rapid growth of body limbs creates physical imbalance while new strong urges like sex, start governing one's behavior. The cortex part of the brain is still under-developed and limbic (emotional) brain is lacking proper control. This results often in an erratic behavior highly charged by emotions, both negative and positive. A new chapter in life is opening but there is no map where to go and how to get there. Today's society witnesses break down in family values and in intergenerational communication. As a result, young people have no road signs to follow, no moral or ethical values instilled and no understanding of what really is happening. During this time, peer groups and external appearance tend to increase in importance. The media knows exactly how to use this void in young people's lives and exploits it to the advantage of commerce².

Role of Yoga:

Yoga teaches order and discipline in life and living. Disciplined Yoga practices can transform the human consciousness into divine consciousness. To achieve this state there are innumerable methods employed by ancient yogis to suit the different temperaments of

people. To name a few Ashtanga Yoga of Patanjali, Hatha/ Laya/ Mantra/ Jnana/ Bhakti/ Karma etc.. In this paper, a few yoga practices are taken into consideration with a view to guide the young people.

Scientific Research studies, all over the world, have revealed that disciplined yoga practices can play important role by way of improving our physiological, psychological and mental functioning. It can help young people in developing and integrating their cognitive, affective and psychomotor abilities. And thereby they can develop healthy social interaction with others and the environment³.

How to Develop the Ability to Focus the Mind:

Probably the most important question for the adolescent is how to develop the ability to focus the mind. The primary aim of Yoga is to develop consciousness. Yoga nidra (relaxed alertness), Trataka (the practice of fixed gazing at a point), Nada Yoga and Mantra are such Yogic techniques which can help the child to develop Dharana and Dhyana (concentration and absorption)⁴.

Yoga nidra: Yoga nidra or relaxed alertness is a great way to learn and prepare for exams, especially if the child has been working hard or actively engaged in sports, and is physically tired. After some time he can bring about the same state of relaxation as while sitting with this practice. It has been shown that we are capable of absorbing more information if we are relaxed⁴.

Trataka: Trataka is used to improve memory and concentration. With this practice you are not only able to watch your concentration, but also intensify it. Trataka is also especially good for tackling insomnia. So when one has been studying hard and needs a rest, a bit of Trataka will get a good night's sleep⁴.

The Nada Yoga: The Nada Yoga not only brings about a very deep state of relaxation but can also help facilitate one of the fundamental behaviours necessary for learning to read, that is, listening⁴.

The basic practice of Nada Yoga is to close the ears and inhale deeply and exhale by humming out or by chanting Ommmm... One listens to the sound from the moment it explodes until the sound totally disappears. After about five to ten minutes, the humming can be stopped, the ears are still closed, and one simply listens.

Finally, one may relax the arms, open the ears and sit quietly for a few minutes before opening the eyes. This has a specific effect on the brain wave patterns. When we chant O or AU, beta rhythms dominate and when we chant M, alpha rhythms dominate. So, a long O and short M gives alertness and is great for morning chanting. Short O and long M induces introversion and relaxes alpha rhythms in the brain so it is perfect for preparing for Meditation or for going to sleep⁵.

Mantra: Relaxing the brain through Mantra is one of the methods of increasing perception. The superficial aspects of thoughts, emotions or desires which are not needed within the mind and which need to be expressed will be swept away by the Mantra. A proper Asana or posture should be selected and maintained for the duration of the practice so that there is no movement to distract the concentration⁶.

According to Patanjali control of mental modifications can be achieved by the steps in ashtanga yoga. Yama is for social well-being. Niyama is for self discipline. Then comes Asanas, such as Sarvangasana - benefits for nervous system, strengthening and blood circulation in brain. Sasankasana to activate spinal cord, Dhanurasana (Bow-curve pose) for fresh blood supply. Ustrasana (camel pose) develops strength and confidence. Gomukhasana (cow pose), alleviates tiredness, tension and anxiety. Sukhasana (easy pose) facilitates mental and physical balance without causing strain and pain⁷.

Yoga, according to Patanjali, is a method by which these chittavritti are controlled and restless mind is calmed. Yoga is a systematic and conscious process for accelerating the growth of a human being, further leading him/her towards all round personality development. Health is a state of dynamic equilibrium between body and mind. Various researches conducted to study the effect of yogic practice establish that Asana, pranayama, Bandha, Mudra, Dhyana, Shatkriyas etc, if done according to the environment nature of individual, place & time, have positive influence on physical and mental health⁸.

Pranayama, Nadisodhan (Alternate nostril breathing) to create a balance between sympathetic and parasympathetic system. Bhastrika strength the whole solar plexus area, build stamina, cleanses organs

Kapalbhati, dyanamic technique that enables to break out of the deep depression by creating a sense of activation. Bhramari pranayam, work towards creating an inner harmony that results in the attainment of a state of mental calmness. The bandha trayam as well as the asvini mudra are both a God send for those suffering from mental disorders since; It revitalizes the entire psycho-neuro endocrine system. here in yoga a complete blend of kriya and breathing patter is alien as the name of "Surya Namaskar" that relieves one from all the mental disorders and cures many diseases. It composes 12 poses at all in which four are repeated. It is a complete set of exercise for the every chakra as well as part of body. or here I can say that surya namaskar is a whole body exercise⁹.

A research has been done on evidence-bases complementary an alternative medicine in 2012, which summarizes the current evidence on the effects of yoga interventions on various component of mental and physical health. There are several randomizes clinical trials (RCT's) of relatively high quality indicating beneficial effects of yoga for pain-associated disability and mental health. Department of Internal and complementary Medicine, Berlin, Germany sounds that application of yoga as a therapeutic intervention, which began early in the twentieth century, takes advantages of various psycho physiological benefits of the component practices. The physical exercise (asana) may increase patient's physical flexibility and strength while breathing practices and meditation may cause calm and focus the mind to develop greater awareness and diminish anxiety and thus result in higher quality of life¹⁰.

Following are a few yoga practices:

1. In order to develop physiological and mental functions properly, young people should learn to regulate their food habits by way of rejecting the fast food habits and selecting only the satvika food. Yoga teaches us- 'What to eat?', 'what not to eat?', 'how to eat'? 'How much to eat?' Our young people should know that 'Food' not only nourishes our physical body but also responsible for our thoughts and behavior. This could be the reason that sages like Vasishtha, Yajnavalkya and Charandasa have described the concept of Mitahara under Yamas. Moreover, the concept of food is not limited to that which is consumed by the mouth only.

The other sensory inputs are also considered to be food. So the person cannot claim that he is consuming only fruits and milk which is satvika in nature unless the food taken by sensory inputs is satvika¹¹.

2. It is accepted fact that health of a person depends upon the healthy functioning of various tissues of the body. Muscular tissues can maintain their force and elasticity if they are regularly stretched and contracted. Sun salutation (Surya namaskara) and Yogic postures (Asanas) are proved to helpful in strengthening various tissues of the body – muscular tissues, the glandular tissues (which are responsible for the secretion of juices when active), the nerve tissues (they transmit impulses when functioning properly). More importantly, the functioning of the endocrine system is kept in the balanced state which not only helps in eliminating the waste material from the body but also helps in maintaining the circulation of blood as well as the digestive system¹².

Researchers have established that Shirasasana, Viparitkarani, sarvangasana, matsyasana are best for preserving the health of pineal and pituitary and thyroid glands whereas Dhanurasana and Uddiyana keeps the proper secretion of adrenal glands. Sexual urge is more dominants in young people which can be sublimated with help of Sarvangasana and Uddiana. The waste material can be eliminated from the body if the functioning's of the digestive, respiratory and urinary systems are kept healthy and this can be done with the practice of Danurasana, Bhujangasana, Uddiyana. In short, asanas, if practiced under proper guidance, are capable of keeping the health of an individual by influencing the different systems of the body and making them healthy in order to enable them to perform their function more efficiently¹³.

3. Yogic breathing exercise (Pranayama) not only helps in improving the functioning of respiratory system but also the other systems. Researches show that Pranayama exercise keeps respiratory system in order by way of stretching the chest muscles to the maximum and this action gives space to the lungs to open fully that improves absorption of oxygen in the blood. During puraka (inhalation) the diaphragm is lowered contracted and abdominal muscles are kept under control. This joined action of diaphragm and abdominal muscles lift

the lower part of the spine and during chin lock the upper part of the spine is lifted that improves the functioning of the sympathetic nerve. During breathing exercises particularly in the practice of Bhastrika circulation of blood becomes rapid and pure blood is supplied to endocrine system. This, in turn, ensures the proper secretions from endocrine glands. Nature has made a provision to give gentle massage to all the digestive organs (stomach, pancreas and liver etc.) to maintain their health. One can observe this by attending to abdominal movements during normal respiration. With every exhalation front abdominal muscles are contracted and all the digestive organs are pushed inward and upward and with every inhalation, the diaphragm presses the abdominal viscera downward and forward and in this way gives them a gentle massage that keeps the digestive organs naturally healthy. However, during the practice of yogic breathing this action takes place more deeply that keeps the digestive organs at proper place and improves their functioning¹⁴.

Practice of Pranayama, if properly practiced, can induce:

- Ø Subtle energy balance,
 - Ø Activates parasympathetic nervous system, Disperses their confusion,
 - Ø Develops mental control mechanisms, Makes them introspective,
 - Ø Brings peace of mind, Clarity of thought and
 - Ø Improves their concentration.
4. Yamas & Niyamas -not only instill values but also provide road map in regulating one's instincts.
 5. Pratyahara- develops an ability to manage sensory inputs (development of supremacy of cortical brain over senses and limbic brain. This is development of emotional intelligence).
 6. Dharana & Dhyana –both these practices give key to manage ones thought process that develops an ability to focus without any disruption.

Following points may be recommended for guiding the young people:

Ø Yoga respects the uniqueness of each and every individual.

Ø Yoga teachers and researchers need to work out a methodology of teaching yoga wherein what can be effectively taught through group techniques, what can be taught only through personalized instructions, and what has to be self-taught through self-directed learning strategies.

Ø Yoga teachers should ensure that whatever they teach to young students conforms to the principle given by Vyasa-bhasya (II 1), that is “citta-prasadanam- abadhyamana”(the mental composure of the students should not get adversely affected or upset).

Ø There is a need to develop “homogenous grouping of students with common features and interests”

Ø Yoga regards any development to be worthwhile only when it is capable of producing concrete personal experiences (svanubhava, svakarna-samvedya or arthavisesah pratyaksikartavyah). Such direct and concrete personal experiences bestow conviction and trust (shraddha) in students in what is being taught. Shradha, in its turn, brings up all the necessary qualities like enthusiasm, confidence, determination, pertinent memory, improved concentration, quicker decision-making, and ease in handling responsibilities in the young students to live a healthy and meaningful life¹⁵.

Conclusion

In conclusion it can be said that Adolescence is a growing age and if proper understanding, guidance (in the form of road map) is provided to young people in the initial stage they can be saved from various psychosomatic diseases like stress, depression, anxiety etc. and they can grow in an integrated manner. This, in turn, may give them a sense of responsibility of their role towards family, society, nation and the world. It is an established fact all over the world that Yoga has potential to develop this sense of responsibility and a person can live a meaningful, healthy and happy life when both aspects of yoga (practical & theoretical) are adopted not as a ‘view of life’ but as a ‘self disciplined way of life’¹⁶.

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Pattern of Feeding Practiced by Mothers of Infants Attending Immunisation OPD in a Tertiary Care Centre: A Hospital based Cross-Sectional Study

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Abstract

Context:Breast milk is the first natural food for babies which is adequate for the first six months of life. But practically very few mothers exclusively breast feed their babies as they start complementary food before completion of six months. Inadequate knowledge and practice regarding infant feeding practices can result in various infections of infants such as diarrhoea and pneumonia. In order to evaluate the pattern of breastfeeding and weaning and their influencing factors a cross-sectional study was conducted in immunization OPD of M.K.C.G MCH from August-October 2014 (3 months) among 152 mothers attending the immunization OPD using a pre-designed, pretested and semi-structured Odiya questionnaire. Data thus collected was analysed using appropriate statistical tests. **Results:** Among the 152 mothers who were interviewed, 28(18%) of them had low birth weight babies. Out of the 148 mothers who had breast fed, initiation of breast feeding was done within half an hour by 64(43.2%) of the mothers. Out of them, 18 (12.1%) of mothers had given pre-lacteal feeds. Among infants greater than six months, exclusive breast feeding has been done in case of 28(33%) of them. Among the 84 mothers who have weaned their babies before completion of six months, 82(98%) have reasoned insufficient milk. After introduction of outside food, 70(62.5%) infants did not suffer from any problem whereas among the rest 32(61.5%) suffered mostly from diarrhoea. Mothers had adequate knowledge regarding various aspects of infant feeding. **Conclusion:** Antenatal mothers should be counselled regarding importance of exclusive breast feeding as well as timely introduction of complementary foods along with necessity of hygiene. Working mothers can practice expressed breast feeding as well use the CRECHE to maintain exclusivity of breast feeding.

Keywords: Infant feeding, Pre-lacteals, Exclusive breast feeding, Complementary feeding, Weaning

Introduction

Breast milk is the life line for the newborns and best gift a mother can give to her baby as it contains all the nutrients for normal growth and development from the time of birth to six months of life. It helps in sensory and cognitive development.⁽¹⁾ Exclusive breastfeeding is

defined (EBF) as no other food or drink, not even water, except breast milk (including milk expressed or from a wet nurse) for 6 months of life, but allows the infant to receive ORS, drops and syrups (vitamins, minerals and medicines).⁽²⁾ It protects against hospitalization for diarrhoea and lower respiratory tract infection. WHO and UNICEF launched the 'Baby friendly Hospital Initiative' (BFHI) in 1991 to protect, promote and support breastfeeding.⁽¹⁾ The key to successful breastfeeding is Information, Education and Communication (IEC) strategies aimed at behaviour change. Very few women in India have access to counselling services on infant and young child feeding. ⁽³⁾ Complementary feeding

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practices are often inadequate in developing countries, resulting in malnutrition between 6 months - 12 months of age. Malnutrition during the critical phases of early growth, can lead to poor physical as well as inadequate intellectual development in children.⁽⁴⁾

According to WHO 2017 (August) fact sheet, it is estimated that only 40% of infants below age of 6 months are exclusively breastfed. As per NFHS 4 (2015 -2016) prevalence of exclusive breastfeeding in India under 6 months age is 54.9% (urban=52.1%, rural=56%). As per recommendations of UNICEF & WHO optimal breastfeeding must consists of early initiation of breastfeeding within 1 hour or as early as possible after birth; exclusive breastfeeding for the first 6 months of life; continuation of breastfeeding up to 2 years of age along with supplementary feeds.⁽²⁾

In India exclusive breastfeeding can improve the nutritional status for millions of infants as well as reduce neonatal mortality to as low as 12 neonatal deaths per 1000 live births by 2030. ⁽⁵⁾ Practice of pre lacteal feeds leads to repeated infections, affecting the growth and development of the children . Breast feeding practices are influenced by socio-demographic factors and cultural values. Illiteracy, ignorance, lack of access to antenatal and postnatal care and inadequate knowledge and skills of breastfeeding are the contributory factors. ⁽²⁾

Objective: - This study was conducted

- to evaluate the breastfeeding and weaning practices.

- to study various influencing factors.

Materials and Methods

Study Area: Immunisation OPD at M.K.C.G Medical College and Hospital in Berhampur, Odisha. **Sampling Method:** Convenient sampling. **Study Population:** Total 152 mothers attending the immunization OPD during study period. **Study period:** August-October 2014 (3 months) **Study Design:** Hospital based cross sectional study. **Ethical approval:** Approval from IEC. After taking verbal consent from mothers interview of 6-7 mothers was taken weekly on each Wednesday using a pre-designed, pretested and semi-structured Odiya questionnaire in the counselling room maintaining adequate privacy. **Statistical**

Analysis: Data was analysed in the Dept of Community Medicine, using SPSS 20.0. Categorical variables were measured in proportions whereas Mean and Standard deviation were calculated for continuous variables.

Results

Total 152 mothers were interviewed. Half of the mothers (48.7%) were in age group 25-30years with 4% teenage mothers. About 40% of the mothers are graduate. Of them only 10% are working mothers. Fathers of 41% of infants were professionals whereas 14.4% of fathers were labourer by occupation.

About 60% of mothers were multi-parous. At least four antenatal visits were recorded in 93%. All were institutional delivery. The prevalence of normal vaginal delivery and caesarean section were equal and equal number of male and female babies among which 18% had low birth weight.

Four out of 152 mothers had never breast fed their children. Initiation of breast feeding was done within half an hour among 64(43.2%). Out of them,18 (12.1%) of mothers had given pre-lacteal feeds. Out of the mothers whose infants were greater than six months, exclusive breast feeding has been done in case of 28(33%) of the babies. Among those 84 babies, breast feeding has been discontinued among 58(69%) of them. **(Table-1)**

Table 1: Profile of Breast-feeding

Characteristic	Frequency (%)
Onset Of BF(n=148)	
<1/2 hour	64(43.2%)
1-24 hours	70(47.3%)
1-4 days	2(1.4%)
>4 days	12(8.1%)
Pre-Lacteal Feeds(n=148)	
No	130(87.8%)
Yes	18(12.1%)
EBF among children greater than 6months(n=84)	
Exclusive	28(33%)
Not Exclusive	56(66%)
Continuation of BF among children greater than 6months(n=84)	
BF continuing	26(31%)
BF discontinued	58(69%)

112(73.6%) mothers have already started giving outside foods to their babies {84(75%) infants more than 6 months and 28 (25%) infants less than six months of age}. Among the 68 babies who are less than six months, rest 40 (59%) babies are being still fed only with breast milk. Weaning has been started among all the 84 infants more than six months. Out of the 84 infants greater than six months 56(67%) mothers had started outside food within six months. Among all the 84 infants who have been weaned before completion

of six months ,56(67%) are more than six months and 28(33%) are aged less than six months. Among those 84 mothers,82(98%) have reasoned insufficient milk for premature weaning. 92(82.14%) babies were fed with katori and spoon. Hygiene was adequately maintained among 110(98%) of the mothers. After introduction of outside food, 70(62.5%) infants did not suffer from any problem, and among the rest 32(61.5%) suffered from diarrhoea. (Table-2)

Table 2: Profile of complementary feeding

Characteristic		Frequency (%)	
Whether outside food being given (n=152)	Yes	112(74%)	No 40(26%)
	No		
Weaning(among babies>6months)n=84	Yes	84(100%)	No 0(0%)
	No		
Complementary food(among babies within 6months) n=68	Yes	28(41%)	No 40(59%)
	No		
Among infants (age>6months) when was outside food introduced (n=84)	before 6months(i.e not EBF) 56(66%)	after 6months(i.e EBF) 28(33%)	
Babies who have been given outside	Age <6months	Age >6months	

Cont... Table 2: Profile of complementary feeding

food before 6months(n=84)	28(33%)	56(66%)
Reason for early introduction of complementary food(n=84)		
Insufficient milk	82(98%)	
Working	2(2%)	
Method of feeding(n=112)		
Katori-spoon	92(82.14%)	
Bottle	20(17.8%)	
Hygiene being maintained(n=112)		
Adequate	110(98%)	
Inadequate	2(2%)	
Any Problem after starting of complementary food(n=112)	Yes	No
	42(37.5%)	70(62.5%)
Problems after starting of complementary food(n=42)		
Weight loss	6(14.2%)	
A.R.I	4(9.5%)	
Diarrhoea	32(76.2%)	

Adequacy of knowledge regarding advantages of breast feeding, exclusivity of breast feeding, start of weaning, weaning foods were found among 120(79%), 125(82%), 114(75%), 114(75%) mothers respectively.

Discussion

Among the 152 mothers interviewed half of them (48.7%) were in 25-30years with 4% teenage mothers. About 40% of the mothers are graduate and 10% were working mothers. In a study by **Bagul A.S et al** in

Nagpur, among the 384 enrolled mothers 111 (28.94%) were housewives and rest working women. Only 77 mothers (19.73%) were illiterate and 99 (25.65%) were educated beyond secondary school. ⁽⁶⁾ In a study by **Roy S et al** in Kolkotta, among 120 mothers, majority 81.6% were literate and 69.1% were housewives. ⁽⁷⁾ In a study by **Rajesh D et al** and **Bhavna D et al**, mean age of the mothers was 24.89 ± 7.82 years. ⁽⁴⁾ Another study by **Cheedarala V et al**, among 100 mothers, mean age of mothers was 25.6 ± 3.81 years. Most of the mothers 68% were employed. ⁽²⁾ A similar study by **Mahmood**

S.E et al found 78.04% mothers less than 30 years and 69.9% illiterate and all were housewives.⁽⁸⁾ In study by **Ekambaram M et al**, among 100 postnatal mothers, mean age was 25.18 ±3.81 years. Only 29% had completed upto primary school while 22% of them were graduates. Majority (67%) of them were housewives.⁽³⁾ In study by **Srivastav P et al**, most of the mothers (43.4%) were in the age group of 19-22 years. Majority of the respondents (45.5%) were educated up to middle school level. Almost all the mothers (97.9%) were housewives.⁽⁹⁾ In a study by **Wadde et al** in Maharashtra, among 306 mothers age of all the mothers ranged between 18 to 35 years whereas 33.99% were illiterate.⁽¹⁰⁾ In study by **Bhatt et al** 95 (54.3%) belonged to age group of 26-30 years. Most of them 77 (44%) have studied up to primary & by occupation majority (66.9%) are housewives.⁽¹¹⁾

On assessing the *obstetric history*, about 60% of mothers were multi-parous. Antenatal visits more than four times were undergone by 93%. All had undergone institutional delivery. The prevalence of normal vaginal delivery and caesarean section were 50% each with equal number of male and female babies but 18% of them had low birth weight. 84 (55%) babies were aged greater than six months whereas 68 (45%) babies were less than six months.

In study by **Rajesh D et al**, 52% of children are male and 48% female.⁽⁴⁾ In a study by **Cheedarla V et al** Mothers with one child were 38 (38%), whereas with two children 44 (44%).⁽²⁾ In a study by **Supare A.S et al** 17.1% mothers had home Deliveries. Caesarean sections were done in 83(21.66%).⁽⁶⁾ In a study by **Mahmood Syed et al**, 68.2% mothers were multiparous with half of the deliveries at home. Only a quarter of the females had three or more antenatal visits during pregnancy.⁽⁸⁾ Whereas **Srivastav P et al** found 97.9% of the mothers delivered in a health care institution.⁽⁹⁾ Similarly **Bhatt et al** found two-thirds of the babies were delivered vaginally and caesarian section in one third.⁽¹¹⁾

In our study, four of the mothers had never breast fed their children. Out of the remaining 148 mothers initiation of breast feeding was done within half an hour among 43.2% of the mothers. Among them only 12.1% babies had been given pre-lacteal feeds. Out of the 84 mothers whose infants were greater than six months, exclusive breast feeding has been done in case of 33%

of the babies. Among those 84 babies, breast feeding has been discontinued among 69% of them. Weaning has been done by 73.6% of the mothers. They include all the 84(75%) infants who are aged greater than 6 months as well as 28(25%) infants who are still less than six months of age. Among the 68 babies who are less than six months, rest 40(59%) babies are being still fed only with breast milk. Violation of EBF has been done in case of 84(55%) of the babies which include 56 (66.6%) out of 84 babies who are now greater than six months and 28(41%) babies out of 68 babies who are less than six months. Insufficient milk was reason in case of 82(98%) mothers.

In a study by **Supare A.S et al** 32.56% had started breast feeding within 1 hour. Colostrum was given by 21.38% mothers. Pre-lacteal feeds were given by 78.61% mothers and Exclusive breast feeding by 36.84% mothers. Complementary feeds were introduced at 6 months by 41.11% and after 6 months by 7.89% mothers.⁽⁶⁾ In a study by **Roy S et al** in Kolkota 29.16% gave pre-lacteal feed and 76.67% received breast milk within 24 hr. 90% were fed with colostrum with 28.33% exclusive breast fed. Inadequate milk production is the most common reason for not giving EBF in 62.79%. Among them 71.66% were given complementary feeding at 6 months.⁽⁷⁾ In a study in district of AP by **I. Meshram L.A.V et al** only 22% mothers initiated breastfeeding within one hour. Pre-lacteal use was high (44.7%). Only 41% of infants were exclusively breastfed for 6 months and 58% of infants (6-11months) received complementary feeding at 6-9 months of age.⁽¹²⁾ Similar findings are found by **Rajesh D et al**, **Cheedrala et al**, **Srivastav P et al** and **Wadde et al** in their respective studies.^(2,4,9,10)

Among all the 112 mothers, 92(82.14%) babies were fed with katori and spoon. Hygiene was adequately maintained among 110(98%) of the mothers. After introduction of outside food,70(62.5%) infants did not suffer from any problem. Among the rest 42 babies, most of them i.e 32(61.5%) suffered mostly from diarrhoea. Adequacy of knowledge regarding advantages of breast feeding, exclusivity of breast feeding, start of weaning, weaning foods were 79%,82%,75% and 80% respectively.

In study by **Mahmood S.E et al** BF a majority (69.9%) of the mothers did not receive advice on child feeding. About 47.2% of the respondents were not aware of the benefits of exclusive breastfeeding. ⁽¹³⁾ In study by **Ekambarm et al**, majority of the mothers (52%) did not receive any advice on breastfeeding during antenatal period. But 92% knew that breastfeeding should be initiated within one hour ⁽³⁾ In study by **Bhatt et al** it was found that 84.6% mothers agreed that mother's milk alone is the best food for the new born. It was found that majority of women interviewed did not receive any antenatal counselling regarding breastfeeding (77.1%). ⁽¹¹⁾ In a study by **Roy S et al** among 120 mothers 41.66% were informed about EBF and timely introduction of complementary feeding either from health facility or family members and peer groups.⁽⁷⁾

Conclusion

Very few mothers are practicing exclusive breast feeding by premature weaning mostly because of insufficiency of milk. Due to inadequate hygiene some babies are suffering from diarrhoea and pneumonia. During antenatal visits, postnatal check-ups, as well as immunization of babies mothers should be routinely educated about proper infant feeding practices. Working mothers can practice expressed breast feeding as well use the concept of CRECHE for their babies to maintain exclusivity of breast feeding.

Limitation:

As it is a hospital-based study so the findings cannot be generalised. Further studies need to be conducted to determine the strength of association between pattern of feeding with various influencing factors.

Conflicts of Interest: Nil

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Study of Epidemiological Factors Affecting Patients of Hypertension Attending Urban Health Training Centre of Community Medicine of Tertiary Care Hospital, Maharashtra

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Abstract

Introduction -Hypertension is a chronic condition causing coronary heart disease, stroke and other vascular complications. **Aim and objective**- To study epidemiological factors affecting patients of hypertension attending urban health training centre of community medicine department of tertiary care hospital, Maharashtra. **Material and Methods**- The study was a hospital based observational descriptive study carried out in urban health training centre of community medicine department of tertiary care hospital from April 2016 to September 2016 including all known cases of hypertension which was around 450. **Result**-Maximum cases were from age group 40-59 years (53.71 %) and 40.77 % were males and 59.23 % were females. Whereas 43 % and 14 % of study subjects were having BMI of 25-29.9 and ≥ 30 respectively, 35 % were having family history of hypertension, 72% were having salt intake of > 5 gram, 67% were having mixed diet, 55 % men were having waist-hip ratio > 0.9 and 67% women were having waist-hip ratio > 0.8 , 45 % of total male subjects and 08 % female subjects were having habit of alcohol intake. Whereas 42 % of total male subjects and 28 % of female subjects were having habit of tobacco intake. **Conclusion**- For the control of hypertension decreased salt intake, physical activity, cessation of habits such as alcohol and tobacco intake and early detection and treatment are need of the hour.

Keywords - Epidemiological factors, Hypertension, Tertiary care hospital.

Introduction

Hypertension is a chronic condition of concern due to its role in the causation of coronary heart disease, stroke and other vascular complications. It is the commonest cardiovascular disorder, posing a major public health challenge to population in socio-economic and epidemiological transition. It is one of

the major risk factors for cardiovascular mortality, which accounts for 20-50 percent of all deaths¹. The global prevalence of hypertension is estimated to be 1.13 billion in 2015. The overall prevalence of hypertension in adults is around 30-40 per cent, with a global age standardized prevalence of 24 and 20 per cent in men and women respectively. It is estimated that the number of people with hypertension will increase by 15-20 per cent by year 2025². Elevated blood pressure is a leading cause of premature death in 2015, accounting to almost 10 million deaths and over 200 million DALYs. Despite advances in diagnosis and treatment over the past 30 years, the DALYs have increased by 40 per cent since 1990. Systolic blood pressure >140 mmHg accounts for most of the mortality and disability burden. The largest number of systolic blood pressure related deaths per year are due to IHD (4.9 million), haemorrhagic stroke

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(2 million) and ischaemic stroke (1.5 million)².

Population-based epidemiological studies have reported that prevalence of hypertension has increased by two to five times in the urban and rural regions of India over the past 50 years³. Prospective studies from all parts of the world have reported that hypertension is an important cause of mortality and that higher the blood pressure (BP) greater the mortality^{4,5}. Prospective studies in India have also reported a significant correlation of increasing BP with greater CVD mortality^{6,7}.

Although the urban health training centre (UHTC) under community medicine department of tertiary care hospital caters to the urban slum population, this hospital based observational descriptive study was undertaken in all known cases of hypertension coming to UHTC to study the epidemiological factors associated with hypertension in them.

Aim and Objective

To study epidemiological factors affecting patients of hypertension attending urban health training centre of community medicine department of tertiary care hospital, Maharashtra.

Material and Methods

The study was a hospital based observational descriptive study carried out in urban health training centre of community medicine department of tertiary care hospital. It is a duration based study carried out from April 2016 to September 2016 i.e. for total 6 months. All the known cases of hypertension attending the UHTC during the study period willing to participate in the study procedure were included in the study which was around 450. While patients unwilling to participate in the study procedure and pregnant women were excluded from the study.

The hypertension was defined according to Seventh

report of Joint National Committee on prevention, detection, evaluation and treatment of high blood pressure. Accordingly the Hypertension is defined as systolic blood pressure (SBP) of 140 mm Hg or more, diastolic blood pressure (DBP) of 90 mm Hg or more or taking antihypertensive medication⁸.

Data collection- After explaining the purpose of study and obtaining verbal informed consent from the patients, all patients were interviewed with the help of preformed structured questionnaire comprising of questions related to epidemiological and clinical details of the subject, age, sex, address, height, salt consumption, physical activity, addictions and history of hypertension amongst their parents and siblings. A clinical examination was conducted on all the participants by trained department faculty/LMO/MO/interns of the centre of department of Community Medicine. Blood pressure measurements were taken using mercury Sphygmomanometer in sitting posture. The individuals were labeled as known cases of hypertension only when they showed the reports and evidence of antihypertensive medication or previous medical examination reports. Records of all patients were studied and data regarding their clinicosocial profile was analyzed. Data was entered in Microsoft excel sheet and it was analyzed with Epi info software. Statistical analysis was done by using simple proportions and percentages. Throughout the study anonymity of all patients was maintained and privacy as well as confidentiality of the data was assured.

Results

The present hospital based observational descriptive study was carried out among 450 known cases of hypertension who attended Urban Health Training Center of the Department of Community Medicine during the study period.

Table No. 1: Distribution of study subjects according to age and sex

Age group in years	Males (%)	Females (%)	Total (%)
20-29	18 (45%)	22 (55%)	40 (09.01%)
30-39	42 (41.58%)	59 (58.41%)	101 (22.23%)
40-49	50(39.68%)	76 (60.31%)	126 (28.16%)
50-59	45 (39.13%)	70 (60.86%)	115 (25.55%)
≥60	29 (42.64%)	39 (57.35%)	68 (15.05%)
Total	184 (40.77%)	266 (59.23%)	450 (100%)

The distribution of total 450 study subjects according to age and sex showed that 40.77 % were males and 59.23 % were females. The maximum numbers of individuals were from age group 40-59 years (53.71 %) followed by age group 30-39 years (22.23 %) and the minimum numbers of individuals from age group 20-29 years (09.01 %).

Table No. 2: Distribution of study subjects according to clinicosocial factors-

Marital status	Number (n=450)	Percentage
Married	140	31
Unmarried	180	40
Widowed	99	22
Divorcee	31	07
B.M.I		
< 18.5	50	11
18.5-24.9	144	32
25-29.9	193	43
≥ 30	63	14
Family history of hypertension		
Yes	158	35
No	292	65
Salt intake per day		
≤ 5 gram	126	28
> 5 gram	324	72
Physical activity		
Sedentary	90	19.90
Moderate	324	72.08
Heavy	36	08.02
Dietary pattern		
Mixed	302	67
Vegetarian	148	33

Distribution of study subjects according to marital status shows that 31 % were married, 40 % were unmarried, 22 % were widowed and 07 % were divorcee.

Distribution of study subjects according to Body Mass Index shows that 11% study subjects were having their BMI below 18.5 while 32 % study subjects were having their BMI in normal range [18.5-24.9], 43 % and 14 % of study subjects were having BMI of 25-29.9 and ≥ 30 respectively.

Distribution of study subjects according to family history of hypertension shows that amongst 450 study subjects, 35 % were having family history of hypertension and 65 % were not having family history of hypertension.

Distribution of study subjects according to their salt intake shows that 28 % and 72% study subjects were having salt intake of ≤ 5 gram and > 5 gram respectively.

Out of total 450 study subjects, 19.90% were having sedentary activity, 72.08 % were having moderate activity and 8.02 % were having heavy activity.

Distribution of study subjects according to dietary pattern shows that 67% of total study subjects were having mixed diet and 33 % of total study subjects were having vegetarian diet.

Table No. 3: Distribution of study subjects according to other high risk factors-

Waist hip ratio	Male	Female
Normal	82[45%]	87[33%]
Abnormal	102[55%]	179[67%]
Alcohol intake		
Yes	82[45%]	22[08%]
No	102[55%]	244[92%]
Tobacco intake in any form		
Yes	78[42%]	75[28%]
No	106[58%]	191[72%]

Table no. 3 shows distribution of study subjects according to other high risk factors. Waist hip ratio was calculated as waist circumference divided by hip circumference. The cut-off used for the waist-hip ratio (WHR) for males was 0.9 as normal and for females it was 0.8 as normal.

Out of 184 males in study, 55 % men were having waist-hip ratio > 0.9 and 45 % men were having waist-hip ratio ≤ 0.9 . Amongst 266 females in study, 67 % women were having waist-hip ratio > 0.8 and 33 % women were having waist-hip ratio ≤ 0.8 .

Considering alcohol intake, 45 % of total male subjects were having habit of alcohol intake, while 08 % female subjects were having habit of alcohol intake. Whereas 42 % of total male subjects were having habit of tobacco intake in any form as compared to 28 % of female subjects who were having habit of tobacco intake in any form.

Discussion

This study was a hospital based observational descriptive study carried out in urban health training centre of community medicine department of tertiary care hospital from April 2016 to September 2016 i.e. for total 6 months considering all the known cases of hypertension attending the UHTC during the study period which was around 450.

The distribution of total 450 study subjects according to age and sex showed that 40.77 % were males and 59.23 % were females. The maximum numbers of individuals were from age group 40-59 years (53.71 %) followed by age group 30-39 years (22.23 %). In a study done Dr. Siraj Ahmad, out of 388 hypertensive patients, 57.7% were males and 42.3% were females. Majority of patients 42.8% were in the age group of 50 – 59 years⁹.

While 31 % in our study were married, 40 % were unmarried, 22 % were widowed and 07 % were divorcee. In contrast to our studies, Midha T et al¹¹ found no significant association between marital status and hypertension ($p = 0.213$). Distribution of study subjects according to Body Mass Index shows that 11% study subjects were having their BMI below 18.5 while 32 % study subjects were having their BMI in normal range [18.5-24.9], 43 % and 14 % of study subjects were

having BMI of 25-29.9 and ≥ 30 respectively. The study findings were parallel to other studies done by Gore Chaitali et al and Om Prakash Das et al^{12,13}. Family history of hypertension was present in 23.3% participants in urban slums of Tirupathi in a study done by SS Reddy et al¹⁴ and 26.8% in urban slums of Bangalore in a study done by Gore Chaitali et al¹² whereas in the present study it was found in 35 % participants. Higher salt intake was associated with hypertension in a study done by Om Prakash et al in urban slums of Belgaum¹³, whereas in our study 72% study subjects were having salt intake of > 5 gram. In our study, 72.08 % of the study subjects were having moderate physical activity and 67% of total study subjects were having mixed diet. The study findings are in contrast with the study done by Mehmood SE et al¹⁰ in which prevalence of hypertension did not differ significantly between non vegetarians and vegetarians.

Out of 184 males in our study, 55 % men were having waist-hip ratio > 0.9 while 67 % women were having waist-hip ratio > 0.8. While 45 % of total male subjects were having habit of alcohol intake, while 08 % female subjects were having habit of alcohol intake. The study findings were similar to the study done by Mahmood SE et al¹⁰.

Limitations of the study-

1. As it was a hospital based study, the study findings can not be generalised to the whole population.
2. Controversial findings found in the study need further in-depth epidemiological studies.

Conclusion

Hypertension is a silent killer which is an iceberg phenomenon. Large numbers of hypertensive are in increasing age group with female preponderance and having family history of hypertension which shows a genetic predisposition to this disease. Other predisposing factors noted are obesity, increased salt intake, alcohol intake, tobacco intake in any form. Therefore, for the control of hypertension, health education awareness programmes on healthy lifestyle namely control and prevention of obesity, decreased salt intake, physical activity, cessation of habits such as alcohol and tobacco intake as well as early detection and

treatment are need of the hour. Also, strengthening of health services should be done in the form of health education camps and educating people through mass media on hypertension and its risk factors.

Ethical approval: The study was approved by the Institutional Ethics Committee.

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Conflict of Interest - All authors declare that there are no conflicts of interest in this study.

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A Cross-Sectional Study of Knowledge about First Aid in Undergraduate Medical Students of Maharashtra

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Abstract

Background- First aid is defined as the assessment and interventions that can be performed by a bystander immediately with minimal or no medical equipments **Objective-** To study the knowledge about First aid in undergraduate medical students of Maharashtra . **Methodology-** Cross-sectional study including all the 150 first year undergraduate medical students undertaken in May 2016 in the department of Community Medicine in Government medical college in Maharashtra. **Result-** 10 % students had excellent knowledge, 52 % needed improvements, 17 % had adequate knowledge and 21 % had poor knowledge about first-aid. With respect to awareness of first aid measures, 28% and 26% had poor knowledge of first aid emergencies like loss of consciousness and snake bite. Followed by poor knowledge in management of burns 23.33%, poisoning 22% , road traffic accident 20% and seizures 19.34%. Excellent knowledge of first aid was seen in 16% cases of nasal bleeding, 14% in cases of bleeding, 12% in cases of fractures and 11.34% in cases of poisoning. **Conclusion-** The study highlights that majority of the students need improvement in knowledge of first aid. Early exposure of trainings in the medical career will make them socially responsible and clinically oriented in the emergency situations.

Keywords- First aid; Undergraduate medical students, Knowledge.

Introduction

First aid is defined as the assessment and interventions that can be performed by a bystander immediately with minimal or no medical equipments¹. The first aider should have a positive attitude and be prepared to help the casualty. The first aider should also have the adequate knowledge and skills about what he is doing, and be encouraging and reassuring

to the victims². The significance of training healthcare professionals in first aid at a very early stage in their career is now acknowledged worldwide. Medical students are taught to handle these emergencies in hospital setting where all facilities are available³. However, this may not be adequate to deal with the emergency conditions (e.g. Road traffic accidents, fire) at the emergency site without hospital facility. The future health care providers in the community are students of health science colleges. First aid is not difficult, it needs a good attitude and a few simple steps with adequate knowledge and skills that make anyone deal with any accidents⁴. Hence this study was conducted on the first year medical students to assess their knowledge about First aid as even in their early years of studying it is expected from them by general public to know how to do first aid to an injured patient and save live.

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Aim and objective- To study the knowledge about First aid in undergraduate medical students of Maharashtra .

Material and Methods

This was a cross-sectional study undertaken in the department of Community Medicine in Government medical college in Maharashtra. The study was conducted in the month of May 2016.

Study Sample :

In our study, all the first year undergraduate medical students were included which were 150.

Data collection: After explaining the purpose of study and obtaining verbal informed consent from the students, a preformed structured questionnaire was distributed to all 150 students through “collective data collection”. The questionnaire included 15 closed ended questions which were multiple choice questions on topics about burn, bleeding, choking, fracture, nasal bleeding, seizure, poisoning, asthmatic attack, hypoglycemic attack, snake bite and loss of consciousness etc. After

briefing about the study objectives, the medical students were asked to tick the most appropriate answer in the given list of options. Questionnaire was collected back, and data regarding their knowledge on first aid was analyzed . Data was entered in Microsoft excel sheet and it was analyzed with Epi info software.All the correct responses were given one point and wrong responses were given zero point. Scores were calculated out of 15. The scoring was graded as follows: · ≥70% excellent · 51% to 69% adequate · 31% to 50% needs improvement · ≤30% poor

Throughout the study anonymity of all students was maintained and privacy as well as confidentiality of the data was assured.

Results

The present cross-sectional study was carried out among 150 first year undergraduate medical students in the Department of Community Medicine during the month of May 2016.

Table 1: Sex wise distribution of students

Sex	Number	Percentage
Male	82	54.66
Female	68	45.33
Total	150	100

Table 1 shows Sex wise distribution of students. Out of the total 150 students, 54.66% were males and 45.33% were females.

Table 2: Knowledge of students about first-aid.

Knowledge	Number	Percentage
Poor (<30%)	32	21
Needs improvement (31-50%)	78	52
Adequate (51-69%)	25	17
Excellent (>70%)	15	10
Total	150	100

Table 2 shows Knowledge of students about first-aid. The overall scores were, 10 % students had excellent knowledge, 52 % needed improvements,17 % had adequate knowledge and 21 % had poor knowledge about first-aid.

Table 3. Distribution of students according to source of information about First aid-

Source of information	Number	Percentage
Television / Radio	63	42
Newspaper / Magazine	26	17
Friends / Family	27	18
Internet	34	23
Total	150	100

Table 3 shows Distribution of students according to source of information about First aid which included maximum 42% from Television / Radio, 23% from Internet, 18% from Friends / Family and 17% from Newspaper / Magazine.

Table 4. Distribution of students according to knowledge of first aid management in different emergencies-

Emergency	Poor knowledge[%]	Need improvement[%]	Adequate knowledge[%]	Excellent knowledge [%]	Total
Burn	35[23.33]	72[48]	27[18]	16[10.67]	150
Bleeding	26[17.33]	75[50]	28[18.67]	21[14]	150
Choking	22[14.66]	78[52]	36[24]	14[9.34]	150
Road traffic accident	30[20]	78[52]	28[18.66]	14[9.34]	150
Fracture	25[16.66]	80[53.34]	27[18]	18[12]	150
Nasal bleeding	28[18.66]	75[50]	23[15.34]	24[16]	150
Seizure	29[19.34]	81[54]	27[18]	13[8.66]	150
Poisoning	33[22]	76[50.66]	24[16]	17[11.34]	150
Asthmatic attack	23[15.34]	87[58]	28[18.66]	12[8]	150
Hypoglycemic attack	18[12]	95[63.34]	22[14.66]	15[10]	150
Snake bite	39[26]	75[50]	21[14]	15[10]	150
Loss of consciousness	42[28]	78[52]	19[12.66]	11[7.34]	150

Table 4. shows Distribution of students according to knowledge of first aid management in different emergencies. With respect to awareness of first aid measures in various conditions, 28% [42/150] and 26%[39/150] had poor knowledge of first aid emergencies like loss of consciousness and snake bite. This was followed by poor knowledge of first aid in management of burns 23.33%[35/150], poisoning 22% [33/150], road traffic accident 20%[30/150] and seizures 19.34%[29/150].

Excellent knowledge of first aid was seen in 16%[24] in cases of nasal bleeding, 14%[21] in cases of bleeding, 12%[18] in cases of fractures and 11.34%[17] in cases of poisoning.

Adequate knowledge of first aid was seen in 24%[36] in cases of choking, 18.66%[28] in cases of bleeding, asthmatic attack, road traffic accidents and 18%[27] in cases of fractures, seizures and burn.

There is need of improvement in knowledge of first aid in 63.34%[95] cases of hypoglycemic attack, 58%[87] cases of asthmatic attack , 54%[81] cases of seizures, 53.34%[80] cases of fracture and 52%[78] cases of choking, road traffic accident and loss of consciousness.

Discussion

The present cross-sectional study was carried out among 150 first year undergraduate medical students in the Department of Community Medicine during the month of May 2016.

Table 1 shows Sex wise distribution of students. out of the total 150 students, 54.66% were males and 45.33% were females. The study findings were parallel to a study done by Anoop Singh et al⁵. The study was done on 100 medical students among them 50% were male, and 50% were female. A study done by Joseph N et al found that there was no association of gender and first aid among the participants⁶.

Table 2 shows Knowledge of students about first-aid. The overall scores were, 10 % students had excellent knowledge, 52 % needed improvements, 17 % had adequate knowledge and 21 % had poor knowledge about first-aid. Parallel findings were found in a study done by Chaitali A.Gore et al in which 43 out of 150 students had excellent knowledge, 71 out of 150 needed improvements, 35 out of 150 had adequate knowledge and only 1 out of 150 had poor knowledge about first-aid⁷.

Table 3 shows Percentage of source of information in students regarding First aid which included maximum 42% from Television / Radio, 23% from Internet, 18% from Friends / Family and 17% from Newspaper / Magazine. The study findings are parallel to a study done by Swetha C. et al⁴.

Table 4. shows Distribution of students according to knowledge of first aid management in different emergencies. With respect to awareness of first aid measures in various conditions, 28% [42/150] and 26%[39/150] had poor knowledge of first aid emergencies like loss of consciousness and snake bite. This was followed by poor knowledge of first aid in management of burns 23.33%[35/150], poisoning

22% [33/150], road traffic accident 20%[30/150] and seizures 19.34%[29/150]. The study findings are parallel to a study done by Swetha C. et al⁴ which found that 12% students were aware that a fainted person should be positioned on his back .Only 5% knew that in case of snake bite the victim should be made to lie down calm till medical help is available , 74% knew that the first information to be gathered in a person who has swallowed poison was, what they have taken, when and how much, 30% knew that the first thing to be done for a victim of seizures was to keep him safe from injury.

Excellent knowledge of first aid was seen in 16%[24] in cases of nasal bleeding, 14%[21] in cases of bleeding, 12%[18] in cases of fractures and 11.34%[17] in cases of poisoning. . The study findings are parallel to a study done by Swetha C. et al⁴ in which 6% of the students were aware that in case of bleeding nose in a child they should pinch the nose and ask the child to lean forwards 16% knew that in case of severe bleeding due to cut injury in arm direct pressure should be applied on the wound, 55% were aware that in case of broken leg a soft padding should be placed around the limb.

Adequate knowledge of first aid was seen in 24%[36] in cases of choking, 18.66%[28] in cases of bleeding, asthmatic attack, road traffic accidents and 18%[27] in cases of fractures, seizures and burn. . The study findings are parallel to a study done by Swetha C. et al⁴ which found 48% students knew that upto 5 back blows were to be given in case of choke on some food, 74% knew that in case of asthma attack the person should be made to sit in comfortable position and asked to take his medication

There is need of improvement in knowledge of first aid in 63.34%[95] cases of hypoglycemic attack, 58%[87] cases of asthmatic attack , 54%[81] cases of seizures, 53.34%[80] cases of fracture and 52%[78] cases of choking, road traffic accident and loss of consciousness. . The study findings are parallel to a study done by Swetha C. et al⁴ which found 62% students knew that airway should be checked first in a victim lying on ground and not responding.

Limitations of the study-

As it was a study involving only the first year undergraduate students of one medical college, the study

findings can not be generalised to all medical students.

Conclusion

The study highlights that majority of the students need improvement in knowledge of first aid. There is need for provision of first aid training to all the medical students. Early exposure of such trainings in the medical career will make them socially responsible and clinically oriented in the emergency situations.

Ethical approval: The study was approved by the Institutional Ethics Committee.

Funding- There are no sources of funding for this study.

Conflict of Interest - All authors declare that there are no conflicts of interest in this study.

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Quality of Life and Sexual Dysfunction among Patients of Alcohol Dependence Syndrome

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Abstract

Background: The study was conducted to assess the prevalence of sexual dysfunction among alcoholic male and extent of sexual dysfunction and quality of life among alcohol dependant male with or without sexual dysfunction.

Study design: Cross sectional study involving newly diagnosed 50 alcohol dependant male patients attended Psychiatry out patient department.

Result: Study showed significant relationship between occupation, level of education and socio-economic class with total quality of life score. 76% of alcohol dependant males have sexual dysfunction. Alcohol dependant males without sexual dysfunction + SE (51.906+ .865) compared to alcohol dependent male with sexual dysfunction (40.977 + .473) which is statistically significant.

Conclusion: The study highlighted high rates of sexual dysfunction along with lower total quality of life score in the alcohol dependant group.

Key words: Alcohol dependence, sexual dysfunction, quality of life

Introduction

Sexuality is determined by anatomy, physiology, the culture in which a person lives, relationship with others, and developmental experiences throughout the life cycle¹. As of 2012, it is estimated that more than 22 million persons older than the age of 12 years (about 10 percent of the total US population) were classified as having a substance related disorder as per The National Institute of Drug Abuse (NIDA) and other agencies,

such as the National Survey of Drug Use and Health (NSDUH).²

Aim

The study aims to assess prevalence of sexual dysfunction among alcoholic male and to find extent of sexual dysfunction and domains of quality of life among alcohol dependent male with or without sexual dysfunction.

Materials and Methods

People between 18 to 60 years with regular sexual partners were enrolled for the study after taking proper consent.

Exclusion criteria were primary sexual dysfunction prior to initiation of alcohol or opioid use, co-morbid physical (e.g. diabetes mellitus, hypertension, alcoholic

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liver disease) or psychiatric disorder, other substance abuse.

Parameters to be studied were socio-demographic data using semi-structured socio-demographic proforma and Prasad's scale, alcohol dependence syndrome and opioid dependence syndrome in patients, sexual functioning using sexual dysfunction checklist, quality of Life Enjoyment and Satisfaction using Quality of

Life using Enjoyment and Satisfaction Questionnaire-Short Form Scale.

Prasad's classification (1961) based on the per capita monthly income has been widely in use in India. It is computed as: Per capita monthly income = Total monthly income of the family / Total members of the family. Income limits thus obtained, are far more practical and realistic.

Revision of Prasad's SES classification revised for the year 2014³-

SES Class	May 2014
I	Rs 5571 and above
II	Rs 2786-5570
III	Rs 1671-2785
IV	Rs 836-1670
V	Below Rs 836

The Quality of Life Enjoyment and Satisfaction Questionnaire- Short Form(Q-LES-Q-SF): A total score of items 1 to 14 is computed and expressed as a percentage of the maximum possible score of 70.

There are two global items, number 15 and 16 that are not included in the Quality of Life Enjoyment and Satisfaction Questionnaire's total score medication and overall life satisfaction and contentment.⁴

The raw total score is transformed into a percentage maximum possible score using the formula : raw total score-minimum score/maximum possible raw score-minimum score

Thus the formula for percentage maximum can also be written as (raw score-14)/56.

Sexual dysfunction checklist⁵—All the patients were assessed for the prevalence of one or more sexual dysfunction experienced over the past 12 months using

a sexual dysfunction checklist. The checklist contains items corresponding to 12 areas of sexual dysfunction described in the Diagnostic Criteria for Research, ICD-10 Classification of Mental and Behavioural Disorders. Sexual dysfunction was rated for the last one year and temporary or situational complaints were ignored.

Mini International Neuropsychiatric Interview⁶-- The M.I.N.I. is a face-to-face , short , structured diagnostic interview designed to identify 10 psychiatric disorders – mood disorders(major depression , bipolar disorder , dysthymia , suicidality), panic disorder , social anxiety disorder , generalised anxiety disorder , obsessive compulsive disorder , post traumatic stress disorder , psychotic disorders , substance dependence and abuse , eating disorder and antisocial personality.

Statistical analysis was done after completion of data collection using standard statistical method (SPSS version 20).

Results

Sociodemographic data of opioid dependent male group & comparison with total quality of life score (by anova & independent sample t test) was shown in table 1

Table 1: Shows there is significant relation between occupation and total quality of life score (F=7.129,P=.002), between level of education and total quality of life score (F=9.424,P=.000), between socioeconomic class and total quality of life score (F=3.889,P=.015).

Serial no.	Variable		N	Mean total QOL score	F/t(df)	P
1.	Residence	rural	25(50%)	39.16	2.360(2)	.106
		semiurban	12(24%)	38.67		
		urban	13(26%)	41.08		
2.	Occupation	unskilled	27(54%)	38.52	7.129(2)	.002
		semiskilled	21(42%)	40.29		
		skilled	2(4%)	45.50		
3.	Religion	hindu	28(56%)	39.93	1.776(2)	.180
		muslim	19(38%)	38.63		
		christian	3(6%)	41.67		
		jain	0(0%)	0.00		
4.	Education	illiterate	8(16%)	37.75	9.424(4)	.000
		primary	25(50%)	38.56		
		secondary	12(24%)	40.58		
		higher secondary	3(6%)	43.33		
		graduate	2(4%)	47.00		
		post-graduate	0(0%)	0.00		
5.	SEC	I	0(0%)	0.00	3.889(3)	.015
		II	3(6%)	42.33		
		III	19(38%)	40.84		
		IV	26(52%)	38.42		
		V	2(4%)	37.50		

Relation of various domains of quality of life with domains of socio-demographic profile of alcohol dependent male (by anova) has been shown in table 2.

SL. NO	ITEM		RESIDENC- E	OCCUPATION	RELIGIO- N	EDUCATION	SEC
1.	PHYSICAL HEALTH	F(df)	1.129(2)	3.798(2)	2.852(3)	1.835(5)	3.367(4)
		P	.332	.030	.047	.126	.017
2.	MOOD	F(df)	.119(2)	1.950(2)	1.620(3)	.884(5)	1.359(4)
		P	.888	.154	.198	.500	.263
3.	SOCIAL RELATION	F(df)	.689(2)	2.409(2)	1.083(3)	.951(5)	.397(4)
		P	.507	.101	.366	.458	.810
4.	LESIURE ACTIVITIES	F(df)	3.236(2)	6.115(2)	.838(3)	4.080(5)	.919(4)
		P	.048	.004	.480	.004	.461
5.	SEX DRIVE	F(df)	.387(2)	5.226(2)	1.258(3)	3.206(5)	2.841(4)
		P	.681	.009	.300	.015	.035
6.	ECONOMIC STATUS	F(df)	1.837(2)	72.744(2)	.813(3)	7.317(5)	10.15(4)
		P	.170	.000	.493	.000	.000
7.	HOUSING SITUATION	F(df)	.767(2)	46.869(2)	1.329(3)	7.948(5)	7.721(4)
		P	.470	.000	.277	.000	.000
8.	OVERALL WELLBEING	F/t(df)	1.248(2)	14.383(2)	.490(3)	3.195(5)	4.342(4)
		P	.296	.000	.691	.015	.005

Table 2 : Shows 6 domains of quality of life are significantly related Physical health, Leisure time activities, Economic status, Housing situation, Sexual drive & performance, Overall sense of well being) (P<.05) with various domains of socio-demographic profile in alcohol dependent male group.

Table 3 : Sexual dysfunction in alcohol dependent male group has been shown in Table 3 :

Alcohol dependent male	Sexual dysfunction	No sexual dysfunction
50	38(76%)	12(24%)

TABLE 4 :

Sl.no.	Items of sexual dysfunction checklist	N	Frequency	Percent
1.	Low sexual desire	50	19	38%
2.	Difficulty achieving erection	50	12	24%
3.	Premature ejaculation(<1min)	50	14	28%
4.	Inhibited /delayed ejaculation	50	7	14%
5.	Anorgasmia	50	6	12%
6.	Frequency dissatisfaction	50	13	26%
7.	Dissatisfaction of sexual relationship with partner	50	6	12%
8.	Dissatisfaction with own sexual function	50	12	24%

Table 3 and 4 shows 76% of alcohol dependent male have sexual dysfunction. None of the subjects reported aversion to sex. Low sexual desire was reported by 19 out of 50(38%). Next was premature ejaculation (<1min) 14 out of 50 (28%).

IMPACT OF SEXUAL DYSFUNCTION IN QUALITY OF LIFE IN ALCOHOL DEPENDENT MALE GROUP.

Table 5 shows univariate analysis of variance of total qol score in alcohol dependent male with & without sexual dysfunction.

	N	Total QOL score		F(df)	P
		Mean	S.E.		
Alcohol dependent male with sexual dysfunction	38	40.977	.473	94.355(2)	.000
Alcohol dependent male without sexual dysfunction	12	51.906	.865		

Table 5: shows alcohol dependent male without sexual dysfunction have mean ± SE (51.906±.865) compared to alcohol dependent male with sexual dysfunction (40.977±.473), the difference being statistically significance (F= 94.355, df= 2, P= .000) after taking into occupation ‘ as covariate between the two groups.

Discussion

Among 50 alcohol dependent male patients, 76% were having sexual dysfunction. This finding is similar to previous studies.⁷⁻¹⁹ the finding of Fahrner¹⁹ who found that among 101 men taking inpatient treatment for alcohol dependence 75% had erectile dysfunction, loss of libido and premature/delayed ejaculation.

In our study, in alcohol dependent male, most frequent complaint was low sexual desire (38%) followed by premature ejaculation <1min (28%), frequency dissatisfaction (26%) and difficulty in achieving in erection (24%). This finding is corroborated with findings of Arackal et al.⁵ Grinshpoon et al however found erectile dysfunction as most common complaint followed by decreased libido and premature ejaculation.¹⁴ The reason for the difference between this and our finding is probably the use of different scales for sexual dysfunction.

Studies on alcohol dependent patients have found quality of life as considerably decreased, but little information is available on how quality of life changes following a therapeutic intervention.²⁰

Daeppeen JB et al. reported a poor quality of life in alcohol dependent patients at the beginning of treatment, but the factors responsible for it have not been investigated in a systematic way.²¹ Srivastava S et al. found significantly lower domains of Quality of Life in alcohol dependent subjects compared to healthy control.²²

In this study, it has been shown in alcohol dependent males, three domains of socio-demographic data namely occupation, education and socio-economic class were significantly associated ($P < 0.05$) with total quality of life score. This is corroborated with results of Srivastava S et al.²² who found that patient's monthly income was significantly associated with improvement in environmental domain of quality of life.

Conclusion

The present study was carried out to assess the presence, prevalence, types of sexual dysfunction and also quality of life in patients of alcohol dependent male group. This study highlighted high rates of sexual dysfunction (76% in alcohol dependent

subjects and 80% in opioid dependent subjects) with most dysfunction in the domains of low sexual desire, premature ejaculation, difficulty in achieving and maintaining erection. Sexual dysfunction was significantly associated with lower total quality of life score in the alcohol dependent group.

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Conflict of Interest - Nil

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Health Status of Assam: A District Level Analysis

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Abstract

Health is an important indicator of HDI which is specially designed to assess the economic development of countries. Access to quality health service at an affordable cost for the common masses is the prime requirement for the overall development of the country. Quality human resource is associated with the quality health and educational services available in the country. Every country spends a percentage of their GDP for health and education sector. Every state government too adopts some scheme and programmes in the health sector. The government of Assam has been adopting many schemes in the health sector since independence. In order to understand the health status of Assam, it is imperative to examine the different health facilities available in the health sector of Assam. In this paper attempt has been made to examine the health status of Assam in general and tried to explore the district-wise analysis of health status. By considering seven indicators, with the help of performing index specially developed to assess the performance level of the different districts. The districts have been classified as Poor, Medium and Good performing districts based on the index value

Key words: *Health, HDI, Index, Resource, service, quality*

Introduction

Health and Education are the qualitative characteristics of a particular population. Population of a particular country is considered as human resource for that country. Along with natural resource, human resources are making important efforts for the development of the country in terms of expanding goods and services. But, quality of human resource is subjected to the attainment of quality education, availability of health infrastructure so that quality health service is accessible for the common masses. Improvement of health indicators like IMR, MMR, CBR, CDR, Neo-natal and Post Neo-natal Mortality, Life expectancy at birth, female literacy, Morbidity rate, different measures of fertility and mortality, institutional delivery etc. represent the improvement of health status of that particular country. Nurkse's doctrine of vicious circle of poverty emphasized on the improvement of health status by making available nutritious food to common masses so that they can come out from the vicious circle of poverty. According to this theory people are poor and because of that they are unable to take nutritious food resulting deteriorating

their health condition and because of that they could not work. Again income declines and plagued by poverty. Poor health condition is one causes of this vicious circle of poverty. Therefore, public and private efforts have been made to improve the health status of the state. Anand P. (2006) has shown that in the desert and non-desert districts, little increase (5%) in health institutions (health sub centre at village level) and doubling the number of health workers visiting households can better account for IMR and LE⁸. Kapoor S. (2010) examines the factors affects the infant mortality rate and found that literacy and women's labour force participation are the most influential factor affecting IMR⁹. Banrajee S.(2020) in the study entitled "Major-Determinant of Infant Mortality: District Level Evidence from Odisha" the study reveals that breastfeeding, birth spacing and mother's nutritional status are the major factors in this regardsⁱⁱⁱ. Saikia and Das (2014) have analyzed the progress in health institutions, availability of health care facilities, the status health work force and the quality of health care services in the rural areas across the eight north-eastern States^{iv}. Paul K.P, Jana K.S and Maiti A (2019) try to show the status of health infrastructure,

health facilities and expenditure pattern on health sector in the state of Assam. The paper uses the technique of Analysis of Variance (ANOVA) to find the variation of different health parameters among the districts in Assam. The results reveal that there is a significant difference across districts of Assam in respect of health parameters like sanitation facilities, institutional birth in public facilities and woman being mother or pregnant at the age of 15- 19 years^v. Nath (2014) observes the status of development in health care services of Assam has been estimated with the help of composite index based on optimum combination of 35 development indicators. They evaluate the inter districts imbalances in the level of development of health care system and to classify the districts in to different stages of development such as high level, medium level, developing and low level^{vi}. Sharma and Sharma (2014) find that Assam has less satisfactory performance than the national level standard regarding these statistics. They try to know the impact of human development indices on human development rank through multiple regression analysis^{vii}. Hooda (2013) analyzes the implications of changing pattern of government health expenditure in India during the last two and a half decade (1987-88 to 2011-12). The results show that government health spending has remained almost constant during the period and hovered around one per cent of GDP, which is even lower than most of

the developing countries^{viii}. Kalita & Harsha (2015) has shown the sanitation facilities among the households of the slum pockets in the city. In this study attempt has been made to reveal health status of Assam by taking the aforesaid mentioned eight indicators. All the districts of Assam are not equally performed in the health sectors^{ix}. Some are performed better than others. Therefore, a performance index has been developed to identify the districts as poor, medium and good performers in terms of these seven indicators.

Methodology

The present study considers the district level analysis. Therefore, the study captures the entire state of Assam. The data has been collected from different sources. The data has been collected from secondary source for analysis. The data related to health profile of Assam considers indicators such as Birth Rate, Death Rate, Infant Mortality Rate (IMR) etc. Health profiles of the state are collected from MOSP. The sources like National Rural Health Mission (NRHM) and National Family Health Survey (NFHS), SRS bulletin etc were helpful for analyzing health facilities. The information regarding the health facilities such as number of SCs, PHCs and CHCs, sub-divisional hospital, district hospital of state Assam are taken from the district level data of NRHM.

Table-1: Health Facilities of Assam (As on 2016)

	Indicator	Number	(%)
Facilities available at Sub-Centre	Number of Sub Centers Functioning	4621	Na
	Number of Sub Centers with ANM Quarter	2337	50
	Number of Sub Centers with ANM living in Sub Center Quarter*	452	19.3
	No. of Sub Centers Functioning as per IPHS norms	Na	Na
	Number of Sub Centers Functioning Without Regular Water Supply	7659	Na
	Without Electric Supply	2298	49.72
		2263	48.9
Facilities at PHCs	Number of PHCs Functioning	1014	Na
	With Labour Room	763	75.2
	With Operation Theatre	29	2.8
	With at least 4 beds	332	32.7
	Number of PHCs Functioning Without Electric Supply	1014	Na
	Without Regular Water Supply	90	8.8
	Without All-Weather Motorable Approach Road	129	12.7
	With Telephone	53	5.2
	With Computer	210	20.7
	656	64.6	

Source: Bulletin on Rural Health Statistics in 31st March 2016

Table-1 gives the availability of health facilities of Assam at sub centre and PHCs level. Access to quality health service by the common masses is vital

for all round development of the state. Accessibility of quality health services depends on the availability of health facilities at sub-centre and PHCs. In this table, availability of different health services of Assam at Sub-centre and PHCs level has been shown.

Table-2: Infant Mortality Rate in Assam as Compared with India

Year	Assam	India
1998	76.0	72.0
2000	75.0	68.0
2002	70.0	63.0
2004	66.0	58.0
2006	67.0	58.0
2008	64.0	58.0
2010	58.0	47.0
2012	55.0	42.0
2014	50.5	39.0
2016	44.0	34.0

Source: SRS Bulletin (1998-2016)

Infant Mortality rate is considered as one of the important indicator of health status. Infant is the baby before completing first birth day. There are many causes of infant mortality. Some are related to neo-natal mortality and some are related to post neo-natal mortality. Infant mortality is connected with the availability of adequate

and scientific health facilities. Therefore, decline IMR is the consequence of improved health facilities. Table-2 reveals the infant Mortality Rate (IMR) for the state of Assam and India from 1998 to 2016. IMR declined in Assam from 76 to 44 from 1998 to 2016. Similarly, IMR declined from 72 to 34 from 1998 to 2016 at the national Level.

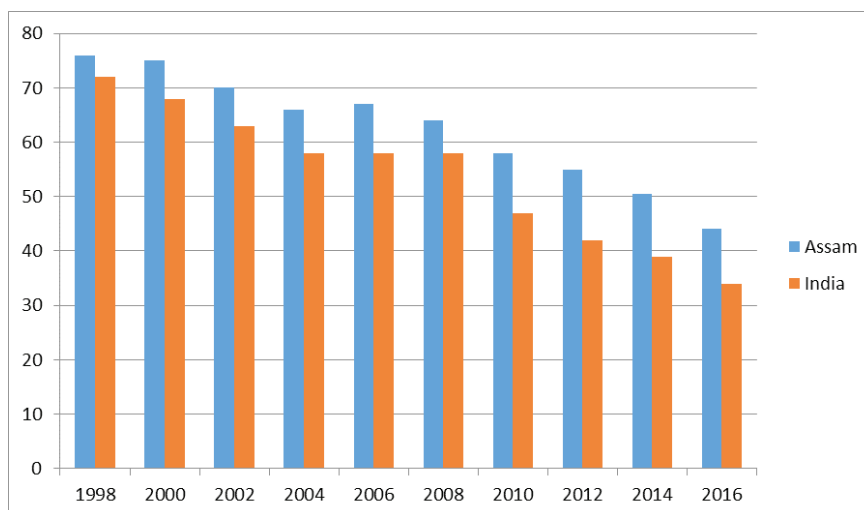


Figure-1: : Infant Mortality Rate in Assam as Compared with India

A District Level Analysis:

In order to understand the health status of Assam, it is imperative to make a district level analysis. Some districts are performing well in terms of some indicators but lagging behind in some other indicators. Some other districts are performing well in some other indicators.

The available statistics reveals that all the districts are not equally performed. Therefore, single government scheme and programme is not equally effective for all the districts of Assam. A performance index has been developed to analysis the district level performance in terms of seven health indicators.

Table-3: District wise Health Centers in Assam (As on 31st March, 2016)

District	Sub Centre	PHCs	CHCs	Sub Divisional Hospital	District Hospital
Barpeta	264	51	6	1	1
Bongaigaon	84	30	3	0	1
Baksa	157	41	5	0	1
Cachar	270	33	5	0	1
Chirang	86	25	3	0	1
Darrang	163	30	6	0	1
Dhemaji	98	22	4	0	1
Dhubri	246	44	8	2	1
Dibrugarh	231	30	7	0	0
Goalpara	151	41	5	0	1
Golaghat	144	40	4	1	1
Hailakandi	105	13	3	0	1
Jorhat	144	44	5	2	0
Kamrup (R)	280	71	11	1	1
Kamrup (M)	51	25	3	0	1
Karbi Anglong	145	46	5	1	1
Karimganj	218	29	5	0	1
Kokrajhar	161	45	4	1	1
Lakhimpur	156	30	8	1	1
Morigaon	123	36	5	0	1
Nagaon	354	80	15	0	1
Nalbari	121	47	9	0	1
Dima Hasao	65	11	2	0	1
Sivasagar	219	45	4	2	1
Sonitpur	275	58	7	2	1
Tinsukia	164	23	6	0	1
Udalguri	146	24	3	0	1
Total	4621	1014	151	14	25

Source: National Rural Health Mission (NRHM)

Table-4:: Inter District Variation in Some Health Parameters in Assam

District	Households using improved sanitation facility (%)	Institutional births in public facility (%)
Baksa	54.3	77.5
Bangaigaon	45.9	56.8
Chirang	32.6	50.1
Dhubri	33	40.3
Goalpara	46.2	66
Barpeta	34.9	49
Kokrajhar	39.2	61.4
Nalbari	51.2	69.1
Udalguri	53.8	65.2
Darrang	45.6	64.8
Cachar	37.3	56.8
Dima Hasao	59	53.2
Hailakandi	36	51.9
Kamrup(M)	61.2	57
Kamrup (R)	52.6	76.9
Karbi Ang.	41.5	45.5
Karimganj	39.5	41.8
Morigaon	40.1	64.8
Nagaon	45.5	56.6
Lakhimpur	49.6	77.7
Dhemaji	41.4	73.4
Dibrugarh	56.6	62.2
Golaghat	59.6	75.4
Jorhat	64.5	80.3
Sivasagar	55.5	66.1
Sonitpur	61	67.1
Tinsukia	50.8	56.9

Source: NFHS-4(2015-16)

Performance Index

Performance Index has been developed to understand the health status of different districts of Assam. Central government and the state government of Assam have been adopting various Schemes and programmes under health sector. The health status of the state is connected with efficient implementation these schemes and programmes. Indicators like Sub-centre, PHCs, CHCs, Sub-Divisional Hospital, District Hospital, Households used improved sanitation facility, institutional delivery have been considered for understanding the health status in different districts of Assam. All districts are not equally performed in terms of these indicators. Some districts have shown good performance whereas others have shown poor performance. To examine the district wise performance, a performance index has been constructed by taking these seven indicators.

Performance Index (PI)

A performance index was constructed using seven indicators. Depending upon the variability of these indicators, a three point scale was formulated for each indicator. The index has been developed based on the literature “Socio-Economic impact of MGNREGA: Evidence from district of Udum Singh Nagar in

Uttarakhand, India,” Kharkwal, S. and Kumar, A. 2015¹⁰. The Performance Index for the districts is constructed by using the following method:

$$4. PI_i = \sum S_{ik} / (\text{Maximum Possible Total Scale Value})$$

Where PI_i = Performance Index of the i^{th} district

$\sum S_{ik}$ = Scale Value of the i^{th} districts for K^{th} indicators

Maximum Possible Total Scale Value = 21

To attain the index value, the total scale achieved by a district is divided by the maximum attainable score of a district. In this case, the maximum attainable score is 21. The index has been developed by following the earlier methodology adopted in computing socio-economic index by Sarkar and Supriya (2011)¹¹

5. FORMULATION OF SCALE FOR THE INDICATORS

All the seven indicators are quantitative and positive indicators. The following principle has been used to construct the scale for indicators.

$$\text{Mean} \pm 0.5 \times \text{standard Deviation (S.D)}$$

TABLE-5: FORMULATION OF SCALE FOR THE INDICATORS

Indicators	Scale-1	Scale-2	Scale-3
Sub-Centre	$\leq \text{Mean} - 0.5 \times \text{SD}$	$> \text{Mean} - 0.5 \times \text{SD}$ to $\leq \text{Mean} + 0.5 \times \text{SD}$	$> \text{Mean} + 0.5 \times \text{SD}$
PHCs	$\leq \text{Mean} - 0.5 \times \text{SD}$	$> \text{Mean} - 0.5 \times \text{SD}$ to $\leq \text{Mean} + 0.5 \times \text{SD}$	$> \text{Mean} + 0.5 \times \text{SD}$
CHCs	$\leq \text{Mean} - 0.5 \times \text{SD}$	$> \text{Mean} - 0.5 \times \text{SD}$ to $\leq \text{Mean} + 0.5 \times \text{SD}$	$> \text{Mean} + 0.5 \times \text{SD}$
Sub-Divisional Hospital	$\leq \text{Mean} - 0.5 \times \text{SD}$	$> \text{Mean} - 0.5 \times \text{SD}$ to $\leq \text{Mean} + 0.5 \times \text{SD}$	$> \text{Mean} + 0.5 \times \text{SD}$
District Hospital	$\leq \text{Mean} - 0.5 \times \text{SD}$	$> \text{Mean} - 0.5 \times \text{SD}$ to $\leq \text{Mean} + 0.5 \times \text{SD}$	$> \text{Mean} + 0.5 \times \text{SD}$
Households used Sanitation	$\leq \text{Mean} - 0.5 \times \text{SD}$	$> \text{Mean} - 0.5 \times \text{SD}$ to $\leq \text{Mean} + 0.5 \times \text{SD}$	$> \text{Mean} + 0.5 \times \text{SD}$
Institutional Delivery	$\leq \text{Mean} - 0.5 \times \text{SD}$	$> \text{Mean} - 0.5 \times \text{SD}$ to $\leq \text{Mean} + 0.5 \times \text{SD}$	$> \text{Mean} + 0.5 \times \text{SD}$

The index value for the district is calculated based on the total scale value attained by the district.

Categorizing of Districts According To Performance Index (PI)

The districts are categorized into different level of performance by using the same principle:

Mean \pm 0.5 \times standard Deviation (S.D)

TABLE-6: CATEGORIZING OF DISTRICTS ACCORDING TO PERFORMANCE INDEX

Level of Performance	Low level of Performance	Medium Level of Performance	High Level of Performance
Index Value	\leq Mean-0.5xSD	$>$ Mean-0.5xSD to \leq Mean+ 0.5xSD	$>$ Mean+0.5Xsd

Based on index value, the districts have been categorized into Poor, Medium and Good. The level of performance is good if the index value is greater than or equal to 0.73, it is poor if the index value is less than or equal to 0.56 and the level of performance is Medium if the Index value lies between these two maximum and minimum values.

Out of the total 27 districts, ten districts are Poor performance category. 12 districts are Medium performance and the remaining five districts are High performer in terms of these seven indicators.

Conclusion

The present study shows that the health status of Assam has improved since 1998. Due to the implementation of NRHM, a flagship programme in the health sector in 2015, IMR, Death Rate as well as birth rate started to decline. But it is still higher than the national level. District-wise, out of 27 districts 5 districts have been found under the category of good performing district, 12 are medium performing district and 10 are low performing districts. In order to upgrade the medium and poor performing districts to good performing district, it is imperative to increase the public and private expenditure in health sector.

Ethical Clearance: Not needed for this kind of Study

Source of Funding: Self

Conflict of Interest: Nil

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Regional Differential in Diet Diversity Consumption and its Association with Adult Nutrition Status in Urban Areas

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Abstract

Background: The demographic and economic transition that many developing countries are undergoing is producing important changes in diet and lifestyle that greatly impact on diet related disease risks. Therefore, evaluating the association between diet diversity and obesity would be interesting for the adult population of urban areas.

Objective: This study deals with the consumption of different food items in the region of Maharashtra and its association with adult nutritional status.

Material & Method: This study used the National Family Health Survey (NFHS -4) data which was collected during 2015-16. Multiple logistic regression analysis has been done to fulfill the objective of the study using software STATA version 14.

Result: The present study found that the overweight and obesity situation among the adults of urban Maharashtra is alarming. This study also shows that the consumption of the Non-veg food (Fish, Eggs, chicken or meat) higher in Konkan and Pune region.

Conclusion: Based on the study findings, it is essential to address the present scenario of its increasing prevalence of overweight/obesity not only in the state but also at the national level.

Keywords: Food Consumption, Obesity, WHO, NFHS, BMI

Introduction

Variety of food consumption has long been recognized as key elements of high-quality diets. A diverse diet increases the probability of nutrient adequacy among people and leads to positive health outcomes^{1,2}. Lack of diversity is a particularly severe problem among poor populations in developing countries. Changing from a monotonous diet to one with varied food types

has been shown to improve energy and nutrient intakes in the people from the developing world^{3,4}.

The demographic and economic transition that many developing countries are undergoing is producing important changes in diet and lifestyle that greatly impact on disease risks. Notwithstanding malnutrition and nutrient deficiencies were important distress in the developing world, recent dietary shift and changes in the physical activity patterns, diet-related metabolic problems have arisen as a disturbing public health puzzle in many developing nations predominantly among urban inhabitants^{5,6}. Therefore, this study deals with the consumption of different food items in the region of Maharashtra. It has also described the pattern and level of food group consumption by socio-economic characteristics of the respondents across all five regions

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of the state. As India has an interesting socio-economical relationship with obesity. For instance, higher wealth and education is positively associated with obesity among Indian adult ⁷. Therefore, evaluating the association between diet diversity and obesity would be interesting for the adult population of urban Maharashtra.

Material and Method

Data Source

This study used the fourth round of National Family Health Survey (NFHS-4) conducted in India during 2015 – 16. The NFHS-4 is a large scale, household-based survey and collected information spanning across the districts of state and the union territories of India. The main purpose of the survey was to provide reliable estimates of fertility and family planning, infant and childhood mortality, utilization of maternal health care services, maternal and childhood nutritional status etc. The survey adopted a multistage sampling design – two stage sampling design in most of the urban area and three stage design in most of the rural areas. The survey collected information using household schedules, individual/women's schedule and men schedule. The household and individual response rates were >95%. The details about the sampling design, sample size response rate and content of the schedules are given in the national report of NFHS-4

Assessment of Nutritional Status and dietary diversity consumption

Assessment of nutritional status of a community is one of the first steps in the formulation of any public health strategy to combat malnutrition. The principal aim of such an assessment is to determine the type, magnitude and distribution of malnutrition in different geographical areas to identify at-risk groups and to determine the contributory factors. In the assessment of the nutritional status of individuals and communities, anthropometric measurement plays a very important role for the following reasons; departures from normal can be often detected earlier, by anthropometry than by clinical examination; and anthropometric figures are more objective than clinical assessments ⁸.

The nutritional assessment may require encompassing nations, communities, vulnerable

segments of communities or individuals. It may be done as a part of an exercise to document current status as compared with past status or as a specific attempt to evaluate the impact of an intervention program.

Anthropometric Measurement

Anthropometry is the study of the measurement of the human body in terms of the dimensions of bone, muscle, and adipose (fat) tissue for the assessment of growth, development and health parameters. Anthropometric measurements, including length or height, weight, and head circumference, help to determine if a child is growing properly and can indicate when the child's health and well-being are at risk ⁹. The 2015-16 NFHS collected anthropometric data on the height and weight of women age 15-49 and men age 15-54 years. These data were used to calculate several measures of nutritional status such as body mass index (BMI) of the respondents.

Body Mass Index (BMI)

We used Body Mass Index (BMI) as an indicator of nutritional status of the respondent. BMI is defined as the ratio of weight (in kgs) and square of heights (in meters) of a person. The National Institute of Health (NIH) has defines the normal weight, overweight and underweight in terms of BMI rather than tadeonal weight/height chart. It is categorized as underweight (BMI<18.5 kg/m²), normal (18.5 to 24.9) overweight (BMI 25- 29.9 kg/m²) and obese (>29.9 kg/m²).

Dietary Diversity (Food Intake)

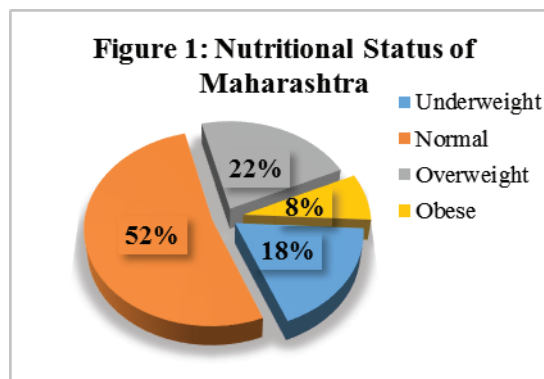
The consumption of a wide variety of nutritious foods is important for the health of the population. A well-balanced diet is required for adequate amounts of protein, fat, carbohydrates, vitamins, and minerals. The 2015-16 NFHS asked women and men how often they consume various types of food (daily, weekly, occasionally, or never). In the survey, consumption of selected foods group was assessed by asking, 'How often do you yourself consume the following items: daily, weekly, occasionally or never?' related to fish consumption, milk or curd, pulses and beans, green leafy vegetables, other vegetables, fruits, eggs, chicken or meat, fried food and aerated drinks. However, NFHS-4 data do not contain consumption data for some of WHO

food group (e.g. grain, roots and tubers). Although, for analysis purpose, we have collated daily or weekly into one and coded as ‘1’, and ‘0’ code was given to those who consumed any food item occasionally or never. It means if a respondent consumed any food from any of the above-mentioned categories, he would get one point in that food category. Simple counting of food items was done to arrive at individual food scores, which ranged from 0 to 9. After that this score has been divided into three food group categories as low (≤ 3 FG), Medium (4 FG) and High (≥ 5 FG).

Statistical Analysis

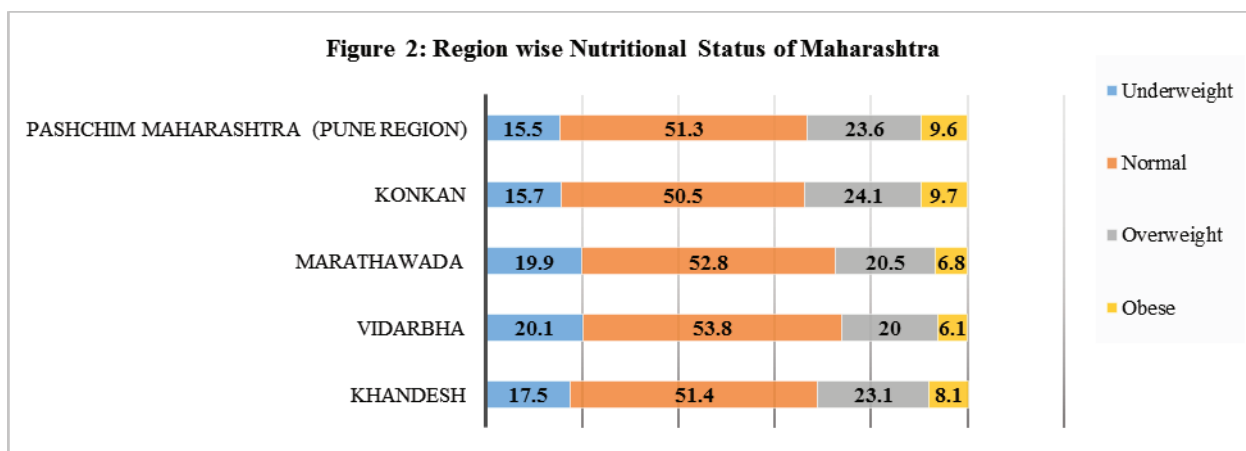
Bivariate and multivariate techniques are used to analyze the data. Descriptive statistics and multivariate technique are used to find out the significant association between predictor and outcome variables. In Descriptive statistics, chi-square test is used, and in multivariate technique binary logistic regression has been used to find out the significant effect of the predictor variables on outcome variables.

Result



Nutritional Status of Maharashtra and its region

Figure 1 shows the prevalence of underweight, overweight and obesity among the adult’s population of urban Maharashtra. Overall 8% of the respondents were obese while 22% were overweight. Most of the respondents were accounting for normal BMI classification (52%). Respondents from the Konkan region were more overweight and obese as the prevalences were high in this region (24.1% and 9.7% respectively) (Figure 2).



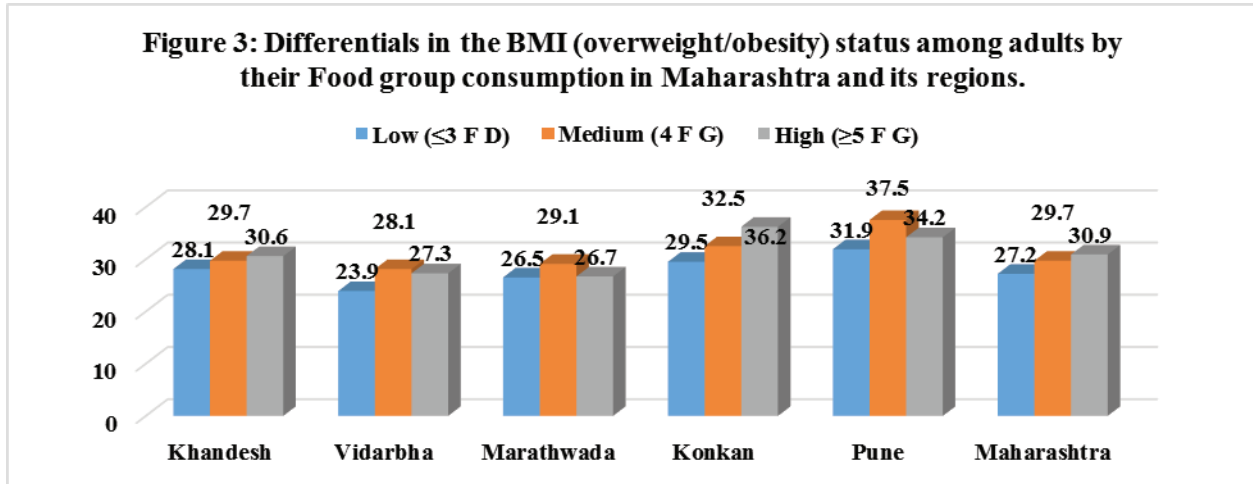
Differential in dietary intake in Maharashtra and its region

Table 1 depicts the variation in the dietary intake in the region of Maharashtra. In Maharashtra, 48.9% of the respondents were consuming milk or curd daily and 57.7% were consuming pulses or beans daily. Only 2.6 percent of the adults consuming the chicken or meat daily, however, a large proportion (43.3%) of respondents were consuming chicken or meat weekly. From the table it can also depict that the daily Consumption of milk or curd was high (59%) in Pune region followed

by Konkan (50%), Khandesh (44.2%) Vidarbha (41%) and least in Marathwada region (40.1%). In term of daily consumption of pulses and beans, it was highest in Vidarbha and least in Marathwada (49%). Again, the daily consumption of green leafy vegetables is higher (59%) and least in the Marathwada region (41%). Moreover, very less proportion of adult daily consuming chicken or meat in all the region, however, the proportion of weekly consumption of chicken or meat is higher (52%) in Khandesh region.

After accessing the food consumption patterns, we have also checked its relationship with the overweight/obesity. For that purpose, the all 9-food item merge into one index and categories it into three categories namely; ≤ 3 Food Group, 4 food group and ≥ 5 and more food group (the details methodology given in chapter 2). The bivariate analysis of food group consumption and BMI status is given in **figure 3**. Results show that the about 31% of the respondents were overweight/obesity among

those who consumed five and more group of food in a week in Maharashtra and it is 27.2 % among those who were consuming less than or 3 food group in a week. A similar finding has been also obtained in Konkan region. However, results from Vidarbha, Marathwada and Pune show that the prevalence of overweight/obesity is higher (28.1%, 29% and 37% respectively) among those who are consuming at least four good groups in a week.



Determinant of overweight/obesity in Maharashtra and its regions

Results of the multivariate analysis reiterate that respondent age, Religion, type of occupation, marital status and wealth index are the significant determinants of overweight and obesity among the adults of urban Maharashtra as shown in **table 2**. The risk of being overweight/obese was higher among those who consumed five or more food group in a week compared to those who have less than or equal to three food group in a week, however, this relationship is not significant. Age group of the respondents emerged as a vital determinant of overweight and obesity. The risk of becoming overweight or obese increased with the increase in age. Respondents in the 45-54 age group are 3.9 ($p < 0.001$) times more likely to be overweight or obese than respondents from younger age group (aged 15-24 years). The risk of overweight and obesity was higher among Muslim respondents ($OR = 1.5$; $p < 0.001$) compared with respondents belonging to the Hindu religion.

As expected, the risk of overweight/obesity is less among those who are working in the agriculture sector and working as manual skilled and unskilled labour. The risk of overweight/obesity was 1.7 times ($p < 0.001$) higher among married respondents compared to never married respondents. The wealth index has a strong significant impact on the overweight or obesity status among adults' population of urban Maharashtra. The odds for overweight or obesity increased with the increase in household wealth status. Respondents from the richest wealth index are 2.9 times ($p < 0.001$) more likely to be overweight and obese compared with respondents from the poorest wealth quintile. The odds ratio of overweight/obesity was higher among the respondents from Konkan and Pune region compared to Khandesh region, but the relationship was not significant.

Summary and Conclusion

The main purpose of our study was to examine the prevalence of overweight and obesity among adults in the urban area of Maharashtra. As well as to access the dietary intake and its association with overweight/

obesity among the adult.

The present study found that the overweight and obesity situation among the adults of urban Maharashtra is alarming. Many adults are either overweight or obese in the state. This condition could well be related to many other developed nations where the prevalence of overweight and obesity is accumulating steadily^{10,11}.

Further, Pune and Konkan region of the state having the higher burden of overweight/obese population. Both regions are more urbanized, and their dietary patterns are also different from the other region of the state. All coastal belt of the state knows as the Konkan region and the consumption of the non-vegetarian food (Fish, Eggs, chicken or meat) in the region is very high compared to other region of the state. At a state level, one-third of the population daily or weekly having fruits. It is also found that the prevalence of overweight/obesity varies with consumption of food group. The risk of overweight/obesity is higher among those who were having five or more food group in a week than those who are consuming less than or three food group in a week. However, the relationship is not statistically significant. The multivariate analysis of this study shows that age, marital status and wealth status of the household are the main significant risk factor of the overweight/obesity.

The present study shows a high prevalence of Overweight/obesity and hypertension in adults of Urban Maharashtra affecting the both-poor and the wealthier. It is essential to address the present scenario of its increasing prevalence not only in the state but also at the national level. The growing demand which appears before the Government is to address these increasing epidemics with equal importance. Timely prevention of these two will reduce the burden of many associated chronic co-morbidities. It can be accomplished either through undertaking separate urban health programme or including a particular clause in the ongoing National Health Mission programme, citing the importance of a healthy diet and physical exercise.

Limitation of the study

The survey considered only the weight and height of respondents to measure the prevalence of overweight/obesity in India, however there is a different approach/cut-point, which is appropriate to measure

the BMI, particularly for the Asian region. NFHS has collected limited information on food items. Although the demographic, socioeconomic and diet factors incorporated in this study may capture much of the variation.

Abbreviations

WHO – World Health Organisation

NFHS – National Family Health Survey

BMI – Body Mass Index

NIH – National Institute of Health

Consent to publish

Not Applicable

Availability of data and materials

The datasets used during the current study are available from the corresponding author upon reasonable request.

Authors Contribution: All authors have made equal contribution on conceptualization, analysis and in writing the paper.

Competing Interests: The authors declare that they have no competing interests.

Funding: No funding is provided.

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Identification and Removal of Mosquito Breeding Sites Using Whatsapp and Google Maps Replacing Gis in Meerut Cantonment

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Abstract

The easiest, inexpensive and most environment-friendly method to control malaria is by preventing the mosquito from laying eggs in stagnated water. Source reduction of mosquito breeding is effective measure for prevention of mosquito borne diseases especially dengue and malaria. The purpose of this study is to identify the source of breeding, pinning of precise locations and immediate implementation of remedial measures for removal of source of mosquito breeding sites.

Utilising the most popular messenger app (WhatsApp) with combination of Web mapping app (Google maps) as a tool for public health measure became very user friendly irrespective of the level of skill and inexpensive comparatively to GIS. This study has been carried under project name called "Vector Hunt".

Keywords: Vector hunt, GIS (geographic information system), WhatsApp and Google Maps

Introduction

GIS (Geographic information system) is defined as a special type of information system that is used to input, store, retrieve, process, analyse and visualize geospatial data and information in order to support decision making etc . Hence a GIS is basically a computer based information system for handling spatially referenced data and information ⁽¹⁾

In this project WhatsApp and Google maps has been utilised for successful geographical visualisation tools to locate the mosquito breeding sites from small to large size pockets. Not only locations of breeding sites that type of vegetation which surrounds the breeding sites can also be determined through this technique. This

project focused on very easy and user friendly method to identify sites precisely both manually and also remotely by pinning down the locations.

The easiest, cheapest and most environment-friendly method to control malaria is by preventing the mosquito from laying eggs in stagnated water ⁽²⁾. More than 3.9 billion people in over 128 countries are at risk of contracting dengue, with 96 million cases estimated per year. Malaria causes more than 400 000 deaths every year globally, most of them children under 5 years of age ⁽³⁾. Dengue cases have become serious public health problem in Meerut district affecting hundreds of lives and thousands of Indian lives ⁽⁴⁾. Being Meerut cantonment is one of the large cantonment using hygiene chemicals in such vast area is really expensive affair.

Major mosquito borne diseases like malaria and dengue are the fastest growing Vector borne diseases. Environmental management strategies that can reduce or eliminate vector breeding grounds altogether through improved design or operation of water resources development projects as well as use of biological controls (e.g. bacterial larvicides and larvivorous fish)

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that target and kill vector larvae without generating the ecological impacts of chemical use. At the same time, when other measures are ineffective and non-cost-effective, Integrated vector management makes judicious use of chemical methods of vector control, such as indoor residual sprays, space spraying, and use of chemical larvicides and adulticides; these reduce disease transmission by shortening or interrupting the lifespan of vectors ⁽⁵⁾.

In recent years, Geographic Information System (GIS) widely used in improving public health focusing on mosquito management to assist in minimising risk ⁽⁶⁾ but there are several pitfalls with this GIS which makes non handy at all levels. The cons compared with ‘Vector Hunt’ project has been illustrated in table 1 conclusion para.

In this project explored detecting small and large pockets of mosquito breeding at non habitual places which is real challenging. These small pockets are less visible to identify through GIS system and the accuracy of inference drawn from such data depends critically on the accuracy of each component. One can achieve a false sense of accuracy when a GIS layers a boundary map with minute detail ⁽⁷⁾. In recent years, information technologies have come to be widely used in improving public health while simultaneously reducing its cost ⁽⁸⁾.

Methodology

Project carried training under two categories (I) Job for trainees and (II) Job of trainer

Job for Trainees: It primarily includes training for WhatsApp users i.e. tradesman mate detailed for antify measures.

1) Popular apps WhatsApp and Google maps used as replacement for GIS. Reasons for choosing these apps are famous, user friendly, available in all mobile platforms (Android, IOS, KOais etc). Due to more number of android users, Android platform has been utilised to explain and same can be carry out in IOS platform too.

2) Trained to all staff/ trainees both skilled and non-skilled employees about particular feature of WhatsApp used in this project like ‘shared location’ where detailed staff share missed pockets and large Mosquito breeding

sites.

3) Step to share location: Open ‘WhatsApp’ icon, Tap the chats tab, open the conversation with corresponding contact, tap the paper clip icon and share the location

4) Due to availability of knowledge on usage of WhatsApp to all categories of employees and also easily available of large amount of internet in our country it has become easy in the project at all levels.

b) Optional: A new cheapest android mobile can be procure for this project, with new SIM card which can utilised for new WhatsApp account and for Gmail account which helps for recovery of password.

Job of Trainer:

It primarily includes compilation of data

a) Create an official Gmail account with dedicated username and password for this project.

b) Ten Steps has been explained along with pics how to Identify the sites, share the location, Compilation of breeding sites in google maps app, action on these location.

Steps:

a) **STEP 1:** Open google maps app & Log in to Gmail account, enter mail address and password to continue further. At the bottom of the screen there are few option icons.

b) **STEP 2:** Tap to ‘Saved’ option icon (Fig 1).

c) **STEP 3:** Create ‘New list’ as per convenience (Fig 1).

d) **STEP 4:** Name the list, Give list description and select List type as ‘Private’ for privacy.

e) **STEP 5:** Create list

f) **STEP 6,7,8)** Step 6,7 and 8 is job of trainee to use WhatsApp for sharing location of water collected sites irrespective of amount of water stagnated (Fig 2).

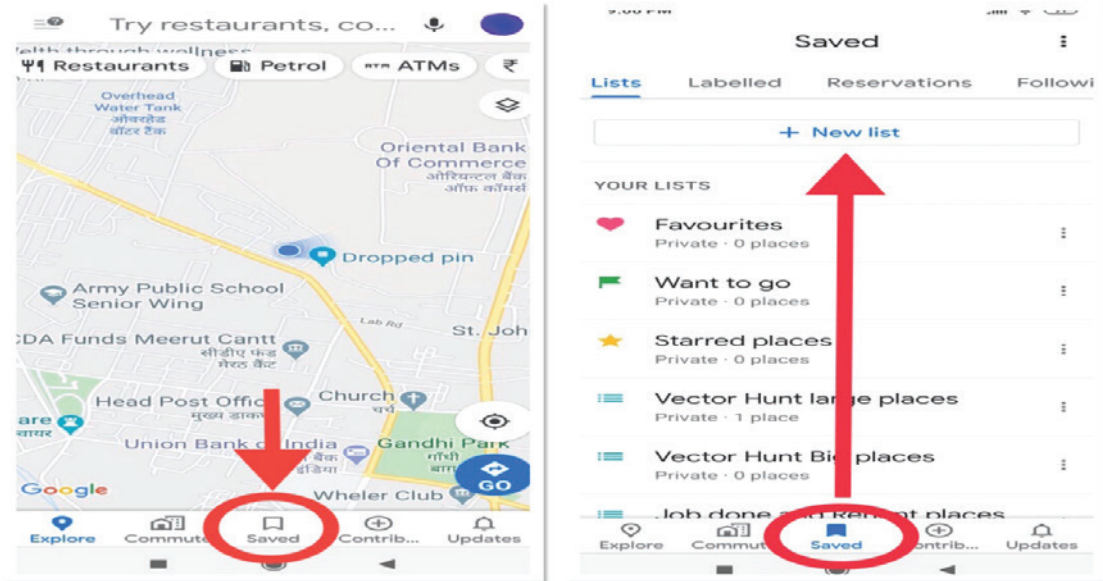
g) **STEP 9 :** Again step 9 starts with job of trainer, once location received in message form, click message and open. After ‘Red colour dropped pin logo appears’

name and save it to created list. Here in below example show Sewage treatment plant and saved it to created list (Fig 3).

h) STEP 10: Saved pin the red logo turns into blue logo as below. After appropriate preventive measures the finished task can be saved in another list for regular monitoring (Fig 3).

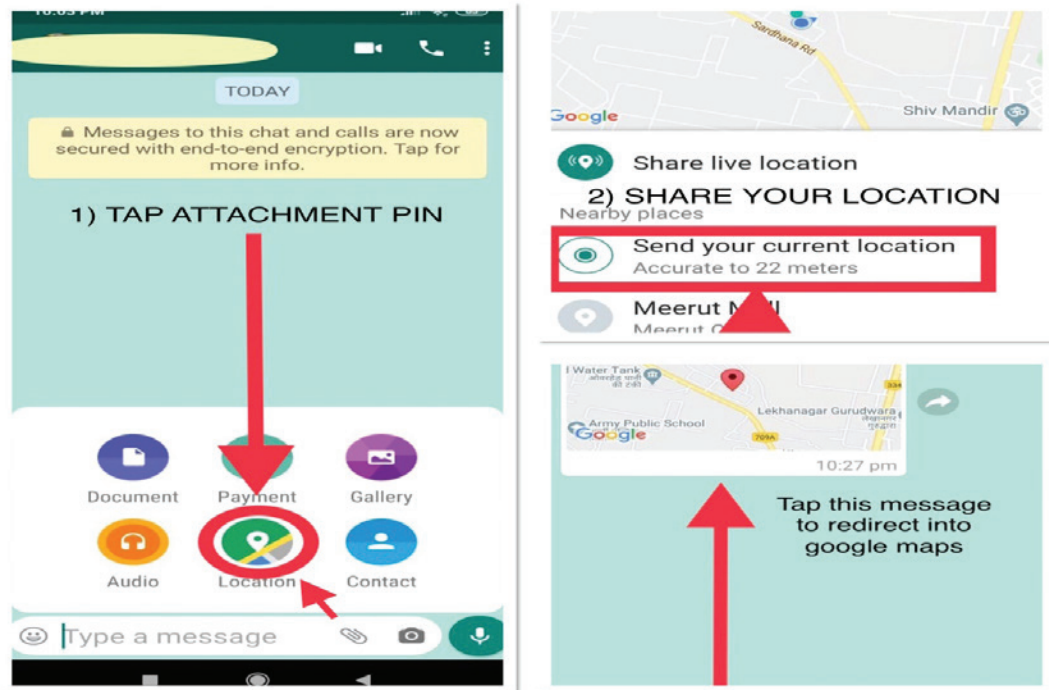
STEP 2 & 3 (Fig 1)

Figure explains how to save and create list



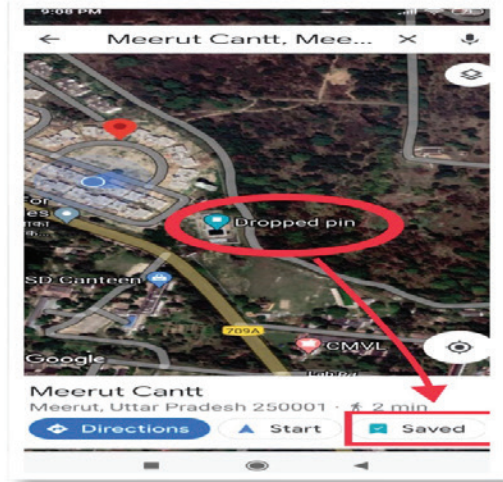
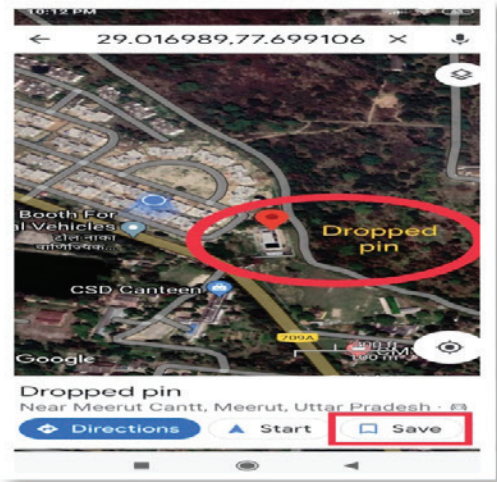
STEP 6,7 & 8 (Fig 2)

Description of sharing geo location through WhatsApp



STEP 9 & 10 (Fig 3)

Sewage treatment plant saved as potential source of breeding for regular birdwatch



Discussion and Conclusion:

This project became easier than GIS system due to easily available of real time satellite images and precise location. Based on this project the Pros and cons of the Vector hunt project and GIS system has been evaluated and as follows (Table 1)

Table 1: The comparison between GIS and readily available satellite images

Functions	GIS	Vector hunt
1) Software	Expensive (9)	Inexpensive since available in all smartphones
2) Data	Enormous data which need to modify, chances of error more and time consuming (9)	Simple touch and save, less chances of error and less time consume.
3) Requirement of skill	High professionalism required for GIS layering	Not required since usage of WhatsApp and Google maps became common tool in day to day life.
4) Internet connection	High speed wired internet requires to capture good quality images and also for further layering	Works on 2G internet also.
5) User friendly	Non user friendly	User friendly to all and easily understandable
6) Equipment	Computer / laptop mandatory	Only mobile is enough
7) Field data and accessibility	Sometimes not understood due to poor rendering images and become incomplete or obsolete or erroneous	Not applicable
8) Platforms	Available only in windows	Available in all mobile platforms like Android and IOS.

Suggestion: Due to aware of commonly used applications in day to day life this system can be replace current existing GIS system and can be include in curriculum for awareness and implementation. This system also useful to map and monitor pump houses for assessment of outbreaks, overflow and uncovered septic tanks, water pipe line leakages, drainage blockages and can be used for containment plans pinning index case containment zone and buffer zones.

Ethical Clearance: Not Required (It does not involve any experimental data on humans) and the description for knowledge sharing purpose.

Conflict of Interest Statement: There is no conflict of interest.

Source of Funding: Nil

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Innovative “RK Walker”: Transdisciplinary Multiphasic Observational Experimental Trial

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Abstract

Activities of Daily Living (ADLs) involves several physical activities like walking, climbing, etc. However, such ADLs may get compromised because of disorders where assistive devices play a key role for functional independence. Walker is a device used by people with locomotor disabilities, where stair climbing remains challenge. **Objectives:** To understand the process of making an innovative walker for stair climbing, to test and re-test its applicability with healthy adults and patients with locomotor disabilities, to dedicate the outcome of research work to improve quality of care and life. **Methodology:** Multiphasic Observational Experimental Trial, **Phase I:** Identify the need of change in traditional walker by survey, **Phase II:** Designing a Walker in AutoCAD software and hardware (RK walker), **Phase III:** To assess the efficacy of “RK Walker” compared to Traditional Walker in healthy adults, **Phase IV:** With reference to data analysis from healthy adults, Traditional standard Walker and “RK Walker” was compared for walking (TUG) and “RK Walker” for Stair Climbing (SCT) on patients with partially and non-weight bearing gait due to spinal / lower limb musculoskeletal dysfunction. **Result:** Outcome measures and feedback reports show significant impact with RK Walker as compared to traditional walker especially in stair climbing. **Conclusion:** This multiphasic observational experimental trial and novel concept extend the functional ability for stair climbing for patients with disability.

Keywords: Spinal and lower limb dysfunction, stair climbing, walker

Introduction

Activities of daily living (ADLs) involves several physical activities, such as walking, climbing, grooming, etc. One needs to be ambulatory independent to carry out all these activities. Ambulation is one of the functional requirements which gets involved in fulfilling ADLs in all age groups.

Loss of independent ambulation due to various disorders will cause loss of mobility. To be living

optimally is to keep moving functionally. Loss of mobility will be a hindrance for functional tasks. Autonomy in the area of mobility is of high value.

Independent ambulation in cases of disability can be achieved with some kind of assistive mechanism. For several years, researchers have been addressing the needs of persons with disabilities through assistive device. There are different kinds of assistive devices available to meet requirements of user. Some of the various mobility assistive devices available are canes, walkers, wheelchairs, etc. Though such assistive devices has its own limitation / benefits in functional fulfillment. [1]

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However, walker is one of the common assistive devices routinely practiced by people with lower limb disabilities. Among the assistive devices, walkers assume an important role, due to the large number of

potential users, considering its simplicity and ambulatory potential.

Line of gravity passes through body's center of mass. To maintain balance body's center of mass should be maintained over base of support. Due to lower limb disability body's center of mass gets shifted from its original position and also, the base of support is reduced leading to increased risk of falls. Use of a walker will increase the base of support hence increases the balance. [2]

There are many types of walkers, considering their constitutive materials and configurations. However Standard walker is the most common variety of walker that is used because of high level of stability and mobility. Also, there are physiological benefits of limiting osteoporosis, reducing deconditioning effects and improving peripheral circulation compared to use of wheelchair. [1]

However, there are some limitations of traditional standard walker. This aspect is clear when considering stair-climbing. While modern architecture and government policies continue to make community accessible for disabled, steps cannot be completely eliminated. [4]

A walker which can be used for walking as well as stair climbing will be of great advantage to people using walker. There is increasing need to explore technology and use it for society. Technological advances in the walkers' field have a great potential on helping people with mobility disabilities.

Ergonomics also play a very important role in this aspect. In designing such a medical product for the human use, the anthropometric data is an essential element that must be put in consideration. Without using the appropriate measurements, the product, layout or workspace may not function effectively. [5]

Smart walkers have emerged with the same structure as the conventional ones but they include additional robotic components that promote a better assistance to gait, especially considering navigation. [3]

Some of the modifications made for walker with stair climbing facility have been made. Boomer was designed by Daniel Molloy, Australia, has a futuristic

aesthetic. It allows the user to climb stairs: by pushing a button the front wheels move along to near the back wheels so that it becomes a kind of cane that helps in climbing the stairs. [6]

Great Lakes Innovations Inc. holds patent for the Stair Climber which is a walker, designed to make a regular walker adapt seamlessly to become stair-climbing walker. [7]

Still it is found that such walkers with advance mechanism are not so easily available in our present scenario. An online survey was conducted among physiotherapists to identify the need of change in traditional standard walker. Among different modifications suggested there was certain need to focus on modification in available design of traditional standard walker to use it for climbing staircase.

However, there is certain need to develop a walker which can be used by children with disability to climb staircase. A multiphasic experimental trial in which an innovative walker will be designed, manufactured and progressively tested on young healthy adults, followed by testing on adults with disability, then healthy children and finally testing on children with disability to evaluate effectiveness of the walker as well as user satisfaction with it. User feedback taken after the experimental trial in each phase will guide for further modification in innovative-walker.

Objectives

1. To understand the process of making an innovative walker for stair climbing
2. To test & re-test its applicability with healthy adults & patients with locomotor disabilities
3. To dedicate the outcome of the research work to society to add on quality of care and quality of life

Materials and Method

Materials:

- Innovative "RK Walker"
- Traditional Standard Walker
- AutoCAD software

- Metal rods & hardware parts
- SF 36 Health Questionnaire
- QUEST version 2.0 Quebec User Evaluation of Satisfaction with Assistive Technology
- Timed Up and GO (TUG) Test
- Stair Climbing Test (SCT)

PHASE III
 Young healthy Adults (SF 36 - General health status Good & above)

Age: 18 to 35 years (healthy subjects)
 Height: 5.4 to 5.6 feet

PHASE IV

Patients using walker with partial weight bearing in one lower limb

Age: 18 to 50 years
 Height: 5.4 to 5.6 feet

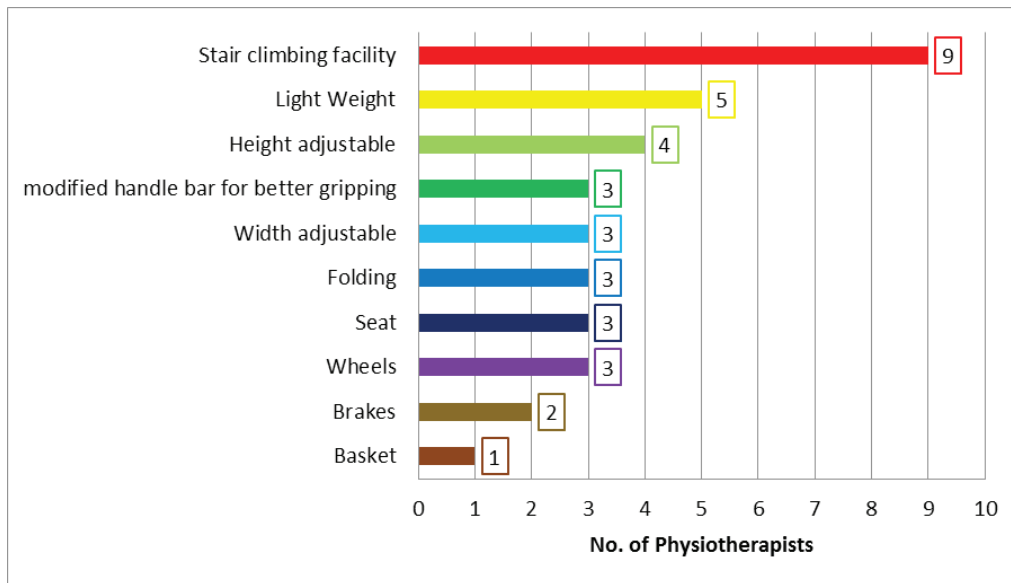
Methodology:

- Study Design:
 Multiphasic Observational Experimental Trial
- Inclusion Criteria:

PROCEDURE

PHASE I

It's a multiphasic study trial. After Ethical committee approval an online survey was conducted in Phase I using google form. Mailed to various leading Physiotherapists, who gave opinion about the need of modification in traditional walker.



Graph 1: Modifications suggested by Physiotherapists in Traditional Standard Walker

INTERPRETATION: 20 physiotherapists suggested the need of modification in traditional standard walker. Individual modification suggested and number of physiotherapists is represented in Graph 1. Stair climbing facility was suggested as modification in traditional standard walker by maximum physiotherapists who participated in survey.

PHASE II

A raw model of innovative walker was made inside RK University campus. There was some difficulty for locking stability while climbing staircase using it. Further, designing of final model of innovative RK walker with locking stability was done with help of

engineers using AutoCAD software. Bill of material and application was given for financial support to RK University for project funding which was granted. Final model of RK Walker was manufactured in collaboration with Kelco Industries.

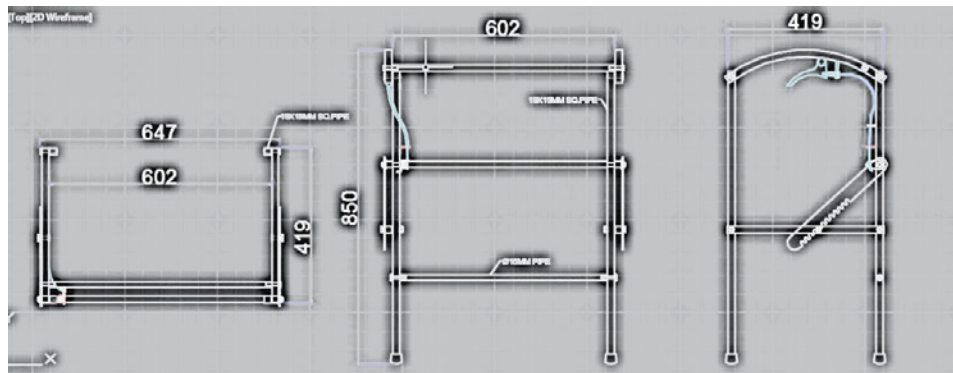


Fig. 1 AutoCAD

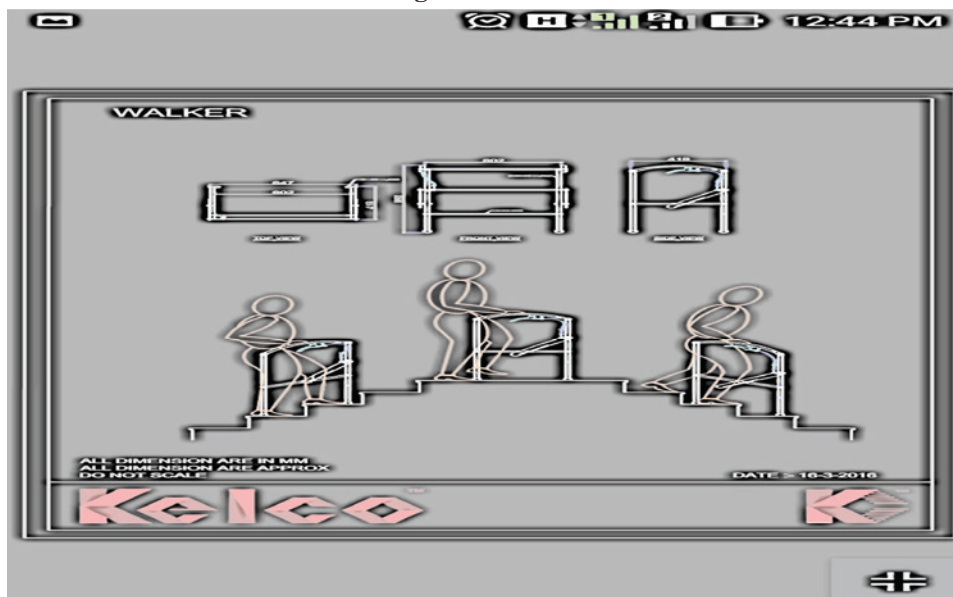


Fig. 2 AutoCAD simulating on steps

PHASE III

For testing of RK Walker subjects were selected based on inclusion criteria. Consent were taken, Timed Up and Go (TUG) Test was done with both traditional standard walker and RK Walker. And Stair Climbing Test (SCT) was done with RK Walker. Subject had to keep one leg in non-weight bearing during TUG Test and SCT.

In TUG Test time taken to rise from a chair, walk 3m, turn, walk back to the chair, then sit down wearing regular footwear and using walker was noted. Pulse rate (PR) was taken at rest and after TUG Test with traditional standard walker and RK Walker respectively.

In SCT time taken to ascend and descend a flight of stairs was noted. 10 steps with 18cm step height was used. PR was taken at rest and after SCT with RK Walker

After TUG Test and SCT subject's feedback for RK Walker was collected using QUEST 2.0

PHASE IV

With reference to positive result and data analysis from healthy adults, Traditional standard Walker and "RK Walker" were compared for walking using TUG Test and "RK Walker" for SCT on patients with partially and non-weight bearing gait due to spinal and lower limb dysfunction.

For testing of RK Walker patients were selected based on inclusion criteria. Consent from patients were taken. TUG Test was done with both traditional standard walker and RK Walker. And SCT was done with RK Walker.

Pulse rate (PR) was taken at rest and after TUG Test with traditional standard walker and RK Walker respectively.

In SCT time taken to ascend and descend stairs was noted. 10 steps were used wherever possible. However, controlled environmental condition was not maintained as the test procedure was carried out at varied outpatient department where step height was not same. PR was taken at rest and after SCT with RK Walker.

Following tests, patients' feedback for RK Walker was collected using QUEST 2.0.



Fig. 3 SCT with RK Walker

Result

PHASE III:

On analyzing scores of TUG Test for both Traditional Standard Walker (21.40 seconds) and RK Walker (24.33 seconds) in healthy subjects, we have observed that both were efficient in walking on flat surface. However, time taken for TUG Test was few seconds less with standard walker than with RK walker in healthy subjects.

The mean score of resting PR (77.80) and PR (86.47) after TUG Test with Traditional Standard Walker, PR (86.43) after TUG Test with RK walker and PR (87.30) after SCT with RK Walker in healthy subjects which shows that exertion level during walking remained almost same with both the walkers and also

shows the exertion level during stair climbing with RK walker. Considering these information modifications can be done in model of RK walker.

QUEST 2.0:

QUEST version 2.0, includes 12 items to evaluate satisfaction with assistive device and its services. In that 8 questions are related to Assistive device and 4 questions are related to Services provided for assistive device. In this study first 8 questions related to 8 satisfaction items of assistive device were taken for RK Walker.

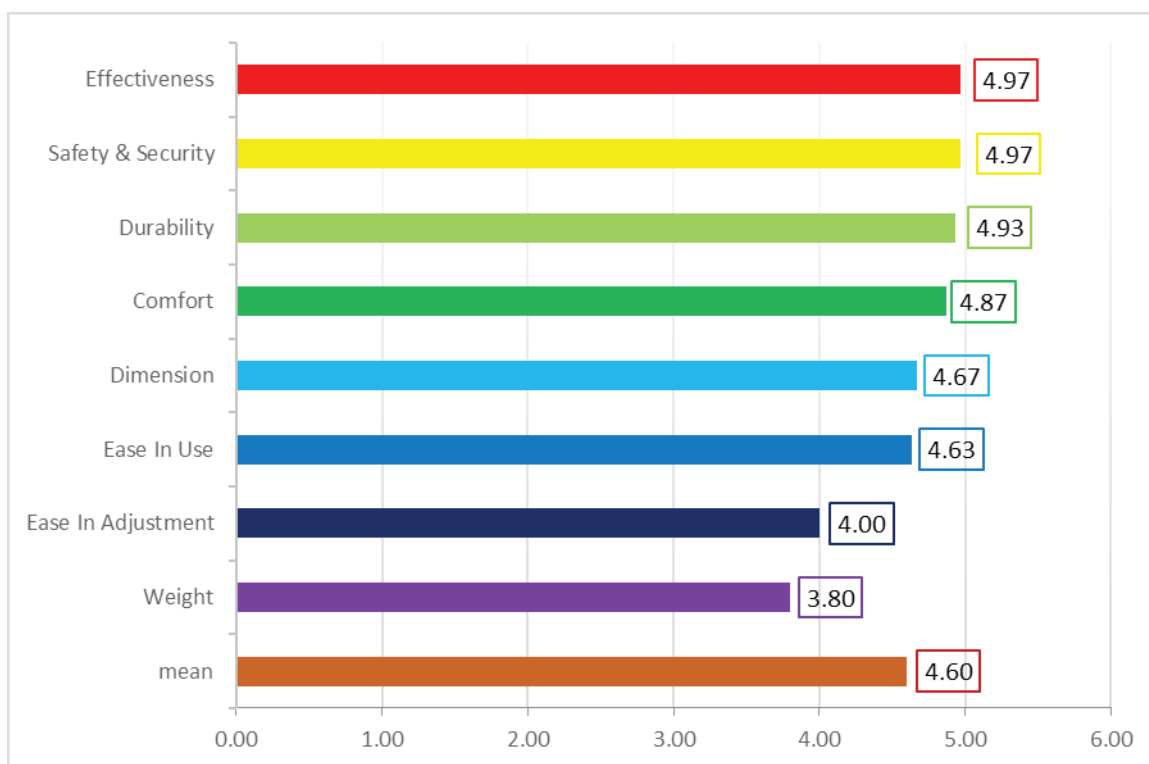
The first 8 satisfaction items include dimensions, weight, ease in adjustment, safety & security, durability, ease in use, comfort and effectiveness.

Scoring:

- 1: Not satisfied at all
- 2: Not very satisfied
- 3: More or less satisfied
- 4: Quite satisfied
- 5: Very satisfied

Mean of each question was taken.

Areas of QUEST 2.0 and their mean scores were taken. Total mean score is 4.60 out of 5 which suggest that overall RK walker is quite satisfactory in meeting needs for stairclimbing and walking on flat surface by healthy subjects.



Graph 2: Mean value of individual feedback from QUEST 2.0 by healthy subjects

INTERPRETATION: On analyzing Graph 2, the scores from QUEST 2.0, we have observed that weight (3.8 out of 5) and ease in adjustment (4 out of 5) has shown less impact for RK walker. Whereas, effectiveness (4.97 out of 5), safety and security (4.97 out of 5), durability (4.93 out of 5), comfort (4.87 out of 5) has shown efficient scores for satisfaction with RK walker.

Results for Phase IV

On analyzing, the scores of TUG Test for both Traditional Standard Walker (55.2 seconds) and RK Walker (60 seconds) for patients, we have observed that both were efficient in walking on flat surface. However, time taken for TUG Test was few seconds less with standard walker than with the RK walker in patients.

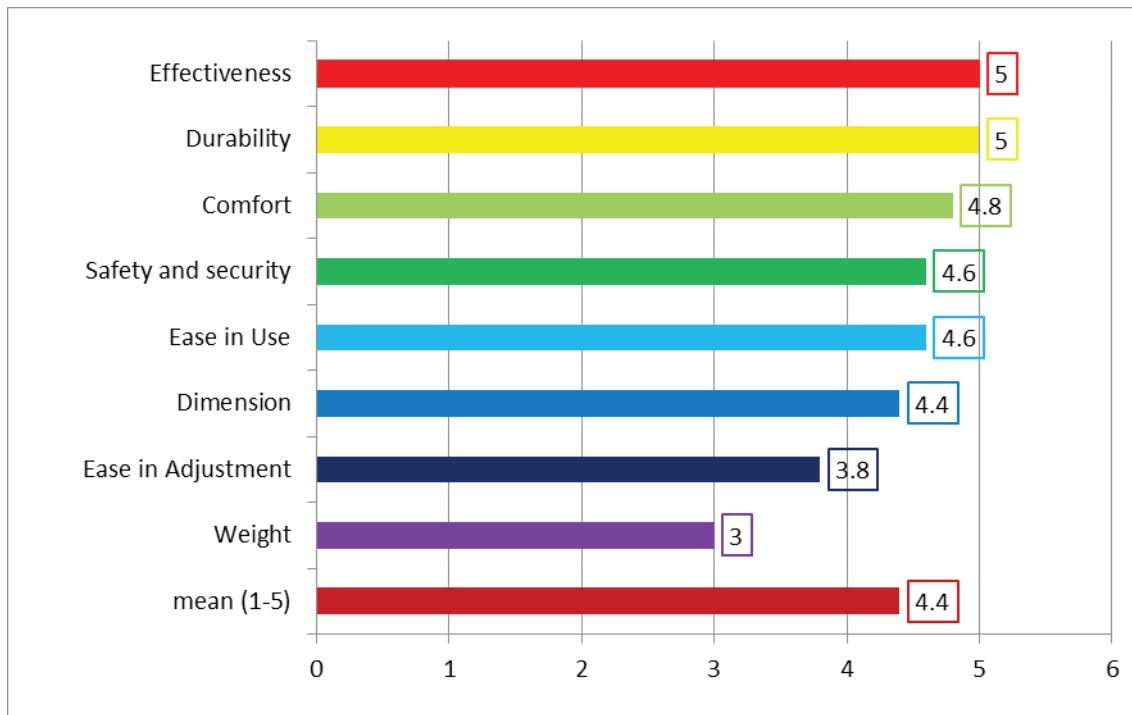
The mean score of resting PR (80), PR (86) after TUG Test with Traditional Standard Walker, PR (86.4)

after TUG Test with RK walker and PR (87.2) after SCT with RK Walker in patients which shows that exertion level during walking remained almost same with both the walkers and also shows the exertion level during stair climbing with RK walker. Considering these information modifications can be done in model of RK Walker and training can be imparted regarding its efficient use in future to reduce exertion level during use of RK walker in stair climbing and walking.

QUEST 2.0:

QUEST 2.0 was taken from patients in same way as described for healthy adults for evaluating satisfaction with RK Walker.

Total mean score was 4.4 out of 5 which suggested that overall RK walker was quite satisfactory in meeting needs for stairclimbing and walking on flat surface.



Graph 3: Mean value of individual feedback from QUEST 2.0 by patients

INTERPRETATION: On analyzing scores from QUEST 2.0 we have observed that weight (3 out of 5) and ease in adjustment (3.8 out of 5) has shown less impact for RK walker. Whereas, effectiveness (5 out of 5), safety and security (4.6 out of 5), durability (5 out of 5), comfort (4.8 out of 5) has shown efficient scores for satisfaction with RK walker by patients.

Discussion

As per the need of users and innovative design - a model with adjustment for stair climbing up and down requires quality training to its users. However, the quality of material and testing tools must be validated

for higher research. Interdisciplinary approach from patients, physiotherapists, engineers, industrial experts, and software designers remain the integral part of designing innovative “RK Walker”.

Comparison of difference between mean score of TUG Test with traditional standard walker and RK Walker among healthy subjects and patients shows that on average healthy subjects took 2.93 seconds while patients took 4.8 seconds in TUG Test with RK Walker than with Traditional Standard Walker. So, patients took 1.87 seconds more than healthy subjects for TUG Test with RK Walker which is very less.

Tuck-Voon H et al (2013) found increase in satisfaction score in QUEST 2.0 with intelligent wheelchair system after few numbers of trial and training. [10] Further training with RK Walker may increase patients' performance and confidence level and minimize time taken with RK Walker. Training and familiarization with the device may also increase performance with the device. [10]

Efficacy of RK Walker among healthy adults was evaluated first and then among patients to assure safety of patients with all trials. After successful trial with adult patients such device can be manufactured considering pediatric age group.

The RK Walker is designed and developed to benefit the community. Also person using walker when come across steps cannot always put walker aside and use hand rails for support. Independent access to steps with use of walker by disabled improves quality of life.

Conclusion

In context to the result and discussion, aids for stair climbing remains important area for patients and therapists' perspectives. Skill, time and cost-effective approach in designing and testing a walker with support from industrial experts has shown advantages of interdisciplinary research.

Limitations

Difficult to practice on staircase having different size of steps, though it's rare to be possible but must be taken into consideration.

Future Scope

Further study can be done in controlled environmental conditions with patients.

RK Walker can be modified & made more user friendly, based on suggestions obtained in QUEST 2.0

Experts and collaboration:

· Dr. Kartik Kothari, HOD, Mechanical Engineering Dept., School of Engineering, RK University.

· Mr. Anil Kachhadiya and Mr. Pratik Muliya, Faculties, Mechanical Engineering Dept., School of

Engineering, RK University.

· Mr. Bharat Kakadiya, Proprietor, Kelco Industries, Rajkot.

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Ethical Approval: Ethics Committee (EC), School of Physiotherapy, RK University, Rajkot approved by The Central Drugs Standard Control Organization.

Conflict of Interest: Nil

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Comparison of Median Urinary Iodine Concentration as an Indicator of Iodine Status among Pregnant and Altered Thyroid Function Women - A Pilot Study

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Abstract

Background: Iodine is vital for synthesis of thyroid hormones for brain development especially during gestational period and early childhood. Therefore variations in iodine exerts some effects on normal and sick thyroid gland.

Objective: To compare and validate whether the median Urinary Iodine Concentration (mUIC) varies in different physiological conditions.

Method: A snapshot study was conducted among sixty subjects, selected conveniently to measure the Urinary iodine concentration (UIC) by using spot urine sample in all the groups. Also dietary habits, knowledge, attitude and practice of iodine was studied.

Results: The values for mUIC were highly significant ($P < 0.01$) between the groups. Knowledge, attitude and practice varied significantly between the groups. It was surprising to observe, high mUIC in healthy non-pregnant women.

Conclusion: Continuous intake of high iodine may trigger thyroid hypo-function. A positive change with better education regarding the iodine intake and its consequences might help in reducing the burden of high iodine intake.

Key words: Iodine status, goiterogens, food frequency

Introduction

Iodine is an essential component for the synthesis of thyroid hormones. Deficiency causes goiter and hypothyroidism and excess may lead to thyroid

dysfunction, as iodine exerts some effects on the normal and the sick thyroid gland.⁽¹⁾ Urinary iodine excretion (UIE) is a good marker of recent dietary iodine intake for assessment of iodine deficiency in community, and urinary iodine (UI) analysis is the most common biochemical method for assessing the iodine status of populations to monitor dietary iodine intake.⁽²⁾ Previous studies have emphasized mainly on adequate iodized salt intake and assessment of household salt consumption, but issues like dietary habits, knowledge, attitude and behavioral practices of salt intake among population are much less explored throughout the country.⁽³⁾

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Aims and Objectives

To assess and validate the UIC in women (pregnant and non-pregnant) with normal and altered thyroid functions and to study the frequency consumption of foods rich in iodine and goiterogens along with the aspects of knowledge, attitude and practice of using iodized salt.

Method

Subject selection

The present cross-sectional study was conducted in Mysuru district of Karnataka, Southern India. Sixty subjects were recruited based on convenient sampling and grouped into four (n=15 each). Group1 (healthy non-pregnant), group2 (non-pregnant with altered thyroid function), group3 (pregnant with altered thyroid function) and group4 (healthy pregnant women) aged between 18-40 years, from University of Mysore, Apollo hospital and Cheluvamba hospital, Mysuru.

Inclusion criteria: group1 and group4 - healthy non-pregnant and pregnant (any trimester) women without any metabolic disorders, for group2 and group3- pregnant (any trimester) and non-pregnant women with altered TSH levels without any other metabolic disorders, age matched.

Urinary Iodine Concentration

The UIC was measured in spot urine samples from all the groups. The samples were collected in deionized plastic vials and preserved at -20°C in refrigerator until analysis. The UI content was determined by digesting with ammonium persulphate and estimated by Sandell-Kolthoff reaction with slight modifications.

Anthropometric Measures

Anthropometric measurements like height, weight, triceps-skin-fold (TSF) and mid-upper-arm circumference were measured (MUAC) according to the standard anthropometric techniques. The skin folds were taken with the help of a standard steel precision calipers. The accuracy of all the instruments was assured by calibrating before use. Body Mass Index (BMI) (kg/m²) was calculated.

General Questionnaire- dietary data, knowledge, attitude and practice,

A semi-structured questionnaire was developed by the authors to collect dietary information regarding frequency consumption of foods rich in iodine and goiterogens, 24 hour recall, salt intake was calculated by Anderson et. al 2008⁽⁴⁾, and the daily iodine intake was calculated using the formula- Daily iodine intake(μg/day) = UIC(μg/L)x0.0235xbody weight (kg).⁽⁵⁾

The responses for questions administered viz., type of salt used, preference of salt, reason for preference; use of salt at the table, its frequency (daily, frequently, occasionally and never) and its addition during food preparation were obtained accordingly. Data on the iodine knowledge viz., do they have knowledge on iodine, its sources, importance, current status in Mysuru and opinion whether they are meeting daily requirement was obtained.

Food Frequency Questionnaire

Food sources that are known to be good source of iodine and goiterogens were grouped into cereals, millets and pulses (oat, corn, field beans, soybeans, cowpea, peas), vegetables and fruits (spinach, drumstick leaves, tapioca, cabbage, cauliflower, potato, apple, banana, grapes, pineapple), oils, fats and nuts (coconut dry & fresh, apricots, walnut, pistachio, groundnut, almond, fennel seeds, black-pepper, cinnamon), Milk and animal foods. Frequency consumption of individual foods was recalled during the participants visit as per the standards. Later the individual foods were grouped according to four food groups and frequency was summed to give a composite score of consumption and mean percentage was calculated for individual food groups.

Data Analysis

The data was compiled and analyzed using SPSS 16 software. Median was calculated for UIC, Mean and SD was calculated for anthropometric measurements and salt intake. Significance between the groups was studied by using ANOVA. Results were expressed in percentage and Chi-Square Test and Fisher's-exact test were used to compare the knowledge, attitude and practice between the study population (P<0.05 was used as significant).

Results

Median UIC, Salt and daily iodine intake

Significant difference ($P < 0.001$) was observed for mUIC between the groups. Higher mUIC was noticed in group2, group3 compared with group1 and group4 respectively. Also significant difference ($P < 0.05$) was observed between the groups for BMI, weight and TSF. High BMI, increase in weight and TSF was observed in group2 and group3 compare to group1 and group4 respectively. No significant difference was observed between the groups for MUAC. The average salt consumption was higher in group3>group1>group2>group4 and the iodine intake is as shown in (Table 1).

Knowledge, attitude and practice on iodine

The knowledge on iodine, its sources and importance was statistically significant between the groups (Table 2). Group1 had more knowledge about iodine, its sources and importance. Attitude and practice of using iodized salt are also discussed. Significant difference ($P < 0.05$) was observed for salt preferences and adding salt during the time of eating, while other parameters showed no significance.

Frequency of foods consumed

The locally available foods rich in iodine and goiterogens were grouped into four basic food groups⁽⁶⁾ and the mean consumption of these foods were more by group1 and group4 compare to group2 and group3 respectively on daily and weekly basis (Figure 1).

Table 1: median UIC, anthropometric measurements, Salt and iodine intake per day of different groups

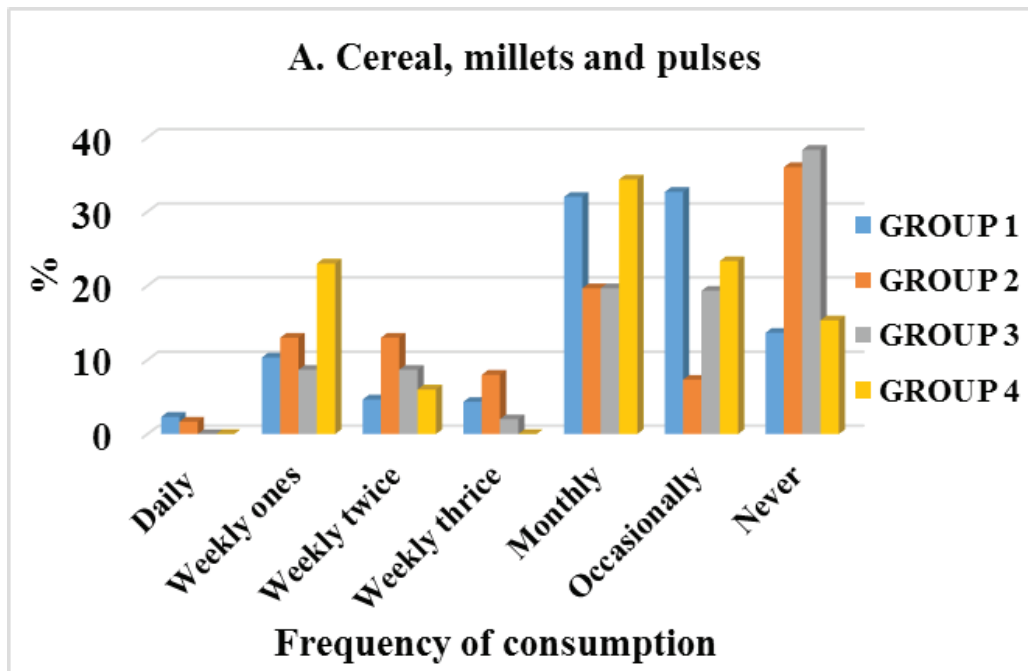
Parameters	Group 1	Group 2	Group 3	Group 4	P
mUICa ($\mu\text{g/L}$)	300.260 (80-750)	305.00 (210-550)	403.981 (116-456.54)	200.68 (59.23-572)	0.000*
Weight (Kg) b	53.969 \pm 10.143	66.447 \pm 8.978	62.08 \pm 10.373	59.333 \pm 7.556	0.005*
BMIb	21.738 \pm 2.948	26.260 \pm 3.115	25.181 \pm 10.373	22.742 \pm 4.251	0.004*
MUAC (cm) b	25.055 \pm 2.225	23.4 \pm 5.717	20.947 \pm 7.174	21.68 \pm 3.295	0.120
TSF (mm) b	13.466 \pm 4.290	14.367 \pm 3.778	21.168 \pm 8.591	16.467 \pm 5.765	0.001*
Salt intake (g/day) b	9.657 \pm 2.652	9.528 \pm 4.712	10.145 \pm 3.447	7.748 \pm 3.513	NS
Iodine intake ($\mu\text{g/day}$)a	230 (68-329)	391.04 (141-633.12)	425.82 (302.14-699.13)	267.9 (112.8-353.68)	NS

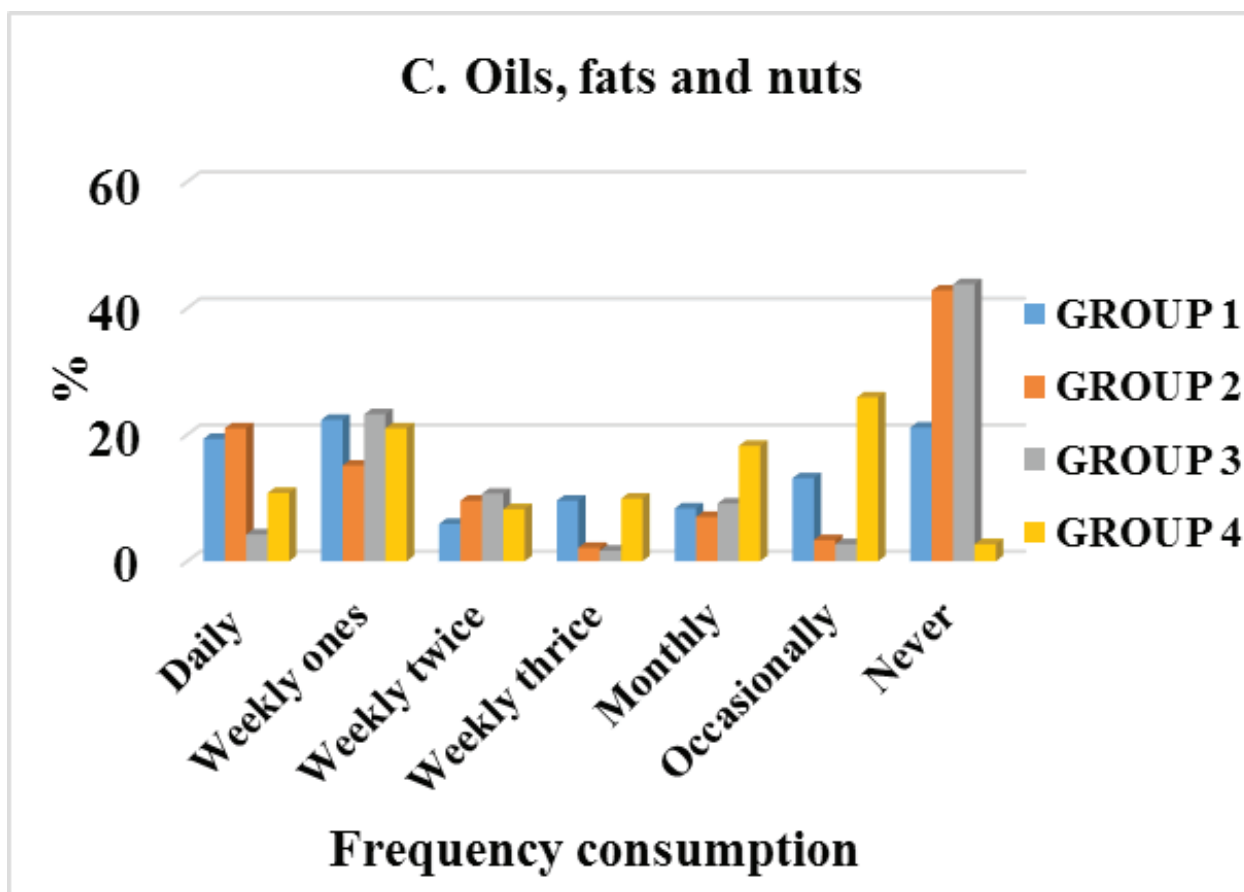
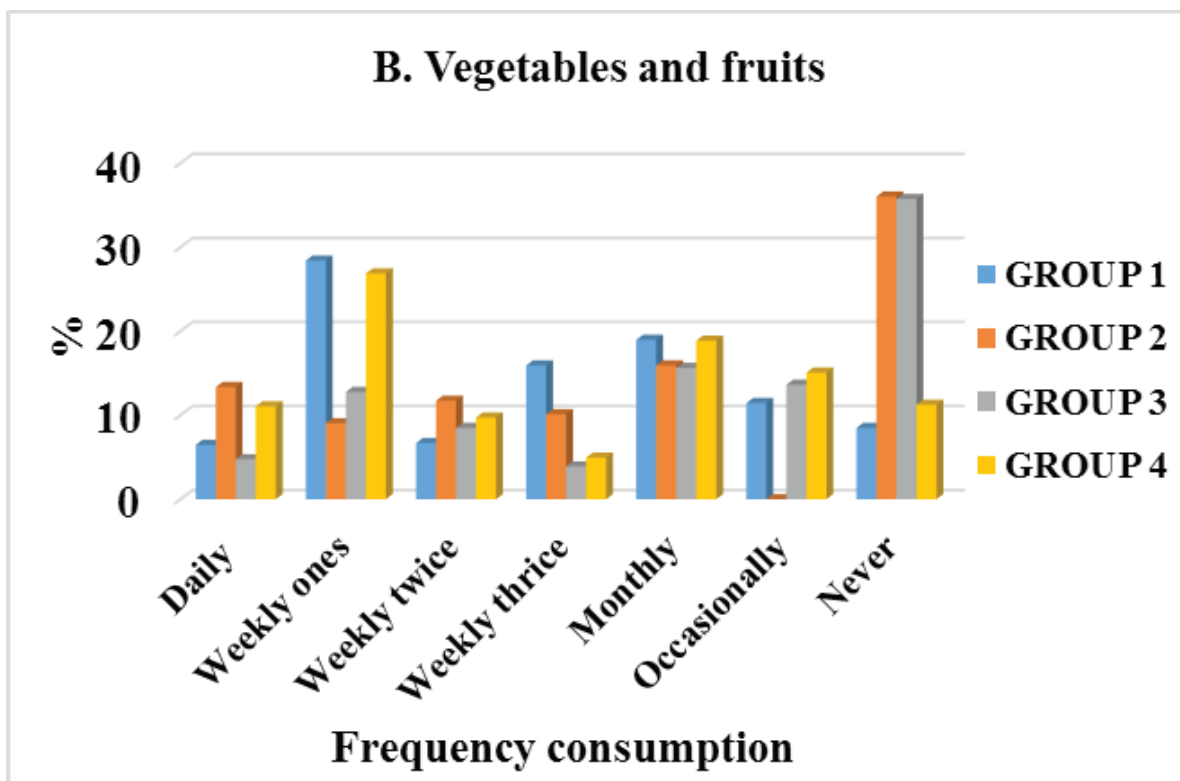
^a median(IQR), ^bmean \pm SD. *ANOVA was applied to test the significance between the groups at $*P < 0.05$. NS-no statistics computed

Table 2: Knowledge of iodine among different groups

		Group 1 (%)	Group 2 (%)	Group 3 (%)	Group 4 (%)	P
Knowledge on iodine	Yes	100	46.7	33.3	40.0	0.000*
	No	0	53.3	66.7	60.0	
Knowledge on sources of iodine	Yes	100	33.3	46.7	53.3	0.000*
	No	0	66.7	53.3	46.7	
Importance of Iodine	Yes	100	26.7	13.3	26.7	0.000*
	No	0	73.3	86.7	73.3	
Current iodine status in Mysuru	Too high	6.7	0	0	0	0.179
	Too low	13.3	0	0	6.7	
	Don't know	80.0	100	100	93.3	
Meeting daily iodine requirement	Agree	26.7	20	20	26.7	0.930
	Disagree	6.7	0	0	0	
	Don't know	66.7	80	80	73.3	

*Significant difference (P < 0.05) with chi-square and fisher-exact test between different groups





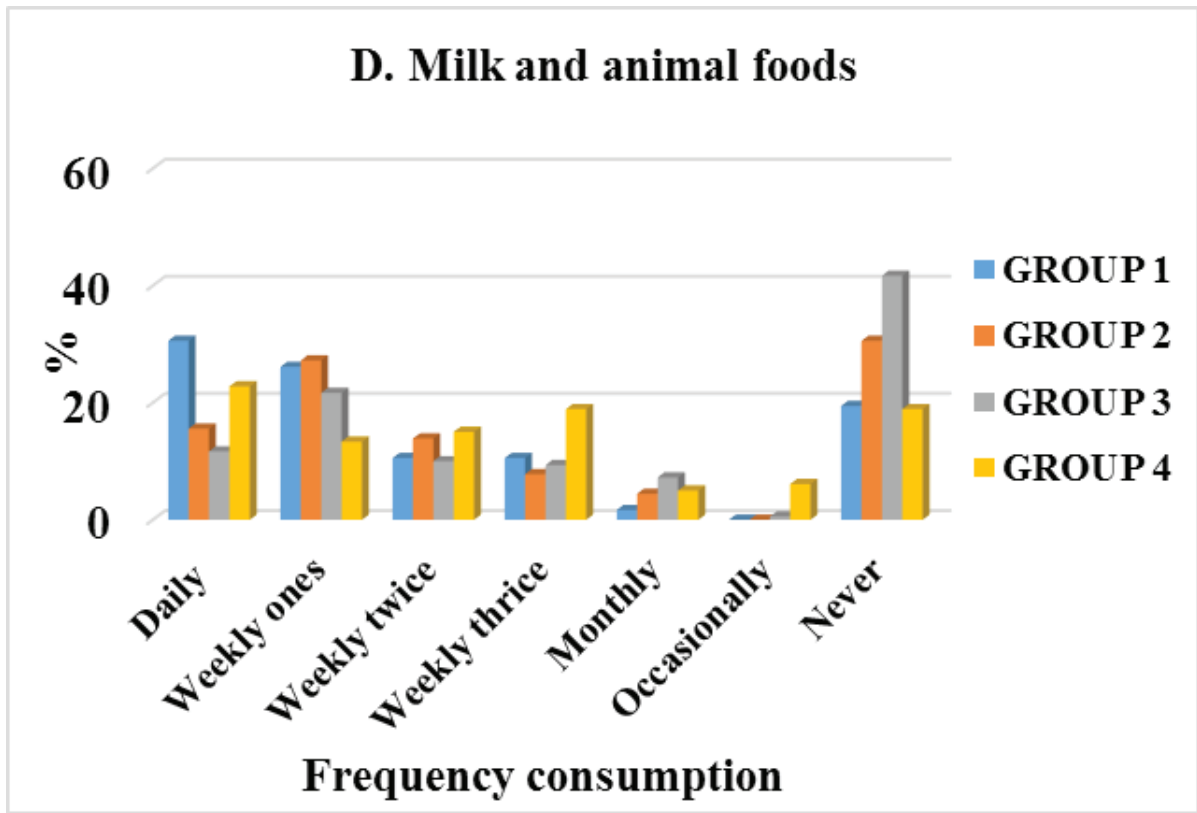


Fig. 1 (A, B, C, D): Frequency consumption of foods rich in iodine and goiterogens (%)

Discussion

To the best of our knowledge, the current pilot study is first of its kind to report iodine status among women. It was evident from the results that the mUIC was higher than the normal range in healthy non-pregnant and adequate in pregnant women.⁽⁷⁾ It shows that, according to recommended values, iodine excretion was excess. Excess iodine intake may cause adverse health effects by increasing the risk of sub-clinical and overt-hypothyroidism and may also increase the prevalence of autoimmune thyroid diseases.⁽⁸⁾ Our results were in agreement with the study by Shrestha et al. 2017 which reported that, thyroid hypo-functioning causes excess UIE. Conversely, high consumption of dietary goitrogens such as cruciferous vegetables, water and also vegetables contaminated with agricultural fertilizers such as nitrates may also contribute to increased UIE.⁽⁹⁾

Increase in weight and corresponding increase in BMI was observed in group2 and group3 compared with group1 and group4 respectively, which may be due to more number of hypothyroid cases in the groups. These

findings were in consistent with the study done by Han et al. During early pregnancy high BMI (> 24 kg/m² for Asian women) may be an indicator of maternal thyroid dysfunction.⁽¹⁰⁾ Increase in TSH in obese may be due to active endocrine organs that produce leptin which play a key role in the process of TSH regulation, linked to hypothalamic-pituitary thyroid axis.⁽¹¹⁾

Increased salt intake and daily iodine intake was observed in group3. Though the upper limits for daily iodine intake is 900 µg/day for adolescent and pregnant women, continuous exposure to high iodine intake may lead to maternal subclinical hypothyroidism.⁽¹²⁾ Relatively high prevalence of excessive iodine intake in normal non-pregnant women may be due to consumption of iodine rich foods (milk and dairy products) along with iodized salt which was estimated through 24hr dietary intake and food frequency.

Knowledge of iodine was better among group1 compare to other groups. The study by Kumar et al.2013, showed 72% population had knowledge about iodized salt. This knowledge difference may be due

to difference in the education, population distribution and salt consumption pattern which is the matter of serious concern.⁽¹³⁾ Similar results were observed for the knowledge on iodine sources. Most of our study population were unaware about the iodine importance, current iodine status and also whether they were meeting the daily iodine requirement or not, which might be due to lack of awareness about iodine.

It was observed that all the groups consumed iodized salt, due to its easy availability in the region. Powdered salt was preferred among all the groups except group4, stating as better taste, quality and used traditionally by their families. The practice of using table-salt was found in all the groups but the frequency intake varied i.e group1 and group3 consumed daily while other groups consumed frequently and occasionally. Among the groups, majority added salt before rather at the end of cooking. While other studies in India have reported that 92.9% of study population added salt during cooking.⁽¹⁴⁾ Loss of iodine by sublimation can be minimized by adding iodized salt after heat treatment, rather during cooking as traditionally followed in India.⁽¹⁵⁾ The participants in group1 showed better knowledge and practice of using iodized salt. Education, endorse people to understand and act upon the information regarding iodized salt consumption at their household level. The improved literacy status was associated with good knowledge and attitude of the participants which is unswerving with the other studies.⁽¹⁶⁾

Currently, the national iodine databases is not available for Indian foods.⁽¹⁷⁾ The data on FFQ revealed that the consumption of locally available iodine rich foods was less by group2 and group3, which may be due to the counselling provided at one hospital by the dietician at the time of treatment. The recent data on 24h dietary recall showed that the frequency consumption of milk was more in all the groups followed by chicken and egg but the exact iodine content in these foods is not known. The Iodine content in Indian milk samples may occur at higher concentration ranging between 26-604 µg/L⁽¹⁸⁾ and the iodine content in food may vary widely, depending on location and farming practices.⁽¹⁹⁾ Therefore it is controversial whether the excess mUIC in group1 is due to the consumption of iodine rich foods in this case milk, unless exact amount of iodine is known.

Limitations

The daily iodine intake was not directly measured from food. Urinary iodine experiences day-to-day variation, hence a single spot urine sample do not capture an individual's iodine status. However, further research with larger population and a longitudinal study which includes measurement of UIC during pregnancy, dietary patterns, selected biochemical parameters and imparting dietary counseling is under progress.

Conclusion

Excess UIC may increase the risk of sub-clinical and overt-hypothyroidism and could increase the prevalence of autoimmune thyroid diseases in healthy population hence need to be carefully considered. Also, our study revealed that education played an important role in better attitude, knowledge and practice among the groups. A positive change in the attitude and practice might help in reducing the burden of high iodine intake.

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Conflict of Interest: Nil

Ethical Clearance: The study protocol was reviewed and approved by the Institutional Human Ethics Committee (IHEC-UOM No.156/Ph.D/2017-18) and written consent was obtained prior including the subjects.

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Mode of Teaching in Anatomy- Perception of 1st Year Medical Undergraduates

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Abstract

Introduction: To analyse and assess the perception of medical students on different teaching aids which are normally used in teaching and their attitude towards it.. Time to time evaluation of medical curriculum by experts is the routine practice in medical education. A comparison between the use of recent advanced teaching tool and the traditional way of teaching is challenging. However the student's perception and opinion is equally important because it is meant for them.

Materials and Methods: A questionnaire was designed covering the different aspects of lecture. It was given to 150 medical students of first year students of Sri lakshmi Narayana Institute of Medical Sciences. Informed consent was taken by the participants and confidentiality was maintained. The questionnaire was assimilated and analyzed statistically. A personal interview was also conducted to them to know their better suggestions.

Result : In our study HIGH SATISFACTION INDEX (SI) for the teaching aids were for Powerpoint + Blackboard teaching. As for teaching methods students preferred combination of teaching followed by small group discussion and group assessment. However, under individual teaching tool they opted for Powerpoint teaching only (80%).

Conclusion: The combination of teaching methods using technology is more effective when compared to didactic lectures. This observation and application may probably break the monotonous mode of lectures .

Keywords: Teaching, Questionnaire, Medical Students, Teaching Aids.

Introduction

Teaching is an art. To improve the academic performance and attitude of the students , teachers should carefully select and use teaching aids that will make them understand, learn and reproduce the subjects well. The best way to a students mind and heart is through teaching, hence its necessary to carefully choose the mode of teaching which will provide complete effectiveness. The best way of assessment is asking directly to them.

The most preferred form of learning which stimulate both visual and auditory senses is still considered to be

didactic lectures. Chalk And Board was the traditionally followed form back then but with the advent and profuse availability of technology at finger tips, electronic presentations has become more easy and simple. But still the difference in opinion regarding the superiority of method of teaching is still a debate.

Use of teaching aids in medical education technology is swiftly changing from blackboard to virtual simulations and teaching methods range from lectures to integrated teaching.¹ If we look back at the literature there is no clear cut opinion as to regarding the preferred method .² To make learning more interesting and effective we intend to study the feedback from

students about the preferred mode of teaching so that it can be adopted by teachers to improve the academic performance of the students.

Materials and Methods

The study was conducted for 150 students of first year MBBS students of Sri Lakshmi Narayana Medical College and Hospital, Puducherry. A total of 150 (male, female) students were incorporated in the study. A questionnaire survey was conducted to establish the opinion of medical students regarding the preferred mode of teaching.

Teaching-aids used in study were :

1. Black board alone
2. OHP (Over Head Projector) alone
3. Power Point presentation (PPT) alone
4. Over Head Projector (OHP) + Black board
5. PowerPoint presentation (PPT) + Black board

Irrespective of the teacher and topic, the students were asked to grade the above mentioned teaching aids as below.

A grade: most helpful to understand, remember and reproduce.

B grade: more helpful to understand, remember and reproduce.

C grade: helpful to understand, remember and reproduce.

D grade: not helpful to understand, remember and reproduce.

E grade: not at all effective

Further the students were asked to grade the following teaching methods :

1. Teaching followed by self study
2. Teaching followed by individual assessment

3. Teaching followed by small group discussion
4. Teaching followed by small group discussion and assessment
5. Teaching followed by individual assignment on the topic
6. Teaching followed by small group assignment on the topic

The students were encouraged to furnish their unbiased independent opinion after obtaining informed consent. The response obtained from the students were statistically treated to calculate the high Satisfaction Index (SI) for Teaching aids and Teaching methods separately¹.

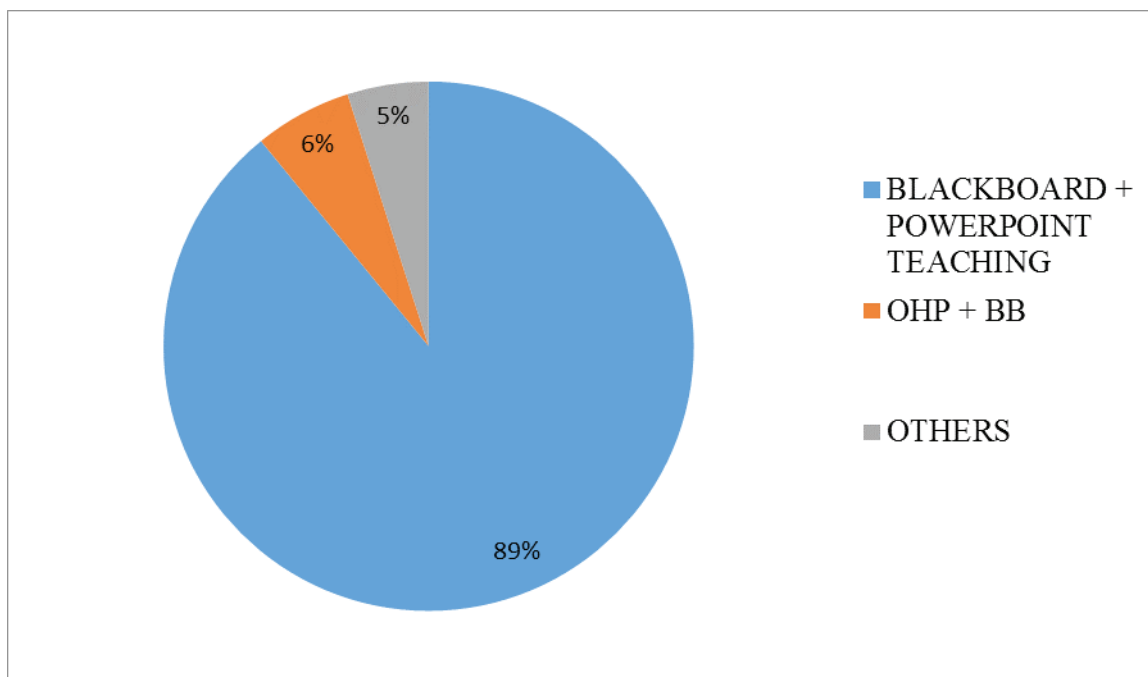
Results

These following were the results obtained from the first year medical undergraduates towards the assessment of better mode of teaching used for conducting theory classes. It is represented in a PIE chart A. Powerpoint presentation in combination with Blackboard (89%) was the most helpful teaching aid to understand, remember and reproduce; followed by combination of OHP and blackboard(6%) . In our study high satisfaction index was noticed for blackboard + PPT teaching aid.

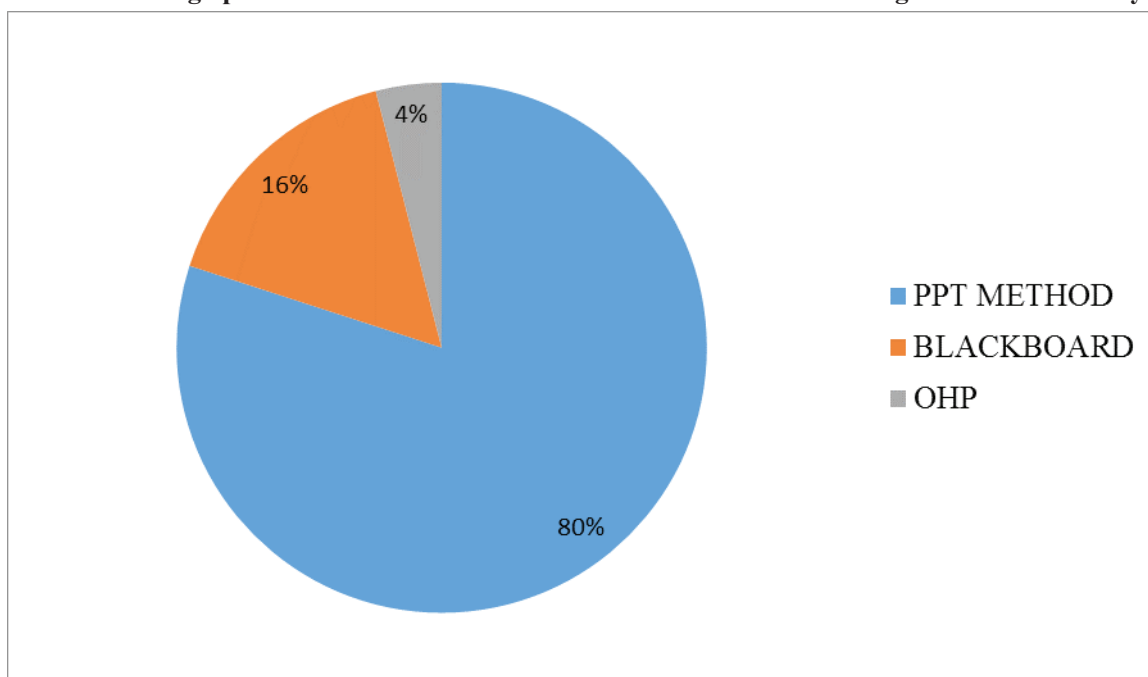
When teaching aids were individually considered, surprisingly the preferred mode was Power-point teaching (80%) (A grade) over blackboard (16%), OHP (4%) which is represented in PIE chart B.

The opinion of 1st MBBS students towards the various teaching methods used for conducting Theory classes were asked. Teaching followed by small group discussion and assessment (89%) was considered as the most helpful teaching method to understand, remember and reproduce (A grade) when compared to teaching followed by small group assignment on the topic (6%), rest of the teaching (5%) .

So in our study high Satisfaction Index (SI) was noticed for teaching followed by small group discussion and assessment (89%) .



Pie Chart A - showing opinion of 1st MBBS students towards the various teaching methods for theory classes



Pie Chart B- showing opinion of 1st MBBS students towards the various teaching aids used for conducting theory classes

Discussion

Use of technology can be time saving and very beneficial for all the teachers. Judicial use of these newer technologies can be very useful to students to make them understand, learn and reproduce well. In turn improves both attitude and academic performance.²Medical teachers have started implementing advanced

teaching aids like audiovisual aids such as videotapes and multimedia to educate medical students which was previously dominated by blackboard and slide projectors.³

In our study, combination of teaching aids were preferred by our students rather than individual teaching

tool. This could be probably due to the fact that the understanding and explanation of the topic could be repeated by using different modes as well easy to recollect, it also prevents the monotonous way of handling the topic. Majority of the students have opted Power point + Black board as their preferred aid for the better perception of subject. Our study can be compared with the study conducted in the field of biochemistry by Priyadarshini KS .⁴

A study done by Chaudhary R observed that majority of the students (67.1%) favoured the combination of teaching aids.⁵ A Garg have showed that 81% of the students wanted the teacher to make use of audio visual aids during the lectures⁶. Roopa kulkarni concluded that audiovisual aids enhance the effectiveness of the Blackboard Teaching .⁷ Sujata Biswas et al study showed that student's opinion about both lecture delivery methods, majority students feel that both power point and chalk and board should be used simultaneously in all the classes.⁸

When the options were to choose exclusively one mode of teaching, students opted for Powerpoint (A grade) as teaching aid which was very much in different with that of other observations made where blackboard teaching was the standard choice.

This could be related to the familiarity of smart board teaching of new generation and their knowledge and dependence on recent technology. Few drawbacks they mentioned about blackboard teaching were poor visibility of the board with high level of continuous attention for the whole day, distractions were easy when the teacher was busy with the board, more time consumption with less topic coverage

Similarly in another study, Seth has observed and compared the preference for teaching aid between medical students versus dental students. The medical students have preferred Powerpoint teaching whereas the dental students preferred the Chalkboard .⁹ Study done by Thirunavukkarasu et al observed marks scored by 60 students, taught using two different teaching aids for medical under graduates in pathology subject was, students had a more favourable response towards Power Point presentation than Blackboard for better inclusion of content and understanding figures.¹⁰ A study has pointed out that in power- point the ability to integrate

the text and the pictures and images is a great advantage and improves the educative value of the subject .¹¹

Teaching using blackboard and OHP alone was opined not effective at all.

Powerpoint presentations were preferred because:

- It gives time for them to listen and understand the concept of the topic with an effective instructor with less time consumed, once understood they prefer learning in their own style.

- The 3D visuals, complicated diagrams, are all better understood through one simple slide rather than manually drawing.

- They get time to interact with the teacher effectively , as the teacher is not preoccupied or in a hurry to complete the class in the given time mostly which is only one hour.

- They can always get a copy from the teacher and revise with those familiar slides.

Teaching approach :

Medical undergraduate has a shorter duration of first year. They are exposed to new curriculum which they find very hard to cope up with the subjects for the initial few months of first year. So the teaching methods has to be made simple and easy so that they don't feel stressed. Hence the best way of approaches were assessed.

As per the basis of memory formation and learning, it involves three major steps of acquisition of knowledge, its retention and its retrieval. Our study results also support the concept of multiple intelligences in learning identified by Gardner and Kolb's Experimental Learning Cycle theory of learning ¹².

We found that teaching followed by small group discussion and assessment/tests (in the form of spotters, MCQs, clinical scenario, short notes - topic wise) was opined as best teaching method by the students. This preference may be as they feel they might listen more attentively to the topic once there is an assessment going to be held at the end of the lecture, after the lecture whatever the lacuna left in the topic could be discussed among peers or even with the teacher, finally the student gains full confidence on the topic once the assignment is

completed. This ensures a complete in and out reach of the topic, which being a medical student is beneficial for future practice.

Conclusion

The best teaching aid is the combination of different tools as it helps to rectify the inherent deficiency of one aid to the other. Multimedia teaching aid is most acceptable among individual teaching aids than the traditional chalk and talk method, because students can follow and understand the concept with ease.

The students have opined that the lectures are effective with any teaching tool only with a good instructor with profound knowledge in the subject.

Ethical Clearance - Ethical clearance was obtained from the Institution ethical committee

Source of Funding- Self

Conflict of Interest – Nil

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Effect of Interferential therapy along with McKenzie Extension Bias Exercises on Pain, Disability and Spinal Extensors Muscles Strength among the Patients with Chronic Low Back Pain

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Abstract

Chronic low back pain is one of the most common musculoskeletal disorders in different age groups in developing countries. Low back pain grows up gradually with other associated symptoms such as disability, muscular weakness and functional limitation that restrict the social and overall health wellbeing. 70% adult populations face one episode in their life. Chronic low back is a barrier in terms of economic burden in health care system among various musculoskeletal disorders. Promote and administered a rehabilitative program necessarily to fix and resolve the problems arising from and with chronic low back pain. The purpose of this study was to determine the effect of interferential therapy along with McKenzie extension bias exercise on pain, disability and spinal extensors muscle strength in patients with chronic low back pain.

Methods- 41 patients were recruited in this study but only 24 patients meet the criteria and participated in this study. After taking written consent form from the patients. Firstly, moist heat pack was implicated to patient for 15 minutes. The patient asked regularly about the temperature of heat pack and therapist also monitors the skin texture and suitability towards the procedure. Further implementation, Interferential therapy was given to lumbar spine for 30 minutes followed by Mckenzie extension bias exercises with 3 sets of 10 repetitions. This protocol was given for 6 days in a week for 4 weeks.

Results- The result of this study shows that there was significant improvement in pain, disability and spinal extensors muscle strength in order to decrease VAS, ODI and increase MMT score respectively with follow up 4 weeks protocol.

Conclusion- The study concludes that interferential therapy along with McKenzie extension bias exercise has been positive impact in reducing pain, disability and spinal extensors muscle strength in patients with chronic low back pain.

Keywords- *Chronic Low Back Pain, Interferential Therapy, ODI, VAS, MMT and McKenzie Extension Bias Exercises.*

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Introduction

Chronic low back pain is one of the most common musculoskeletal disorders in developing countries¹. 70% of adult populations experienced at least once episode in their life². Major cause is functional limitation due to muscular weakness in elderly population. Functional

incapability and progression leads the bad impact on social and overall health wellbeing³⁻⁵. Chronic low back pain is not further results of specific disease, but rather of a platform of cause such as inflammatory, degenerative, systemic, congenital disorders and also associated with occupation and daily living activities⁶.

Physiotherapy and other conservative treatment is the basic platform to manage spinal pain. Spinal exercises are very useful and play an important role to alleviate pain and improve muscle strength which helpful in overcoming the chances of reoccurrence the symptoms in related to lower back pain. Mckenzie, in fact advocates position and movement patterns, flexion or extension, that best relieve the patients symptoms. In the lumbar spine: Mechanical diagnosis and Therapy (1981), Mckenzie classifies lower back pain based on spinal movement patterns, positions and pain responses and describes a postural syndrome, derangement and dysfunction⁷.

In association with manual therapy and therapeutic exercises, electrotherapy is often used to minimize the pain and disability. In electrical stimulation, the impulses vary in frequency and intensity when stimulating the nerve which leads the inhibition the gait pathway and relief the symptoms related to lower back pain⁸. To determine the analgesic effect of interferential current on outcome measures such as NPRS (Numeric pain rating scale) which measure the intensity of pain and ODI (Oswestry disability index) questionnaire to check the functional independence are widely used and important for the quality of this study⁹. This study emphasized on the effect of interferential therapy along with McKenzie extension bias exercises on pain, disability and spinal extensor muscle strength in patients with chronic low back pain.

Objective: To determine the effect of interferential therapy along with McKenzie extension bias exercises on pain, disability and lumbar spine extensor strength in patients with chronic low back pain

Hypothesis

Experimental Hypothesis [H₁]- There will be significant of interferential therapy along with McKenzie extension bias exercises on pain, disability and spinal extensor muscle strength in patients with chronic low

back pain.

Null Hypothesis [H₀]- There will be significant of interferential therapy along with McKenzie extension bias exercises on pain, disability and spinal extensor muscle strength in patients with chronic low back pain.

Materials and Methods

This is a quasi-experimental study. 41 subjects were recruited, 24 out of 41 were included on the basis of inclusion and exclusion criteria. This study was conducted at physiotherapy OPD, CSSH hospital, Swami Vivekanand Subharti University, Meerut India. The informed consent form was taken from the each selected patient in this study.

Inclusion criteria included both gender (male and female), history of chronic low back pain, no history of trauma, tumor, infection, degenerative disease related to disc and vertebral column, no history of previous and recent surgery to spine and abdomen and neurological disorders such as neuropathy, paraesthesia, numbness and tingling sensation. This study was carried out in 6 days in a week for 4 weeks.

Outcome Measures

NPRS (Numeric Pain Rating Scale)

The Numeric pain rating scale (NPRS) is a unidirectional measure of pain intensity in patients including those with chronic pain. The NPRS is a segmented numeric version of the visual analog scale (VAS) in which a respondent selects a whole number (0 -10) integers that best reflects the intensity of pain. The 11- point numeric scale ranges from “0” representing one pain extreme (e.g. no pain) to “10” representing the other pain extreme (e.g. “pain as bad as you can imagine”). The NPRS can be administered verbally or graphically. Scoring range from “0 -10” points, with higher scores indicating greater pain intensity¹⁰⁻¹⁴.

ODI (Oswestry Disability Index)

Oswestry Disability Index is a good functional scale because it deals with activity of daily living and therefore is based on the patient response and concerns affecting

daily life. It is the most commonly used functional back scale. The disability index is calculated by dividing the total score (each section is worth from 0 -5). The 6 statements are scored from 0-5 with the first statement scoring 0 through to the last at 5¹⁵

MMT (Manual Muscle Testing)

This checks the strength of the spinal extension muscles¹³. Test procedure as follows:

(Normal) 5:- Prone with hands clasped behind head, patient extends the lumbar spine until the thorax is raised from the table (umbilicus). Patient raises head, shoulders and chest off the table.

(Good) 4:- Prone with hands on the back, patients extends the lumbar spine until the thorax is raised off the couch and in this back extensors can come to the end position but may waver or display some signs of effort.

(Fair) 3:- Prone with arms at sides, patient extends spine, raising body from the table so that the umbilicus clears the couch. Patient completes the range of motion

(Poor) 2:- Patient completes partial range of motion

(Trace) 1:- Contractile activity is detectable but no movement.

Procedure

After taking consent forms from the patients, patients informed and aware to the procedure that delivered to them to minimize the symptoms they had. The subjects were first given hydrocollator pack on lumbar region for 15-20 minutes in both groups to reduce muscles spasm and pain and to improve the extensibility of tissues. The temperature of hydrocollator pack was adequate for the targeted area. The hydrocollator pack was well covered with mackintosh sheet. During this phase therapist asked the patient about temperature of hydrocollator pack and his/her suitability towards the procedure.

Application of Interferential therapy- patients treated with interferential current with rubber electrodes in cloverleaf method with patients in prone lying position on couch. Rubber electrodes (5x7.5cm) were placed to counter pain circuit being positioned over the lumbar region of spine using gel and adhesive tape to fix the electrodes for smoothing and fulfill the procedure without any hindrance. The frequency, carrier frequency was set at 4000HZ with beat frequency of 100HZ delivered to the targeted area for 30 minutes. The intensity of interferential current was set according to the tolerance level of patients. After protocol, the electrodes were removed from the targeted area.

McKenzie extension bias exercises- Strengthening of lumbar spine extensor muscles is very important because it helps to provide a great deal of stabilization to this part of the body. The back extension both trains the activation of the spinal extensors and strengthens their ability to extend the back. The therapist was stand at side of couch and patient lies in prone lying position with forearm and elbow supported on couch. Therapist instructed the patients to raise upper trunk slowly in extension in pain free range and elbow and shoulder joint are lie in same line leaning on the forearm and curling of shoulders and upper trunk and then return to a starting position. 3 set of 10 repetitions with 3 sec interval in every repetition and 2 minute interval after completion of 1 set. Both protocols were given for 6 days in a week for 4 weeks.

Data Analysis

All analysis was obtained using SPSS version 20.0. Demographic data of the patients including age, height, body mass and BMI was summarized. The dependent variables for the statistical analysis were NPRS and ODI. A base line data was taken at the beginning of the study (pre-test values) and after the completion of the treatment (post -test values) to analyze the difference between them; paired t-test was used. A level of 5% was used to determine the statistical significance.

Results

Table-1, demographic data of patients with chronic low back pain

Number of Patients	Age (year)	Height(cm)	Body Mass (kg)	Body Mass Index (kg/m ²)
24	28	164	58	21.6

Table-2, Pre-post NPRS score (Mean, S.D, t-value and p-value)

Time Period	Mean	S.D	t- value	p-value	Remark (at 5% level)
1st Day	4.06	0.68	29	0.000	Significant
24th Day	0.44	0.51			

Table-3, Pre-post ODI score (Mean, S.D, t-value and p-value)

Time Period	Mean	S.D	t- value	p-value	Remark (at 5% level)
1st Day	34	0.08	18.78	0.000	Significant
24th Day	18	0.04			

Table-4, Pre-post MMT score of back extensor muscles

Time Period	Mean	S.D	t- value	p-value	Remark (at 5% level)
1st Day	2.25	0.58	15	0.000	Significant
24th Day	3.18	0.40			

Discussion

The purpose of this study to determine the effectiveness of interferential therapy along with McKenzie extension bias exercises on pain, disability and muscle strength in patients with chronic low back pain. 41 subjects were enrolled but only 24 participated in this study. In this study the subjects were selected on the basis of inclusion and exclusion criteria. The subjects were first introduced to hydrocollator pack followed by

interferential therapy with McKenzie extension bias exercises respectively. Before starting the exercises protocol the NPRS, ODI and MMT was measured, similarly then readings also noted down after 4 weeks. The result of this study revealed that interferential therapy with McKenzie extension Bias exercises is statistically significant and effective in improving the strength of muscles and decreasing the pain and disability.

Base line data such as demographic characteristics of patients was measured that shown in table-1. Data of ODI, NPRS and MMT for pre and post interventional study are expressed in terms of mean, S.D and S.E.M is shown in table- 2, 3 and 4 respectively. Further application of paired t-test implemented to assess the significant difference between pre and post intervention study in interferential therapy with McKenzie extension bias exercises significance difference for the 24 patients at 5% level of significance. Within the group pre and post values were assessed by paired t-test in both the groups which has mentioned in table 2, 3, and 4 respectively. p-value was significant at $p < 0.05$ with ODI, NPRS and MMT score (0.0000), (0.0000) and (0.0000). The 4 weeks application of interferential therapy with McKenzie extension bias exercises showed significance in terms of improving muscle strength of spinal extensor and also decreasing the pain and disability.

Regarding to support the result of this study, previous literature on effect of interferential therapy in various musculoskeletal disorders revealed positive impact in order to reduce pain and disability. A study was conducted by Marcelo Baptista Donhert et al¹⁶ on the effectiveness of interferential current as compared to transcutaneous electrical nerve stimulation in reducing chronic low back pain. 28 subjects participated in their study. The subjects were allocated in two groups. One group received interferential therapy while second group received transcutaneous electrical stimulation. Outcome measures were VAS, ODI and Ronald Morris disability questionnaire used in this study. There was positive result found in favor of interferential therapy in terms of reducing pain and disability with follow up one month protocol. Another research conducted by Emela Mujic et al¹⁷, on the 'effect of Mckenzie exercises for low back pain. 34 patients with symptoms of low back pain were participated in their study. All patients were assessed before and after the treatment. The demographic data include age, gender, and duration of symptom. Pain was assessed by VAS, spinal flexibility and movement was assessed by schober test. After this initial evaluation, patients received Mckenzie exercises daily, 5 times a day in series of 5-10 repetitions each time. All exercises were followed by correction of body posture. On completion of the treatment on the 15th day, post interventional assessment was done for the 2 outcome measures and documented for analysis. Their

study concluded that Mckenzie exercises for lower back pain are beneficial treatment for increasing flexibility of spine and improving the pain.

There is less empirical data available related to this study which shows a significant effect of interferential therapy along with McKenzie extension bias exercises in reducing pain, disability and spinal extensor muscle strength in patients with chronic low back pain. In this study interferential therapy has been shown the significant difference with spinal stabilization exercise on pre to post ODI, NPRS and MMT score with follow up 4 weeks or 24 days protocol.

This study may be of significance for the health care providers who treat chronic low back pain and consider recommending McKenzie extension bias exercises to patients to overcome the chance of reoccurrence the onset of problem that have.

Conclusion

This study concludes that interferential therapy with McKenzie extension bias exercises has been shown significant improvement in order to decrease pain, disability and back extensor muscle strength in patients with chronic low back pain. As to follow up data analysis, the result of this study were beyond desirable impact and important for better option of proposed protocol and advising also that this type of protocol may be administered to such type of patients for better health and wellbeing.

Conflict of Interest- There was no conflict of interest

Ethical Clearance: Taken from institutional ethical/research committee

Source of Funding: Self

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Responding to “Covid-19” Pandemic: Quality Management and Preventive Strategies of a Hospital

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Abstract

The newly emerged public health crisis threatening the world with emergence or spread of a novel coronavirus named SARS - CoV-2 associated with higher infection rates and deaths especially elderly people and people with Hypertension, Diabetes Mellitus, Cerebrovascular and Cardiovascular diseases throughout the world. As of 17th June 2020, 216 countries were affected with 83,26,825 confirmed cases including 4,48,081 total deaths. India has reported around 3.6 lakh confirmed cases with more than 12 thousand total deaths. To respond this pandemic, India needs to set-up an adequate, well equipped and dedicated health care facility to contain the spread of infection and manage the infected patients as well as providing protection to the healthcare workers (HCW). Quality management and preventive strategies of a hospital plays very important role for this purpose. Quality management is the fundamental feature of a hospital to establish customer satisfactions and desired outcomes. High quality care health services involve doing the right things, for the right patient, at the right time, in the right way to minimise the harm and resource waste. Preventive strategies especially infrastructure development & Infection prevention and control policies (IPC) are very crucial. The effective, safe, people centred, timely, equitable, integrated and efficient health care delivery improvement with appropriate quality management system and preventive strategies will be helpful to combat with “COVID-19”. This study highlights the “Quality management and Preventive Strategies of a Hospital responding to COVID-19” for providing better healthcare services in Indian healthcare management system.

Keywords: COVID-19, Infection prevention and control policies, Infrastructure development, Patient satisfaction, Quality management

Introduction

The world is grappling with invisible, deadly pandemic threat posed by a small spherical particle with bulbous projections. A sudden outbreak of coronavirus disease 2019 (COVID-19) caused by infection with severe acute respiratory syndrome coronavirus (SARS-CoV-2) happened since December 2019 in Wuhan City, Hubei Province in People’s Republic of China and rapidly spreading around the world¹. On 30th January 2020, World Health Organization (WHO) declared a public health emergency on international concern and

on 11th February 2020, announced a name for the new coronavirus disease: “COVID-19”². The transmission pattern of “COVID-19” is mainly by direct or indirect contacts via respiratory droplets, contact routes and touching the objects used by infected person. An infected person suffers from most common symptoms like fever, cough, dyspnoea, fatigue, myalgia etc. Severe form of clinical condition needs urgent hospitalization³. As of 17th June 2020, India reported 3,60,483 positive cases with 12,058 total deaths & 1,91,446 total recovered⁴. In this crisis, every individual of the country deserves a safe, cost effective and optimal standard of healthcare

services including test and treatment for “COVID-19” required for their survival⁵. Quality standard of care is the main area of domain in today’s healthcare sector which may be improved through effective healthcare policies, human practices and well-developed healthcare management system. Some preventive measures or strategies may be helpful to provide satisfactory and quality care in hospital like formulation of norms, standards, infection prevention & control (IPC) measures (use of PPEs), infrastructure development, manpower planning, supply chain management, training programs, research and innovation, continuous quality improvement and use of technologies in healthcare system⁶. India needs an effective, affordable, quality-based healthcare services in hospitals to combat with corona virus outbreak (“COVID-19”).

Quality management

Quality care is “doing the right things, for the right patient, at the right time, in the right way to achieve the best possible results”. According to IOM (Institute of Medicine) and WHO, quality management is “the degree to which healthcare services for individuals and population increase the likelihood of desired health outcome and are consistent with current professional knowledge”⁷. Total Quality management is also known as Continuous quality improvement, Quality management and Total quality control⁸. Clinical governance and better human resource management practices are important in maintaining the quality standard care. India needs to focus on capacity building, enhancing accountability of health practitioners, managers, efficiency of resources, use of digital technology, research and innovation, IoT (Internet of Things), Management information system and Continuous improvement practices to contain the spread of pandemic disease in recent time and other life-threatening diseases. An approach to develop the quality policies and strategies in a hospital should be

based on effectiveness, safety, culture of excellence and desired outcome to provide better health services⁹. In response to pandemic threat, it is essential to prepare a well-equipped dedicated hospital facility (DHF) based on maintaining content and delivery type of quality to overcome the global crisis¹⁰. A report (by WHO) shows that each year around 5.7-8.4 million people died and \$1.4-1.6 trillion lost productivity due to poor quality care cost in low and middle-income countries, as well as 34% of patient experience disrespectful care with poor communication (patient dissatisfaction) worldwide¹¹. Health is the fundamental right of every individual in this world. Social Health Care protection system also known as Universal Health Coverage ensures that the distribution of health services should be accessible, efficient, affordable, equitable and cost effective to protect the poor people against financial crisis¹². The quality management of healthcare system can be done by sharing of knowledge, experience, facing the challenges, and spark the ideas related to improving institutionalizing quality¹³.

A novel coronavirus is a new strain that has not been previously identified in humans. Healthcare workers are at risk while providing care to patients. Quality standard is dependent on three factors: (1) *Structure Input* involves investment in healthcare infrastructure. (2) *Process measures* includes what and how care is delivered based on guidelines such as Infection Prevention and Control (IPC) policies (3) *Outcome* involves health status of patient or population¹⁴. The application of Shewhart Cycle, Total Quality Management model, implementation of ISO 9000 (ISO 9001, ISO 9002, ISO 9003) standard for ensuring operating requirements, quality assurance, testing and inspections in hospitals may be useful in setting the guidelines or policies of hospital to battle with “COVID-19”¹⁵.

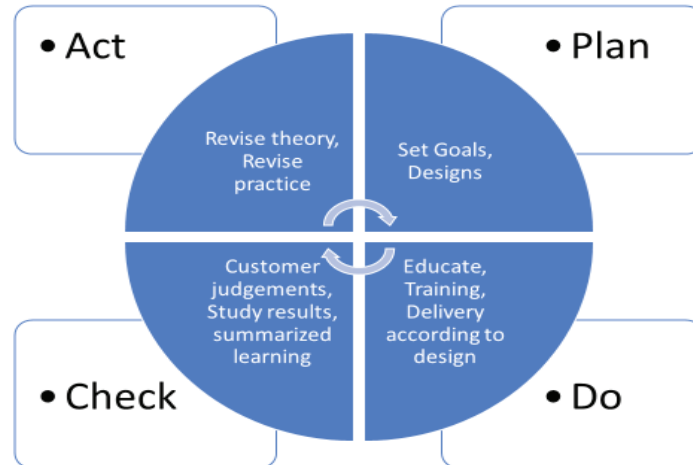


Fig.1. Shewhart Cycle: Plan-Do-Check-Act (PDCA cycle)¹⁶

The application of PDCA process to test the improvements was discovered by Walter A Shewhart in 1930. It helps in planning of SMART (Specific, Measurable, Achievable, Realistic, Time bound) goals and designed it in structured form for achieving the desirable outcome by providing training to the workforce and analyse the results and acts to implement revise the strategy and practices. In response to “COVID-19”, it is essential to take prevention and precautionary measures to break the chain of deadly virus. Some preventive strategies of a hospital may be helpful to provide quality standard care to save the life of people to fight against “COVID-19”.

Preventive Strategies

Infrastructure development

A well-established renovated healthcare system is required to overcome the new challenge “COVID-19”. The Government of India has taken initiative for the development of health infrastructure and approved package worth of Rs.15, 000 crores for emergency response and health system preparedness to fight against “COVID-19”. The main objective of this fund is to limit “COVID-19” infection in India through development of diagnostic centres, centralized procurement of essential medical equipment, drugs required for “COVID-19” treatment, strengthen and build national and state health systems to support prevention and preparedness for “ COVID-19” and future disease outbreaks by setting

up of laboratories, surveillance activities, innovation, pandemic research and development in healthcare sector. Basic requirements need to be developed in a hospital like quarantine centre, well equipped laboratory for testing, increase the number of bed capacity, thermal scanning facility, construction of isolation & suspected ward by maintaining adequate space in-between the beds. A temporary out-patient clinic outside the buildings should be set up to serve the asymptomatic patients¹⁷. A well-equipped dedicated facility hospital should have two building units. The first one will be an isolation space for laboratory confirmed cases. The second unit will be for suspected cases which includes family and hospital contacts who have potential contact with confirmed cases but waiting for laboratory confirmation¹⁸.

Thermal screening

Thermal screening should be done at every entrance of the hospital to recognize the symptoms at the first point of entry to identify the suspected cases. Those identified by scanning have their temperature confirmed with a tympanic thermometer should be sent to “COVID” out-patient unit for further investigations. This strategy strengthens the identification and management of “COVID-19” cases and reduce the risk of exposure¹⁹.

Social distance maintaining

Across the globe, countries have implemented a number of control measures to respond “COVID-19”.

Social distancing includes ways to stop or slow the spread of infectious diseases. Social distancing is important because “COVID-19” spreads from person to person through direct or indirect routes²⁰.

Infection Prevention and Control (IPC) Practice

Infection Prevention and Control policies of a hospital is very important to stop the spreading of the infections. Every hospital should have their own SOPs (Standard Operative Procedures) and protocol should be maintained strictly. The application of appropriate precautionary measures helps to enhance the safety of patients and health care workers to control the infection. Hospital infection control committee plays a critical role to systematically address IPC practice in healthcare facility.

Hand hygiene

Hand hygiene is the primary step in taking precautionary measures and followed timely. Hand hygiene should be done with alcohol-based hand rubor soap before and after use of Personal Protective Equipment (PPE) and medical practices. Printed posters include medical and surgical hand washing steps should be pasted nearby the basin which helps to create awareness and minimize the risk of transmission of infection²¹.

Respiratory hygiene and cough etiquette

Respiratory hygiene and cough etiquette mean the measures taken by person to contain the spread of infection to others as like covering mouth and nose with a tissue while coughing and sneezing.

Environment infection control

In open wards, there must be adequate space between each bed to reduce the risk of cross transmission of infection. Aerosol generating procedure must be avoided in “COVID” area.

Personal protective equipment (PPE)

PPE refers to physical barriers, which are used to protect the mucous membranes, airways, skin and clothing from contact with infectious agents. All the

healthcare workers should have the proper knowledge of usage and disposal of PPE kits like face masks, goggles, face shields, gloves, gowns, shoe covers, and other additional PPEs. Face masks, eye protection goggles, face shields are used to protect the mouth, nose and eyes while providing care to patient with respiratory symptom such as sneezing and coughing. N-95 mask should wear by moderate and high-risk personnel to protect the mucous membrane of nose and mouth during direct patient care. Triple layer medical mask also can be used by moderate & low risk personnel. If the mask gets wet or dirty with secretion it must be changed immediately. Goggles & Face shields usually uses when a splash of body fluid is expected. Sterile, clean latex examination gloves & nitrile gloves should be worn when touching blood, body fluid, secretion, excretion, mucous membrane and skin according to risk. Changing of gloves must be done between tasks and procedures on same patient after contact with potentially infectious materials. Gowns should be worn when there is close contact with the patient, materials or equipment that may lead to contamination of body²². WHO recommends about the rational usage of PPE kits to overcome the shortage supply while providing direct care to the infected patients. Some policies or strategies should be adopted in hospitals to facilitate the optimal usage and minimize the need of PPE kits like restrict the visitors entry in Corona wards, restrict the entry of healthcare workers in Corona ward if they are not involved in direct care, use the physical barriers to reduce exposure of “COVID-19”, one HCW can evaluate others, ensuring the use of PPE should be rationalized and effective²³.

Biomedical waste management

Biomedical waste management (BMW) is any waste produced during the diagnosis, treatment or immunization of human or animal research activities pertaining thereto or in the production or testing of biological or in health camps²⁴. The concern regarding the management of biomedical waste is important to prevent risk on public health. Awareness about handling, transporting and disposal of waste as per the guidelines by Ministry of Environment and Forest, Government of India among healthcare and public is necessary for proper biomedical waste management.

Table 1. Colour coded containers for waste²⁵

Colour Coding	Items	Disposal Method
Yellow	Infectious non- plastic, non-sharp	Incineration
Red	Infectious plastic, non-sharp	Autoclave or microwave (recycle)
White Sharp box	Sharp (metal)	Sharp pit
Blue box	Glass, metal implants	Autoclave (recycle)

Minimum paper work with maximum digitalization

The electronic health record helps to manage the big data in healthcare sector and minimise the paper work for safety of healthcare workers. Some technologies like e- health, telemedicine, teleconsultation, m-health and AI (artificial intelligence) are used for diagnosis, accessibility, cloud based digital drug discovery, mining and managing medical data and robotic services help the healthcare workers to minimise the risk of exposure²⁶.

Conclusion

Healthcare should be cost- effective, efficient, affordable, equitable to everyone. The role of quality management & infection prevention & control practices of hospitals are very important for detection, isolation, treatment and follow up of “COVID-19” patients. Development of healthcare infrastructure, formulation of standard policies including infection prevention and control protocol, mobilizing the human resources, teamwork, leadership, awareness and community participation can provide optimal achieving parameter to combat with deadly virus “COVID-19” which is the biggest challenge for us in today’s era. If “This is a time for facts, not fear”, if “this is the time for science, not rumours”, if this is the time for solidarity, not stigma”, then every individual of this universe has to take responsibility to protect and prevent “THE WORLD”.

Declarations

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Comparison of Outcome of Closed and Open Drainage of Breast Abscess

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Abstract

Breast abscess is an acute inflammatory process resulting in the formation and collection of pus under the skin in breast tissue. Typically, there is painful erythematous mass formation in the breast occasionally with draining through the overlying skin of nipple duct opening. Breast abscess if not treated in time and in proper way, can result in deformation of breast which ultimately can result in loss of self-esteem of the female who suffers from abscess. To compare outcome of closed and open drainage of breast abscess. Breast abscess if not treated in time and in proper way, can result in deformation of breast which ultimately can result in loss of self-esteem of the female who suffers from abscess. As the condition occurs in young women, scar is a major concern in comparison the approach of closed drainage which leaves behind a better scar, breast feeding is started very early and breast regains its suppleness very fast. Furthermore Post operative pain, Scar formation, Residual abscess, time for complete healing is better with closed drainage of breast abscess.

Key words: Breast abscesses, Drainage, postoperative pain, Incision Drainage, Hospital stay,

Introduction

Breast abscess is an acute inflammatory process resulting in the formation and collection of pus under the skin in breast tissue. To compare outcome of closed and open drainage of breast abscess. Breast abscess if not treated in time and in proper way, can result in deformation of breast which ultimately can result in loss of self-esteem of the female who suffers from abscess. Breast abscess is the result of underlying inflammation (mastitis) in the breast skin. Injury may happen either during the lactation process from the infant or in the non-lactation state of the patient as a cracking in the breast skin. This injury accelerates the entry of the causative bacteria which by its role form the abscess.⁽¹⁾

In neglected cases, there may be necrosis in the abscess location leads to fibrosis, scarring and nipple retraction. According to Haagensen(1971) "The conventional treatment of breast abscess has been surgical incision and drainage under general anaesthesia, a curved incision in the skin line is used and a penrose drain is left in a place for 72 hours". The gold standard of puerperal breast abscess drainage described by Haagensen is supported by Webster with addition of gauze packing.⁽¹⁾

Previous study described⁽²⁾ most common etiological factor responsible for breast abscess is lactation. Open drainage with primary closure is effective alternative method of treatment to incision and drainage in properly selected patient and with timely support by sonologist. Conventional Incision and drainage of breast abscess leads to more pain, delayed healing and prolonged cessation of breast feeding. As the condition occurs in young women, scar is a major concern in comparison the approach of open drainage with primary suturing with negative suction drain leaves behind better scar, breast feeding is started very early and breast regains

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it suppleness very fast. The primary closure technique was superior to the conventional technique in terms of duration of healing, post operative pain, number of dressings required, length of hospitalization and post operative complications and quality of healing.⁽³⁾

For the treatment of breast abscesses, surgical incision and drainage are usually carried out under a general anaesthesia, is a traditional method of treatment.⁽⁴⁾ Breaking down any loculi and draining the pus material from the cavity by incision of the swelling is the most common method which follows the irrigation of cavity and either left open and packed with gauze or approximated around a drain.⁽⁵⁾ Our aim is to compare management of breast abscess by open drainage versus closed drainage with reference to Post operative pain, Residual abscess, Time required for complete healing, Appearance of scar

Material and Methods:

The patients attending outpatient department & admitted to Aarupadai veedu medical college and hospital, with diagnosis of breast abscess will be taken for this study by period sampling for the period October 2017 to October 2019. In the present study of 60 cases

of breast abscess admitted in Aarupadai Veedu Medical College & Hospital were divided and study in 2 groups. Group – I (30 patients) – closed drainage Group – II (30 patients) – open drainage. All the 60 cases will be taken up for study following inclusion and Exclusion criteria. By period sampling. The patients selected for this study are those who are with primary diagnosis of breast abscess. Based on detailed history, thorough clinical examination, the diagnosis of breast abscess will be made. These patients will be subjected to the required preoperative investigations. Patients will be alternately undergoing incision drainage and percutaneous placement of suction drain. Each case will be analysed with reference to post operative complications like post operative pain (based on visual analog scale), residual abscess, duration of hospital stay, time required for complete healing and appearance of scar and cost spent for treatment. Each patient will be followed up in the outpatient department at 1 week, 2 weeks and 4 weeks after discharge with regard to wound healing. A minimum of 60 cases with the following inclusion and exclusion criteria will be selected for the study and will be allocated alternatively to each of the comparative study groups.

Results

Table.1: shown Post operative pain

Postop pain	Closed		Open		Total		Chi-square test	p-value
	N	Percentage	N	Percentage	N	Percentage		
No	24	80.0%	12	40.0%	36	60.0%	10.000	0.0010
Yes	6	20.0%	18	60.0%	24	40.0%		
Total	30	100.0%	30	100.0%	60	100%		

Table.2 shown Residual abscess

Residual	Closed		Open		Total		Chi-square test	p-value
	N	Percentage	N	Percentage	N	Percentage		
No	30	100.0%	18	60.0%	48	80.0%	15.000	<0.001
Yes	0	.0%	12	40.0%	12	20.0%		
Total	30	100.0%	30	100.0%	60	100%		

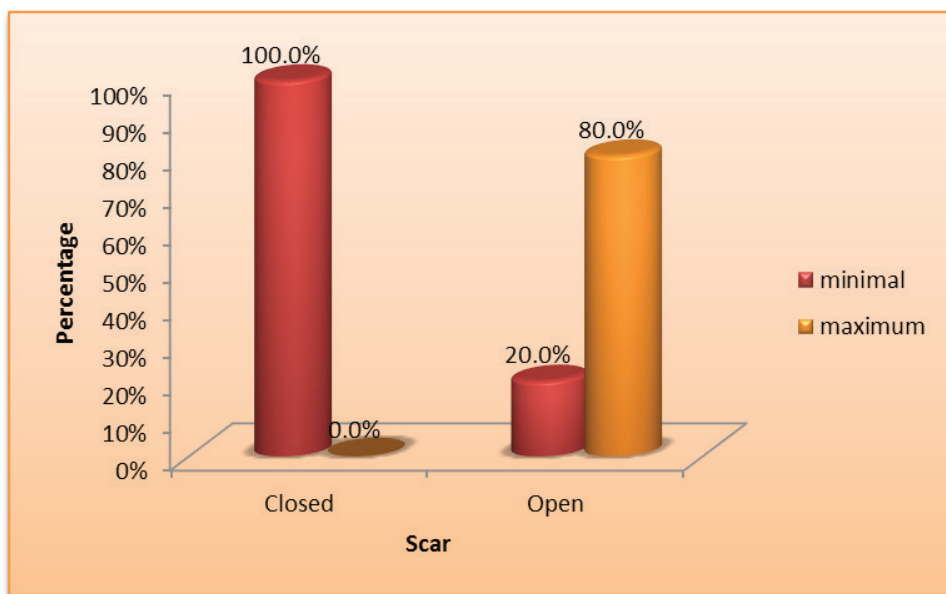


Figure.1: Shown Scar formation

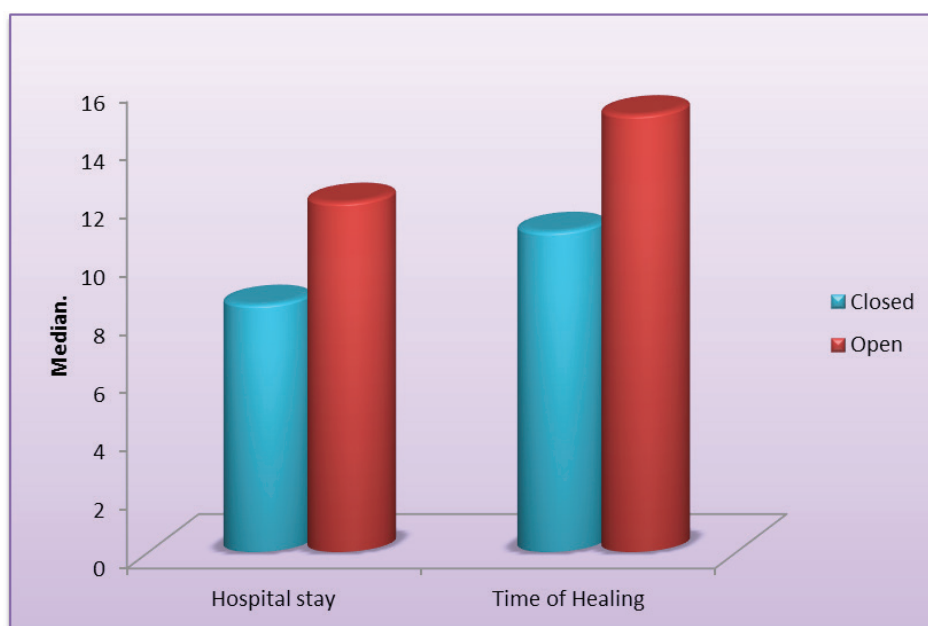


Figure.2: Shown Time for complete healing

Discussion

A comparative prospective study was designed to compare open and closed drainage in breast abscess and the outcomes in the various modalities for betterment. In the study the youngest patient was 18 years old and oldest patient was 42 years old. The mean age was 34 years in the patient of study groups. In the study right sided breast abscess is of 55% (33 patients) and left sided breast abscess is of 45% (27 patients). In present study post operative pain is measure according to visual analogue scale and analgesic requirement. In group I (closed drainage) has reduced post operative pain (80%) when compared to patient underwent open drainage 40% with significant in P value of less then 0.001. similar findings were observed in Edino et al ⁽⁶⁾ and also correlates with other study ⁽⁷⁾. In post-operative period open incision and drainage had more pain give to due repeated dressings and closed drainage was void of it.

In our present study closed drainage (Group I) had no residual abscess when compared to open drainage there was 20% residual abscess 12 patients. It is due to continous negative section created in the walls of abscess cavity that thus not allow residual secretions. With significant p value of 0.001 Khanna et al ⁽⁸⁾ reported residual abscess in 3% of cases in their study. Macfic et al ⁽⁹⁾ documented of 11.4% in their respective study. Kaushal S et al ⁽¹⁰⁾ in their study found 3 patients with residual abscess. Chandika et al ⁽¹¹⁾ in their study noticed no residual abscess in closed drainage but had in incision and drainage. Other author ⁽¹²⁾ in their study said the importance of ultrasound in the follow up to sec for residual abscess in the absence of clinically evident abscess. Khanna YK et al ⁽⁸⁾ which show residual abscess in 6% of cases of primary closure and study of Dubey V et al ⁽¹³⁾ which shows residual abscess in 4.4% of cases of primary closure. In present study no recurrence is seen in group 1 and there is 1 case of more recurrence out of 25 cases (4%) in group 2 suggestive of more recurrence in group 2 as compared to group 1. Similar finding were observed in study by Anirrudha K where recurrence was 3 times more in cases of conventional incision and drainage as compared to primary closure. Similar findings were observed In study by Khanna et al ⁽⁸⁾.

In the study closed drainage group I had better and minimal cosmetics scarring went compared to group II open drainage which had ugly and maximum scarring thesis due to minimal exposure and handling of tissues. With significant P value 0.001 which is also supported by Abraham et al ⁽¹⁴⁾ and Khanna et al ⁽⁸⁾ Imperiable et al in their study said the cosmetic result was optimal in all cases. Kaushal S et al said that all the patients who underwent incision and drainage complained of an ugly scar. Dieter Ulitzsch et al ⁽¹⁵⁾ and Singh et al ⁽¹⁶⁾ in their study reported 96% of patients treated by closed drainage was satisfied by the cosmetic results. According to Chandika et al ⁽¹¹⁾ needle aspiration was a highly accepted modality. The high acceptance rate may be because of the convenience of the procedure which was an minimum scar.

In the study mean duration of hospital stay and time required for complete healing is of significance < 0.001. Similar finding was observed in a study conducted by Abraham et al ⁽¹⁴⁾ they found that hospitalization was reduced by 40-60% in closed drainage (group I). In the study closed drainage group I had no secondary infection when compare to open drainage Group II which is due to exposure of tissues to external environment. With a secondary infection of 30% in the open drainage with significant P value 0.001. Overall 65% of patients who underwent procedure for breast abscess either closed or open drainage had follow up. Previous studies described ⁽¹⁾ a minimally invasive palpatory method of drainage of breast abscess is percutaneous placement of suction drain but in trochar only so there were still chances of remaining loculi and recurrent abscess. Avoidance of repeated aspiration was the advantage of antibiotics into abscess cavity is probably beneficial. Resolution time is faster in percutaneous drain placement as compared to incision and drainage. Moisture is maintained and antibiotic instillation in cavity can be done.

Conclusion

In the Present study of open and closed drainage of breast abscess cases in that right side of affected in 55% of patients. From this study it can be concluded that, the commonest age group affected was between 21-32 years. All patients complaint of swelling, pain and all and showed signs of inflammation. Closed drainage is effective alternative method of treatment to incision and

drainage in properly selected patients. Conventional incision and drainage of breast abscess leads to more pain, delayed healing and prolonged cessation of breast feeding. As the condition occurs in young women, scar is a major concern in comparison the approach of closed drainage which leaves behind a better scar, breast feeding is started very early and breast regains its suppleness very fast. Furthermore Post operative pain, Scar formation, Residual abscess, time for complete healing is better with closed drainage of breast abscess.

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Conflict of Interest: Nil

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Ethical Clearance: Institutional Ethical Clearance No-C: 081/2017

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Convenience Food : An Emerging Trend in India

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Abstract

Convenience food industry has shown a rapid growth in India in the last few years. Now a days they are very much in demand and is growing at a rapid rate. These foods are saviour for busy and working people. They have been widely accepted by the non-working people as well. Due to fast and busy life, consumption pattern of people is drifting from raw food to convenience foods. Convenience foods are overly processed food which saves the preparation and cooking time of food in the kitchen.. Young generation children are more likely to consume packaged food as they give great aroma, texture and taste. These foods determine the food choices and consumption pattern of the consumers. Urbanisation and the changing lifestyle has a huge role in increasing the demand of such food items. They are gaining immense popularity in the food industry, global food market and among the food scientists. In the past few years convenience food has shown a remarkable growth in the food market . This present study aims at studying the consumption pattern of convenience food in India.

Keywords: Food choice, Packaged food , Saviour, Lifestyle, Growth, Consumption pattern, India.

Introduction

India has a huge food diversity. It has both traditional and modern food items. With time, consumption pattern has also changed due to the influence of the modern culture. Now a days convenience foods has changed the whole scenario.

Convenience foods are overly processed food, also known as tertiary foods ,are made in such a way that saves the preparation and cooking time in the kitchen. They are a class of foods that are convenient to use and requires no or little preparation before consumption. The rising urban population has made a huge impact on the demand of the packaged food items in the market. Due to their fast and busy life they try to purchase food items that are convenient to use and saves their time. They play a huge role in determining the food choices of today's generation. These processed foods are highly in demand and in addition, retail food outlets and restaurants, serves fast food and convenient food to meet the consumers need and demand. In today's scenario, convenience food supply daily food needs and requirements to most of the countries in the world. Food items which are

convenient to use are consumer's first preference while those which are less convenient will not be chosen by the consumers. Modernisation and urbanisation resulted in the elevation of these items in the modern diet. These foods are growing at a rapid rate globally. They have changed the daily food consumption pattern of most of the people. They have smartly replaced the traditional cooking pattern of food with fast, easy and hassle free convenience food. Convenience foods saves a lot of cooking time and intense labour in the kitchen. To make it more convenient they should have long shelf life, less weight, easily available, variety and good quality. These all are of prime concern (Arya,1992).

Processed food meets the food demands of the global world. They have been widely consumed in the daily modern diet in the nineteenth and twentieth centuries respectively. This food market has also given rise to the financial group , since most of the urban people tend to consume convenience food items rather than preparing them at home^[1]. At present, around thousands of variety are available in the market for the sale at global level. This emerging market has positively enhanced the

growth of the food industry. All of these items offer various advantages to the consumers like they are easily available, consistent taste and nature, less spoilage, readily cooked and has a lot of varieties. Convenience foods production has been possible only due to the innovation, technology and their craze among the young generation. Along with these factors, transportation, handling and their storage has played a significant role in increasing the growth of such foods. Beyond the technical help, politics, social society and the economical forces also helped in improving these foods and motivated to be a part of our daily modern diet. It has been noticed that, sometimes convenience food directs our food choices, preferences, behaviour and attitude towards the situation. With the packaged foods, mental and physical efforts required while purchasing, handling, storage and preparation of food has been reduced to a much extent. Socio-economic factors along with demographics are also responsible in determining food preferences of a person. A working person will always tend to lean on convenience food rather than preparing at home. Household income is another major factor. People with higher income status consumes more processed food item rather than low income group person due to unavailability of resources. Another determinants such as household size and children also affects the choices and buying pattern. It was noticed that single living person preferred more convenience foods rather than too many people living in the same house. Children loves to eat processed food item as they enhance their taste and mood. Families with children purchases more such food items. Convenience foods became popular in the retail market due to the increased consumption of such items in every age groups whether they are children, adolescents, employed or not and older age ones.^[2]

The foods that are prepared through partial processing, foods that are not cooked properly and foods that requires no preparation are increasing rapidly with a growth rate of 20%. Ready-to-eat foods has shown a noticeable growth in the recent years and they are very much in trend. With the changing lifestyle pattern of middle class people and their busy working schedules, the demand for these type of foods is rising tremendously. There are many food brands that manufacture these types of food such as HLL, MTR, Haldirams, Kohinoor, ITC, heritage foods, Amul etc. These brands have different varieties of such foods and are gaining huge popularity

in the food market. On the other hand, culinary products and snack food products has a growth rate of 8%. Indian snack market is one of the largest and biggest snacks market globally. Few such items are potato chips which is by far largest product snack category, savoury snacks, snack nuts etc. At present, popcorn has become one of the most demanding snack item into the Indian market. The culinary products includes noodles, macaroni etc.. HLL (Kissan), Heinz, Top ramen and Nestle (maggi).

It was noticed that people living in cities played a huge role in increasing demand of convenience foods in the global market. The change in urbanisation and their lifestyle pattern has boost up the processed food consumption. This has also lead to increase in manufacturing of convenience food. The rapid trend of processed food has changed consumers behaviour, desire, choice and ability to prepare food. People spent good amount of money in purchasing convenience foods to save their time, to have less spoilage and to have more varieties rather than preparing home cooked food items which requires a lot of cooking and preparation time^[3]. It was noticed that money usually spent on these foods has increased twice. With the changing global scenario, socio economic factors has also been changed and it has led to huge demand of convenience foods. India is going to become a worldwide centre for yield and manufacturer of processed and packaged food and soon it will be recognised as 'sun-rise industry'.

Review of Literature

Below is a review work done with regards which are identified by different researchers is presented here.

Alan Warde (1999) "Convenience food: space and timing". Researcher noticed there is a distinction which is drawn between modern (which is directed towards the time compression or the labour saving) and hypo modern (which is directed towards the time shifting) convenience forms. Due to the hectic lifestyle and complex time space, people are directed towards more convenience food consumption^[4]. **Mintel (2000)** stated that a lot of time is utilised while preparing food especially during weekdays when one has to manage workplace and house. To their rescue, convenience food is the solution to get over by the time constraint^[5]. **Capps et al (1983)** and **de Boer et al (2004)** described convenience foods as the food items that are fully prepared or partially prepared.

In these food items, culinary skills, preparation time required for the food and energy inputs needed has already been done by the food processor distributors and not by the home makers^[6]. **Jabir A, Sanjeev K and Janakiraman M (2010)** “Buying behaviour of consumers for food products in an emerging economy” stated, consumers choices play a major role in opting the best food product. Their priority is based on freshness, packaging, cleanliness, price, quality, variety, availability of the product^[7]. **Ritu Anand (2011)** “A study of determinants impacting consumers food choice with reference to the fast food consumption in India” showed that ambience, social life, love for eating food, dual income convenience for urban people influences and impact their food choices^[8]. **Joglekar A and Kundle S (2013)** “Consumer awareness about convenience food among working and non-working women” showed that along with the advancement in the technologies of food processing, convenience foods has emerged rapidly. They have minimise the preparation and working time. During the food processing of these food items, new food additives has been added. Different food preservation techniques has also been invented^[9]. **Sunder S and Kiran S (2015)** “Benefits of convenience foods to working women” noticed that working women started using convenience foods as they saves the preparation time and adds variety to the food and also helps in the emergency situations^[10]. **Mc Kenzle (1986)** stated that working women plays a crucial role in financial growth of the household. Due to some situations ‘time poverty’ can develop. This can leads to no time or very little time available for managing daily household works and food preparation^[11]. **Kara, Kayank and Kucukemiroglu (1997)** “Marketing strategies for fast food restaurants and convenience foods : a customer view” noticed that according to past few years, utilization of fast foods and convenience foods has been increased tremendously. As a result of this, food markets will accelerate and rise in future offering new opportunities and better growth options for the marketers^[12]. **Keng and Lin (2005)** studied the relation of time and expenditures on prepared meals on wives in Taiwan. It was noticed that wives value the importance of time, presence of older aged people in house, younger children, household income. Their education plays a crucial role in determining the amount of money they spent on prepared meals^[13]. **Jabs and Devine (2006)** focus on the different factors

affecting consumption of convenience foods such as time scarcity impact, food consumption patterns like an increase consumption of junk foods, decrease consumption of home cooked food, and a rapid increase in consumption of processed foods. It was noticed that socio-cultural trends has a huge contribution in these factors^[14]. **Amarnath and Vijayudu (2011)** stated the factors that change the attitude and behaviour of rural people towards convenience food products. **Steptoe et al (1995)** developed a food questionnaire which include various factors such as mood, variety, sensory appeal of item, convenience, price, brand image, control and safety of the item. This questionnaire was used to collect the data from 100 respondents. The results showed that men are less concerned than women towards variety, convenience and price of the food product^[15]. **Rasanthika and Gunawardana (2013)** studied the working women’s attitude and behaviour regarding fast food consumption. The results revealed that convenience of fast food has positive and better effect rather than these fast food usage^[16]. **Srinivasan and Shende (2015)** stated the use of convenience food by working women, what benefits they derived, type of convenience food they buy. The results showed that variety, off seasonal food availability and for emergency situations are some of the factors which are beneficial for working women^[17].

Conclusion

The review study has shown that customers are becoming more advanced and smarter with the modern technology. A rapid growth of convenience foods has been noticed in India. Financial investment has being done by various manufacturing companies to advertise their products. These advertisement will attract the consumers sand they will purchase more such food items. People are opting for convenience foods. Individual determinants like household size, income, children, meal preparation are some of the factors that affects the convenience orientation. Sometimes external factors like social responsibilities also played a major role in increasing package food orientation. A lot of branded food companies has invested into the Indian food company and they are successful in entering urban and rural kitchens to a great extent.. Convenience foods are saviour for working people as they saves their a lot of time. They are designed in such a way that provide ease

to the consumers. ‘Convenience’ is the main factor that drive people towards the consumption of convenience food. It has reduced a lot of pressure, stress and time problem faced by working sector people. Overall, the need of convenience foods, demand, consumption and their advancement in the food production technology is increasing day by day. These foods are currently at a very emerging state. Now the future researchers has to focus on the consumers’ demands and needs regarding convenience foods and to understand their consumption pattern, attitude and buying behaviour and work upon it.

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Conflict of Interest- Nil

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Effectiveness of Stroke Awareness Programme for Accredited Social Health Activists and Auxiliary Nurse Midwives at Ramanagara District of Karnataka State

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Abstract

Background: Public awareness and health education on warning symptoms of transient ischemic attack and early stroke by optimum use of existing mass media is of utmost importance in the success of stroke campaigns. There is a scarcity of data available on effectiveness of stroke awareness programme.

Objective: The present study was conducted with an objective to evaluate the effectiveness of stroke awareness programme among Accredited Social Health Activists (ASHA) and Auxiliary Nurse Midwives (ANM) at Ramanagara district of Karnataka State.

Material and Methods: This was an interventional study conducted between January 2015 to January 2016 with 139 study subjects. In this study, a pretested semi structured questionnaire containing 50 questions across different domains was used to collect data and the stroke manual — “Stroke Care Resource Manual in The Community” was provided to all the study subjects for reading. Pre-test and post-test interventions were conducted at district training hall of Ramanagara with the support of local district programme manager. Based on the scoring pattern, the level of awareness amongst ASHA and ANM workers for each domain as well as overall stroke awareness was computed. The assimilated data was analyzed using various statistical methods – descriptive statistics (mean, standard deviation, standard error) and t-test was used to access the response scores obtained in each domain, pre and post training. p-value <0.05 was considered statistically significant. All statistical analysis was done using Microsoft Excel 2007 and statistical software like SPSS.

Results: In our study, majority of study subjects belonged to age group of 35-39 years *i.e.* 48/139 (34.50%) and 71.90% study subjects had 5-6 years of working experience. Out of 139 study subjects, 58 (41.70%), 34 (24.50%), 37 (26.60%) and 10 (7.20%) had the education levels of middle school, high school, Pre-university education and degree respectively. It was observed that there has been a statistically significant (p<0.001) increase in mean scores of before and after intervention in all 6 domains of stroke awareness except in treatment domain. In the present study it was observed that the proportion of study subjects with Grade ‘A’ has been increased

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grade of level of awareness of study subjects in all six domains of intervention revealed that nearly 85% of study subjects with Grade ‘B’ awareness has been improved to Grade ‘A’ and the difference observed was found to be statistically significant

(p<0.001).

Conclusions

In conclusion, facilitation of “Stroke Care Resource Manual” and training sessions helped in the improvement of knowledge on stroke awareness among ASHA and ANMs working within the limits of Ramanagara district of Karnataka state.

Keywords: *Stroke awareness, ASHA, ANM, Ramanagara, Pre-test, Post-test*

Introduction

Globally, stroke is the third commonest cause of mortality and the fourth leading cause of disease burden. In 2013, stroke accounted for nearly 5.7 million deaths and 16 million cases of first ever strokes worldwide. Countries with large populations (like India, China, Brazil and Russia) contribute for greater numbers of deaths and disability due to stroke [1]. The prevalence of stroke in India is 1.5 per 1000 population and it leads to significant socioeconomic burden of patients, care givers and the health system. Amongst the non-communicable diseases (NCDs), stroke contributes about 41% of deaths and 72% of disability adjusted life years in India. Stroke care is predominantly urban oriented and is inaccessible financially, socially and geographically to majority of the population [2]. In demographically developed countries, the average age at which stroke occurs is around 73 years reflecting the older age structure of these countries. The probability of a first stroke or first transitory ischemic attack is around 1.6 per 1,000 and 0.42 per 1,000, respectively. In un-developed regions, the average age of stroke is be younger due to the different population age structure resulting from higher mortality rates and competing causes of death [3]. Overall, NCDs are emerging as the leading cause of deaths in India accounting for over 42% of all deaths (Registrar General of India). NCDs cause significant morbidity and mortality both in urban and rural population, with considerable loss in potentially productive years (aged 35–64 years) of life.

The Government of India launched the National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases & Stroke (NPCDCS) in January 2008 [4]. To control stroke in community spanning primary, secondary and tertiary healthcare system levels imply a need to involve community health workers in stroke and NCD control. It is currently

being implemented with regular screening programme in district hospital followed by camp-based activities approaches in community [5]. The NPCDCS aims at integration of NCD interventions in the National Rural Health Mission (NRHM) framework for optimization of scarce resources and provision of seamless services to the end customer patients as also for ensuring long term sustainability of interventions. Thus, the institutionalisation of NPCDCS at district level within the District Health Society, sharing administrative and financial structure of NRHM becomes a crucial programme strategy for NPCDCS [6].

The impact of NRHM and ASHA is only as strong as the individual ASHAs who are chosen to advocate for use of health facilities and provide knowledge on healthy behaviours and dispense basic health products to their community. Key selection criteria such as education level and representativeness of the local community are extremely critical if we want the ASHAs to retain and communicate information to their community members. However, it appears that selection processes and criteria are not being met in several areas, which leads to the recruitment of ASHAs who may not be able to perform to the desired level [7].

Stroke patients are at high risk of death in the first weeks after the event, and between 20 to 50% die within the first month depending on type, severity, age, co-morbidity, and effectiveness of treatment of complications. Patients who survive may be left with no disability or with mild, moderate, or severe disability. They need to be educated about risks, early recognition, disease management and rehabilitation aspects [8]. With rising healthcare costs and failing economy, it is imperative to focus on primary and secondary prevention of stroke. Modification of risk factors itself can help to achieve 2% reduction in overall stroke mortality per annum [9].

Public awareness and health education on warning symptoms of transient ischemic attack and early stroke by optimum use of existing mass media is of utmost importance in the success of stroke campaigns. It has been realized that warning symptoms such as headache, dizziness, difficulty in speaking or understanding speech and altered sensorium are less commonly identified. Available evidence points that low threat perception, contact with local doctor, illiteracy, poverty, and long distance from hospital are independent factors for delay in seeking healthcare facility [10]. The literature review further revealed that although there was enough information available for effectiveness of awareness programmes for tuberculosis, hypertension, diabetes, malaria etc., but not for stroke. With these viewpoints the present study was conducted with an objective to evaluate the stroke awareness programme for Accredited Social Health Activists (ASHAs) and Auxiliary Nurse Midwives (ANMs) at Ramanagara district of Karnataka state.

Material and Methods

Study Setting

This was an interventional study, conducted within the administrative limits of Ramanagara Taluk and District of Karnataka State for a period of one-year from January 2015 to January 2016. The Study subjects were 154 health functionaries, of which 120 were ASHAs and 34 were ANMs working within the administrative limits of Ramanagara district.

Method of Data Collection

A pretested semi-structured questionnaire containing 50 questions across different domains was used to collect data in this study. This includes General information, Signs and symptoms, stroke risk factors, treatment, prevention, and rehabilitation which was developed in both Kannada and English languages. The study instrument contains two-point responses for each item like Yes (1); No (0)

Table 1. Details of Domains of Study Instruments

Sections	Domains	Number of Items
1.	General information /Causes of stroke	14
2.	Early warning signs & symptoms of Stroke	9
3.	Risk factors for Stroke	9
4.	Treatment for Stroke	4
5.	Stroke prevention	9
6.	Rehabilitation	5

The items in the questionnaire were included after a literature review followed by interaction with ASHA and ANM workers. The questionnaire thus developed was tested for face validity and content validity by 5 subject experts. Reliability analysis was done for the study instrument (questionnaire). The reliability coefficient alpha of 0.84, a high value suggested that the instrument was reliable.

Ethical Approval

Before the conduct of study, the ethical approval was obtained from the Institutional Ethical Committee (IEC) of Rajarajeswari Medical College and Hospital. Permission from Director of Health & Family Welfare Karnataka, District Health Officer (DHO), Ramanagara and other administrative officers of Ramanagara District were obtained.

Preparation of Stroke Manual

The stroke manual was developed with the help of subject experts from Rajarajeswari Medical College and Hospital and Center of Public Health, NIMHANS, Bangalore. The English version of the manual was translated into Kannada by a professional translator after which the Kannada version was reviewed by subject experts and few ASHA and ANM workers. Finally, the manual was named as “*Stroke Care Resource Manual in The Community*” (for ASHA and ANM workers). The contents of Stroke Care Resource Manual were as follows,

1. Anatomy of the brain
2. Blood supply to the brain
3. Stroke- Meaning and types
4. Need to know about Stroke
5. Risk factors for Stroke
6. Signs and symptoms of stroke
7. Treatment of Stroke
8. Stroke prevention
9. Rehabilitation of Stroke patients
10. Role of ASHA and ANM workers in stroke care—
5 A’s approach for stroke care

Pre-test

The pre-test was conducted at District Training Hall, Ramanagara with the support of District Programme Manager. For the present study among 154 study subjects, 139 workers consisting of 115 ASHA and 24 ANM workers agreed to participate in the study where as other 15 workers deferred to participate in the study. They were explained in understandable local language about the present study and informed consent was sought. This pre-test was conducted using the study instrument and the study subjects were specifically informed not to discuss while responding to the questionnaire. The investigator read out each question and the study subjects were asked to answer for each question.

Training

Soon after the pre-test training programme was conducted to sensitize the ASHA and ANM workers regarding stroke. Before starting the training programme, the “Stroke Resource Manual” was given to study

subjects for self-reading and re-enforcement. The study subjects were trained about stroke by chief investigator via a power point session wherein each session was followed by interactive discussion. The resource manual was provided to all the health functionaries after the training programme. They were asked to read the same subsequently in their work time or at their leisure time

Post-test

Post intervention evaluation of their awareness was done after two months using the same semi structured questionnaire. Prior intimation was not given the data was collected when the other training/monthly meeting was conducted. It was conducted among the same 139 study subjects who attended the pre-test and training programme.

Data Analysis

The assimilated data was analyzed using various statistical methods like descriptive statistics (mean, standard deviation, standard error), t-test was used to access the response scores obtained in each domain, pre and post training. p-value <0.05 was considered significant. Estimates of population proportions were obtained using estimator sample proportions and 95% confidence intervals under standard normal distribution approximation for large sample. All statistical analysis was done using Microsoft Excel 2007 and statistical software like SPSS.

Determination of Change in Level of Awareness of Stroke Before and After Training

Based on the scoring pattern, the level of awareness of ASHA and ANM workers for each domain as well as overall stroke awareness was computed as follows.

- Level of awareness (%) = $(\text{Score obtained} \div \text{Maximum possible score}) \times 100$
- Based on the level of awareness (%), each study subject was further graded as, Grade A = $\geq 75\%$; Grade B = $< 75\%$

Results

In our study, majority of study subjects belonged to age group of 35-39 years *i.e.* 48/139 (34.50%) followed by 34/139 (24.50%) in 40-45 years, 29/139 (20.90%) in

30-34 years, 16/139 (11.50%) in 18-24 years and 12/159 (8.60%) were in the 25-29 years of age group. 71.90% study subjects had 5-6 years of working experience. Out of 139 study subjects, 58 (41.70%), 34 (24.50%), 37 (26.60%) and 10 (7.20%) had the education levels of middle school, had high school, pre-university education and degree respectively (Table 2).

Table 2. Demographic profile of study subjects enrolled in the study

Sl. No.	Characteristics	No. of Study Subjects	Percentage
1.	Age (in years)		
	18-24	16	11.50
	25-29	12	8.60
	30-34	29	20.90
	35-39	48	34.50
	40-45	34	24.50
2.	Experience (Years)		
	0-2	8	5.80
	3-4	22	15.80
	5-6	100	71.90
	7-8	9	6.50
3.	Education Level		
	Primary School	-	-
	Middle School	58	41.70
	High School	34	24.50
	PUC	37	26.60
	Degree	10	7.20

It was observed that there has been a statistically significant ($p < 0.001$) increase in mean scores before and after intervention in all 6 domains of stroke awareness except in treatment domain. The increase in mean scores was highest in the domain of ‘understanding of risk factors of stroke, wherein the mean score was increased from 5.10 ± 2.50 before intervention to 8.40 ± 1.00 after intervention (Table 3).

Table 3. Change in Mean Scores of Intervention Domains Before and After Intervention

Sl. No.	Intervention Domain	Before	After	t-test	df	p-value
1	General information/causes	8.70 ± 2.50	10.60 ± 1.80	-7.80	138	<0.001
2	Early warning signs & Symptoms	6.30 ± 2.40	8.20 ± 1.30	-8.30	138	<0.001
3	Risk factors	5.10 ± 2.50	8.40 ± 1.00	-14.30	138	<0.001
4	Treatment	3.00 ± 0.90	2.90 ± 0.90	0.90	138	0.05
5	Prevention	4.80 ± 2.00	6.80 ± 2.10	-8.70	138	<0.001
6	Rehabilitation	3.30 ± 1.40	4.70 ± 0.80	-10.40	138	<0.001

Values are expressed as Mean±SD

It was observed that among 113 study subjects with Grade 'B' level of awareness in all 6 domains of awareness score before intervention, nearly 96 (*i.e.* 85.00%) were converted to Grade 'A' after intervention. Similarly, among 26 study subjects who had Grade 'A'

level of awareness, 22 (*i.e.* 84.60%) continued to remain in Grade 'A' after intervention. Hence, the intervention had converted nearly 85% of study subjects with Grade 'B' awareness into Grade 'A'. The difference observed was found to be statistically significant ($p < 0.001$) (Table 4).

Table 4 Change in Grade of Level of Awareness of Study Subjects In all 6 Domains of Intervention

Intervention-	After		
Before	Grade A	Grade B	Total
Grade A	22(84.6%)	4(15.4%)	26(100%)
Grade B	96 (85.0%)	17(15.0%)	113(100%)
Total	118(84.9%)	21(15.1%)	139 (100%)

Discussion

The present study was conducted with total of 139 study subjects consisting of ASHA and ANM workers working within the administrative limits of Ramanagara district of Karnataka State to assess the knowledge on stroke by pre-test and post-test intervention by training programme using a need based locally sensitive manual between January 2015 - January 2016.

In our study, majority of subjects belonged to age group of 35-39 years *i.e.* 48/139 (34.50%) and 71.90% study subjects had 5-6 years of working experience. Out of 139 study subjects, 58 (41.70%), 34 (24.50%), 37 (26.60%) and 10 (7.20%) had the education levels of middle school, had high school, pre-university education and degree respectively.

In this study it was observed that, the percentage of overall response in the pre-test and post-test with regards to awareness of signs and symptoms of stroke among ASHA and ANMs was 69.40% and 91.40% respectively. These findings were in concurrence with Akinyemi et al [11]. Similarly, with respect to awareness on risk factors of stroke the percentage of response was 56.60% and 93.00% pre-test and post-test respectively. However, these findings are contradictory to the results reported by Akinyemi et al wherein the percentage of response was 90.50% and 99.00% pre-test and post-

test respectively [11]. In our study, results on awareness on stroke treatment, prevention measures of stroke, rehabilitation for stroke pre-test and post-test was 75.20% and 72.90%, 57.40% and 83.80%, 67.20% and 93.50% respectively.

The results on mean scores of intervention domains before and after intervention revealed that there has been a statistically significant ($p < 0.001$) increase in mean scores of before and after intervention in all 6 domains of stroke awareness except in treatment domain and the increase in mean scores has been highest in the domain of understanding of risk factors of stroke. In the present study it was observed that the proportion of study subjects with Grade 'A' has been increased after training in all domains except treatment domain, wherein it remains unchanged. The results on change in grade of level of awareness of study subjects in all six domains of intervention revealed that nearly 85% of study subjects with Grade 'B' awareness has been improved Grade 'A' and the difference was observed found to be statistically significant ($p < 0.001$). Hence, it was evident that by providing the "Stroke Care Resource Manual" and the training session has significant impact on stroke awareness knowledge among ASHA and ANM workers.

Conclusion

In conclusion, Accredited Social health Activists

(ASHA) and Auxiliary Nurse Midwives (ANM) workers were largely recruited as per pre-set selection criteria regarding their age, education, and working experience as social activist. The ASHA and ANM workers were found to be functional in some areas with scope for improvement in others. The role of an ASHA and ANM workers was perceived to be more of a link-worker/facilitator rather than a community health worker. Facilitation of “Stroke Care Resource Manual” and training sessions helped in the improvement of knowledge on stroke awareness among ASHA and ANM working within the limits of Ramanagara district of Karnataka state.

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Effects of Therapeutic Weight Loss Exercises on Obese Individuals with Genu Valgum Deformity

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Abstract

Introduction: Obesity is a major factor, increasing susceptibility for MSDs, specifically thereof lower back and lower extremities. An increase in Q angle beyond the normal range is known as genu valgum (knock knees) and considered as extensor mechanism misalignment, and it has been associated with knee joint hypermobility, patellar instability and patellofemoral pain syndrome. the association with increased BMI and genu valgum and found that the severity of tibia vara was high obesity.

Material and Methods : The interventional study was conducted in a Physiotherapy centre with 50 overweight and obese males with increased Q-angle between the age group of 25-40 years. Recent fractures, open wounds, and other congenital anomalies in the lower extremities were excluded. Therapeutic weight loss exercises were given based on the American college of sports medicine (ACSM) and the observations were done.

Results: Pre and post intervention results showed a significant ($p < 0.005$) that the treatment given was effective.

Conclusion : In conclusion, the severity of the genu valgum is directly associated with increase in BMI, sedentary lifestyle and physical inactivity plays a major etiological role for obesity in the development and progression of genu valgum. Essentially, early detection and intervention with guidance of physical therapist can correct the deformity with limited surgical morbidity.

Key words : Q-angle, Weight loss exercises, Genu valgum, Obesity and genu valgum

Introduction

Obesity is one of the metabolic disorder in which there is an accumulation of excessive fat that have a negative effect on health ¹. The World Health Organization reported that more than one billion people are overweight and of these, 300 million are

obese worldwide ². Although the mortality rate is low in musculoskeletal disease, it is a major cause of pain and disability in the society³. Musculo-skeletal disorders (MSDs) are caused by increased stress to the skeletal system through biomechanical load which may be caused by occupation (external load) or obesity (internal load)⁴. Stated that obesity is a major factor, increasing susceptibility for MSDs, specifically thereof lower back and lower extremities⁵. Done a literature review of 63 research papers and observed that obesity has been clinically implicated with musculoskeletal disorders involving the back, osteoarthritis of hip, knee, flattening of the medial longitudinal arch and chronic heel pain⁶. Conducted a cross-sectional study using a tool “Nordic Musculoskeletal Questionnaire” among 41 subjects with the mean age of 40.78 ± 9.85 years and the mean BMI

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(46.87 ± 8.08) and found that 80.49% of the individuals marked the painful areas as ankle feet, lower back, knees, wrists, hands and fingers⁷.

A retrospective review of relationship was done between genu valgum and obesity with the existing data on 66 children with mean age 12.2±2.2 years and found that 71% obese children had genu valgum, he concluded that obesity may play a role in the etiology of idiopathic genu valgum in young age and leads to osteoarthritis during old age⁸. The normal range of Q angle is 14° for males and 17° for females^{9, 10, 11}. An increase in Q angle beyond the normal range is known as genu valgum (knock knees) and considered as extensor mechanism misalignment, and it has been associated with knee joint hypermobility, patellar instability and patellofemoral pain syndrome^{12, 13}. The Q-angle is one of the major predictor of knee problems and lower limb injuries¹⁴. Abnormally increased Q-angles (> 15° for males and 20° for females) are considered to be an anatomical risk factor in the etiology of overuse injuries of the knee. Q angle may increase in conditions such as increased femoral anteversion, external tibial torsion, laterally positioned tibial tuberosity, tight lateral retinaculum¹⁵. The physical inactivity is a predisposing factor for obesity which leads to idiopathic genu valgum in children 3 to 9 years of age¹⁶. demonstrated the association with increased BMI and genu valgum and found that the severity of tibia vara was high obesity¹⁷.

From the problem stated it has been showed that obesity is one of the predisposing factor in developing the genu valgum, literature has shown that surgical methods have been implicated for the correction of deformity, but none of the studies have been reported to correct the genu valgum deformity by conservative method among obese individuals. There is a lacuna in reporting the effects of therapeutic exercises over the genu valgum, hence the aim of our present study was to find the effects of weight loss exercises among the obese individuals with genu valgum deformity.

Study design

The interventional study was conducted in a

Physiotherapy centre at Chennai. A total number of 50 overweight and obese males with increased Q-angle between the age group of 25-40 years with a Mean height of 173(cm) and weight of 98.61(Kg) met the selection criteria were enrolled in this study. Recent fractures, open wounds, and other congenital anomalies in the

lower extremities, uncontrolled hypertension (systolic blood pressure > 180 mm Hg or diastolic blood pressure > 100 mmHg) and other cardiovascular diseases, or any major active rheumatologic, pulmonary, hepatic, renal, dermatologic disease or inflammatory conditions were excluded. Written consent form was obtained from the patients after detailed explanation of the study, their role, risks & benefits involved and their rights. The study was approved by the institutional ethical committee (IEC)

Materials

The materials used were

- Standard height and weight measuring scale.
- Goniometer to measure the Q-angle.
- Fitness equipments (stationary cycle, treadmill, dumbbells, barbells, resistance band)

Procedure

The individuals underwent a Health-related physical fitness tests and assessment according to the guidelines provided by the American College of Sports Medicine (ACSM)¹⁸. Height and weight of the individuals was measured using a standard scale. BMI was calculated by $Wt/Ht (m)^2$. Q-angle was measured by a line drawn from the anterior superior iliac spine (ASIS) to central patella and a second line drawn from central patella to tibial tubercle¹⁹. Weight reduction exercises and healthy diet patterns for weight loss²⁰ were given to the individuals, appropriately for 1 year duration. The exercises were listed in table: 1, the intensity of the exercises was increased based on the performance and improvement. The parameters were recorded before and after the intervention.

Table 1 : Exercise schedule given for weight loss

Warm up exercises 5-10mins					
Flexibility training for all the major muscles					
Cardiovascular training 45-60mins					
Core and abdominal exercises					
Strength training					
	Exercises	Sets	Reps	Tempo	Rest
Day 1	Thighs and legs	2-3	15,12,10	2:01:04	30-45(sec)
Day 2	Latissmus dorsi and biceps	2-3	15,12,10	2:01:04	30-45(sec)
Day 3	Chest and triceps	2-3	15,12,10	2:01:04	30-45(sec)
Day 4	Shoulders and neck	2-3	15,12,10	2:01:04	30-45(sec)
Day 5	Upper and lower back	2-3	15,12,10	2:01:04	30-45(sec)

Observation and Results

Table 2: Statistical analysis of parameters pre and post intervention

S.no	Parameters	Pre Mean (SD)	Post Mean (SD)	t	p-value	CI
1	Weight (Kg)	98.61(23.7)	86.33(16.4)	12.76	<0.001	95%
2	BMI (Kg/m ²)	35.42(7.46)	31.16(5.59)	13.37	<0.001	95%
3	Q-angle (degrees)	16.2(2.7)	15.4(1.9)	4.70	<0.001	95%

p-value < 0.005 = statistically significant, Confidence interval – (CI) 95%

The weight loss exercises administered for the obese individuals resulted in significant reduction of weight and BMI (Mean Difference of 12.28(9.6) Kg and BMI 4.26(3.2) Kg/m² respectively. The Q angle also recorded significant reduction of 1.2(1.19) degrees with a 95% CI of 0.86-0.54 in the Q-angle as shown in table 2.



Figure: 1
Q – angle before intervention



Figure: 2
Q – angle after intervention

Discussion

Obesity causes metabolic disorder and also had negative effects over musculo-skeletal system, but we have focused only on the effects of weight loss on exercises on Q-angle, this is the limitation of the study. The study results demonstrate that overweight and obese participants showed increase in Q-angle which caused a genu valgum deformity, with the prescribed weight loss and strengthening exercises the participants showed significant changes in Q-angle.

The line of gravity (LOG) is an imaginary line passing vertical through the centre of gravity (COG) from the vertex of the head to the foot, there is a structural and functional connection (kinetic and kinematic chain) between the trunk and lower extremity which operates the biomechanics of the lower extremities. In individuals with ideal body weight, the weight is transferred through the spine to the pelvis; from pelvis, the force is transmitted to the lower extremities²¹. This biomechanical sequence of weight distribution was affected in obesity due to abnormal alteration in the Q-angle. Obesity caused an increase in the Q-angle by placing a excessive stress over the femoral condyles thus internal femoral torsion which leads to a muscle imbalance between the vastus medialis

and vastus lateralis. This abnormal alteration reduces the efficiency of the quadriceps muscle and cause the deviation of patella with genu valgum deformity. In the present study this patho-mechanical alteration was reversed by the weight loss and strengthening exercises. Weight loss exercises with diet patterns showed a significant weight loss of Mean difference 12.28(9.6) Kg and BMI 4.26(3.2) Kg/m² the given strengthening exercises provided stability for the trunk and pelvis in the post intervention, the changes in the appearance of anterior part of the thigh muscle with reduction in the Q-angle was shown in figure 1 & 2.

Orthotic Special shoes are ineffective in treatment or prevention of genu valgum, as they do not correct the genu valgum but relieve muscle fatigue, foot strain, and calf muscle pain²². Performed hemiepiphysiodesis technique by stapling the medial part of the distal femoral and proximal tibial growth plates, and concluded that this surgical procedure may end up with undercorrection or overcorrection²³. Done a surgical procedure in 48 obese children between the age group of 12.7±6.76 years with genu valgum by means of temporary hemiepiphysiodesis using eight-plates and revealed that temporary hemiepiphysiodesis technique using eight-Plates is a

simple, gentle, and effective procedure to treat genu valgum²⁴. When comparing the treatment technique of Stevens PM & Walker et al the surgical technique for genu valgum may end up with complications. In contrast to this the aim of the present study focussed on the conservative and therapeutic management. Positive changes have been observed in the Q angle after the post intervention therapy with a significant value of 1.2(1.19) degrees with a 95% CI of 0.86-0.54 as shown in table 2. This showed that obese individuals have a similar positive association for genu valgum with the reduction of magnitude of valgus in the tibia.

Conclusion

In conclusion, the severity of the genu valgum is directly associated with increase in BMI, sedentary lifestyle and physical inactivity plays a major etiological role for obesity in the development and progression of genu valgum. Obesity and lower extremity malalignment are high risk factors for the development of osteoarthritis of the knee and ankle in adults. Regular exercises with healthy diet patterns minimize the valgus deformity in obese individuals and be expected to reduce the risk of osteoarthritis associated with limb malalignment and reduce the need for joint replacement in the future. Essentially, early detection and intervention with guidance of physical therapist can correct the deformity with limited surgical morbidity.

Ethical Clearance: The study was approved the institutional ethics committee (IEC)

Source of Funding: Self-funded project

Conflict of Interest: Nil

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A Study on Substance Abuse among Male Construction Workers in Tamil Nadu, India

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Abstract

Introduction: Due to substance abuse, there is a serious inflation rate on health burden which have a tendency to cause acute intoxication, harmful behavior, injury and violence. The consequences of abnormal substance abuse associated with tobacco and chronic alcohol may end with numerous psychiatric disorders and other medical conditions.

Objectives: The objective of the present study is to explore the type of substance abuse followed by the reason and frequency of the abuse.

Methods: A descriptive cross-sectional study was conducted among 50 constructional workers in sub-urban region of Chennai, Tamil Nadu, India. Purposive sampling technique was used; the interview was conducted based on a pre-tested questionnaire to collect the data regarding the type of substance abuse, pattern of substance abuse, frequency of substance abuse.

Results: The current study reveals that consumption of alcohol and snuff is to a greater extent among the construction workers. About 30 per cent of them were consuming only alcohol followed by 26 per cent of them were alcoholics and smokers, 22 per cent of the study participants were using only snuff, followed by 18 per cent of them were taking alcohol and snuff. The study also highlights that 85 per cent of the total population started substance abuse at the young adult period itself. More specifically, the study identified that 84 per cent of consumers were getting influenced by their friends. To a greater extent, the study also determines the male at adolescent age group addicted for the substance abuse such as cocaine, cannabis and others substances which predominantly creates an impact on health.

Conclusion: Substance abuse, a serious problem in the society which is comparatively high in the adolescence age period and henceforth required a prompt attention and intervention for creating an awareness to the effective groups in the society. Even though there are various treatments to handle the substance abuse cases, action must be taken to stop or prevent substances abuse which is injuries to health. Further, there is a need to eliminate the stigma and discrimination of persons with substance abuse.

Keywords: Addiction, Construction Workers, Pattern of Substance Abuse, Purposive sampling

Introduction

According to the report of *World Health Organization's (2005)*, there are nearly 200 million

opium addicts in the world and 81,802 treatment seekers in India during the year of 2004-2005. Almost, 61.3 per cent reported use of opioids, followed by cannabis 15.5 per cent, 4.1 per cent sedatives, 1.5 per cent cocaine, least is 0.9 per cent solvents, and 0.2 per cent amphetamines¹. Often, the first experience of substance abuse starts in the adolescence periods and many studies have shown that substance abuse is primarily related to

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alcohol consumption and cigarette, an initial exploration of substance abuse prevalence, alcohol consumption seems to be the first step in preventing and controlling drug consumption¹. Drug and alcohol abuse are significant public health problem in recent times that has a significant negative effects on every community and family in some way². According to the *Substance Abuse and Mental Health Services Administration (2013)*, one in four deaths in the United States is due to substance abuse such as alcohol, tobacco, and/or illicit drugs¹. Drug/ Substance abuse plays a key role in numerous social problems, such as drugged driving, violence, stress, and child abuse. Drug abuse can lead to crime, homelessness, and missed work or problems with the job. Substance and drug abuse harms unborn babies and destroys families². More than a decade, ample sources have reliably shown that working adults are using illicit drugs and drinking heavily, many of them are not substance abusers in the adolescent period². Without addressing the substance abuse and substance abuse disorders with the scientific rigor, compassion, physical and mental health problems, the public health goal of decreasing the world's drug issues cannot be achieved. Substance abuse disorders are common psychiatric disorders². Substance Abuse is the use of the drug or other substances with aim of producing some type of mind-altering effect on the user, this includes both the use of medical substances and non-medical drugs; like alcohol, snuff etc. Morbidity and mortality rate is increased due to substance abuse.

Rationale

Share of the health burden due to substance use is increased and substance abuse can lead to acute intoxication, harmful behavior, injury and violence due to substance abuse, and the consequences of numerous psychiatric disorders associated with tobacco, chronic alcohol and other drug use, and medical conditions⁴. There is numerous evidence that substance abuse among workers is associated with a variety of harmful outcomes, including absenteeism, accidents, and other sources of productivity and performance losses⁶.

Operational Definition

“Substance abuse refers to the harmful or hazardous use of psychoactive substances, including alcohol and illicit drugs. The use of

psychoactive substances causes significant health and social problems for the people who use them, and also for others in their families and communities. Substances of abuse include alcohol, opiates, cocaine, amphetamines, hallucinogens, prescription medicine and over-the-counter drug abuse. (Psychoactive substances are substances that, when taken in or administered into one's system, affect mental processes)¹.”

“Drug addiction as a complex multifactorial health disorder characterized by chronic and relapsing nature”

Materials and Methods

A descriptive cross-sectional study was conducted among 50 constructional workers in sub-urban region of Chennai, Tamil Nadu, and India. Purposive sampling technique was used; the interview was conducted based on a pre-tested questionnaire to collect the data regarding substance abuse. A total of 50 participants were selected from the Chennai district of Tamil Nadu. Subjects have been interviewed by the principal investigator and the data collectors. The data regarding their socio-demographic profile, type of substance abuse, frequency of substance abuse were collected. The questionnaire was translated into local languages (Tamil language). Inclusion criteria include Substance abusing male construction workers, who are aged 18 years and above (A study conducted by *Arjaria et al* states that more number of male participants (14.5 per cent) was found to have higher probabilities for substance disorders as compared to female participants)². Exclusion criteria of this study includes Female construction workers & Non abusing male workers and study participant who is not willing to participate in this even after explaining the purpose of the study.

Statistical analysis: Analysis of the data was done using the SPSS 20.0 trial version for Windows. A descriptive analysis was performed.

Results and Discussion

A Community based cross-sectional study was done to find out the type of substance abuse and the frequency of substance abuse. As a total 50 nos. of construction workers have participated. Among 50 participants 48 per cent of them belong to young adults, followed by middle aged adult 40 per cent and 12 per cent of them

were an older adult.

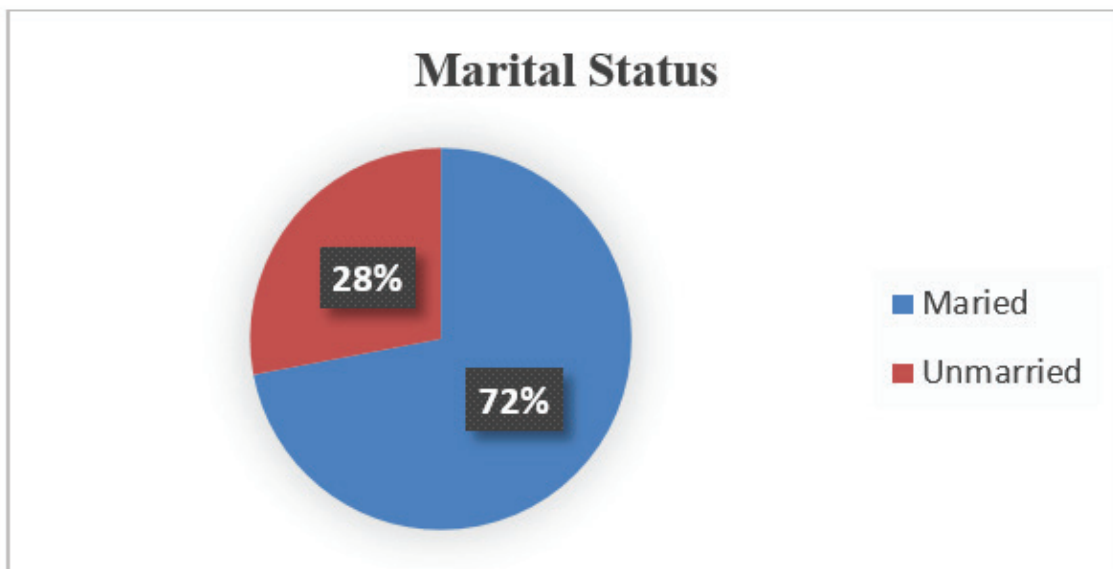


Figure 1: Marital Status

The Figure 1 portrays that out of 50 respondents 36 (72 per cent) of them got married and 14 (28 per cent) of the participants were unmarried.

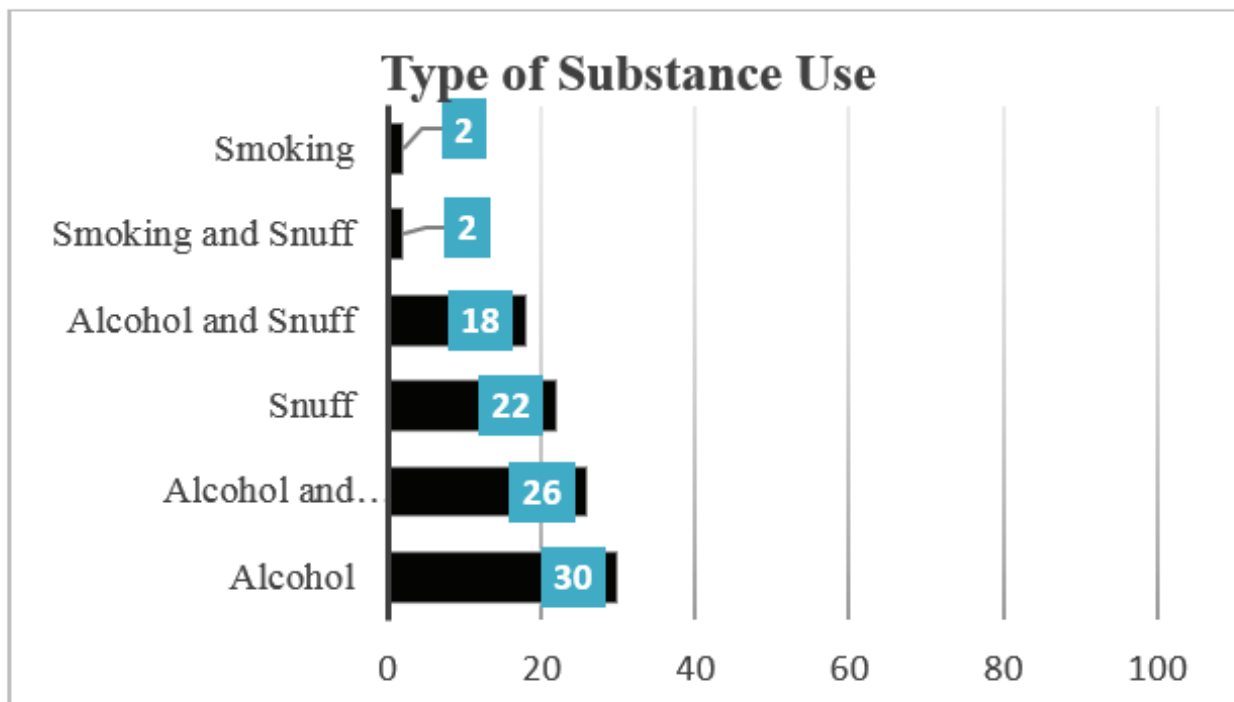


Figure 2: Type of Substance abuse

An in-depth investigation with a respondents, it has been observed that 30 per cent of total population were consuming only alcohol followed by 26 per cent of them were smoking and consuming alcohol, 22 per cent of the study participants were using only snuff, followed by 18

per cent of them were taking alcohol and snuff and least of them were having smoking and snuff (2 per cent) and Smoking alone (2 per cent). Almost 85 per cent of them were started to use substance more at the young adult period itself.

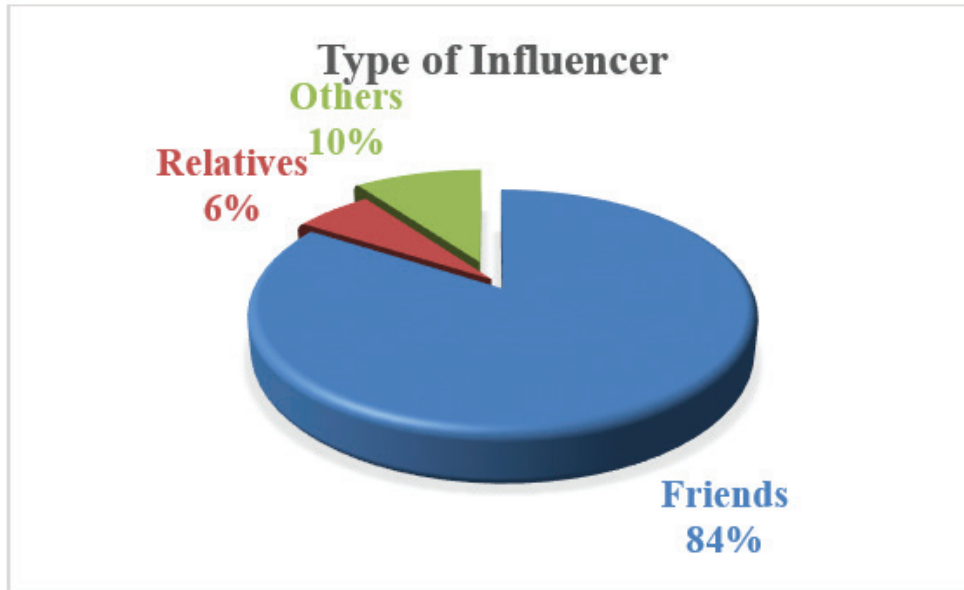


Figure 3: Type of influencer

Above figure 3 depicts that 84 per cent of them were getting influenced by friends and 10 per cent of them were influenced by others and only 6 per cent of them were getting influenced by relatives. Hence, it is clear that the friends are having a higher level of influential capacity in substance abuse and substance abuse.

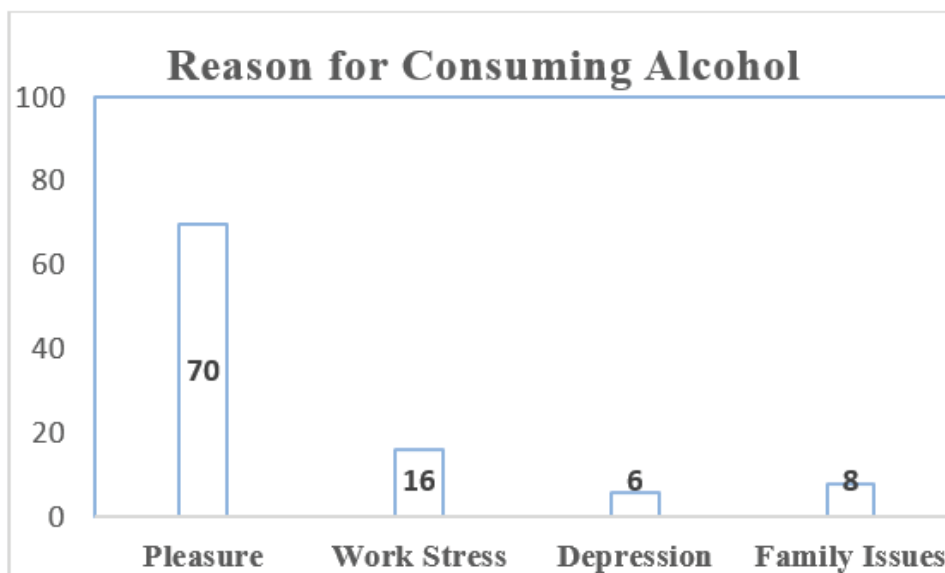


Figure 4: Reason for Consuming Alcohol

Out of 50 construction workers, 70 per cent of them started abusing out of own interest for the sake of enjoyment, followed by 16 per cent of them are abusing due to their work stress and 8 per cent of them due to family issue and only 6 per cent of them are due to depression.

Discussion

The current study reveals that consumption of alcohol and snuff is to a greater extent among the construction workers. A study conducted by Cook, *et al* (2004) for prevention program for substance abuse by providing the social-cognitive principles and cast in a health promotion framework and this was tested on 374 construction workers from 05 different sites. Further, the author in the study highlighted that a program of this type may help construction workers to reduce their licit substance use, but not in illicit drug use⁶. According to the report of the *Ministry of Social Justice and Empowerment Government of India, National Drug Dependence Treatment Centre (NDDTC) and All India Institute of Medical Sciences (AIIMS), New Delhi*, the subsequent consumption of Cannabis and Opioids are next commonly used substance in India beyond alcohol. About 2.8 per cent of the country population (3.1 crore individuals) reported that they have consumed cannabis product without understanding the itinerary of the health impact. The present study illustrates that alcohol and snuff abuse are most commonly abused substances among the construction workers¹⁰. In accordance to the *National Family Health Survey (NFHS, 2014)*, the tobacco and alcohol consumption in India is increasing gradually and more consistently among the male population. The current study reveals that nearly 30 per cent of the study participants were consuming any types of alcohol¹¹. A population based study conducted by Dutta, *et al* (2014) in Tamil Nadu shows that the mean age was 37.20 years and the prevalence of alcohol consumption among the respondent was 35.7 per cent and this study shows 30 per cent of them were having alcoholism².

Conclusion

Substance abuse, a serious problem in the society which is comparatively high in the adolescence age period and henceforth required a prompt attention and intervention for creating an awareness to the effective groups in the society. Even though there are various

treatments to handle the substance abuse cases, action must be taken to stop or prevent taking a substances which is injuries to health. Further, there is a need to eliminate the stigma and discrimination of persons with substance abuse. This can be achieved by increasing knowledge and public awareness about addiction and dependence. The author also highlights that there should be a national policies which exclusively addresses the substance abuse disorders. More specifically on providing an evidence based prevention, treatment and recovery option to drug users.

Recommendation

The social-cognitive model can be developed with substance abuse prevention messages about the hazardous nature of substance abuse. Followed by the information to motivate participants and the way to avoid substance abuse, and real-world instructions on reducing or eliminating substance abuse².

Screening and brief intervention for hazardous substance abuse in diverse medical and community-based settings.

A study can be done to find out the relationship between trauma exposure and substance abuse among construction workers.⁴

Replication of a similar study can be done with a large number of samples.

Limitation: This cannot be generalized

There is a chance of information bias from the respondents.

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Serum Angiotensin-1 & Angiotensin-2 as Serum Biomarkers for Ectopic Pregnancy and Missed Miscarriage

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Abstract

Background: The angiotensins are proteins which belong to the family of angiogenic proteins, Angiotensin-1 (Ang-1) and (Ang -2) are two critical regulators with different functions of vascular development and angiogenesis indicators for placental growth and maternal vascular health in early pregnancy and miscarriage .

Objective: To evaluate whether a single serum measurement of angiotensin-1 and angiotensin-2 at 6-8 weeks gestation can differentiate failed pregnancies, whether ectopic pregnancies or missed miscarriages, from healthy intrauterine pregnancies.

Methods: This study was a case control study conducted at Obstetric & Gynecological Department of Baghdad Teaching hospital /Medical city through the period from 1 st of March to end of August, 2017

Patient and method: the study included 93 pregnant women as following:

- a- 33 women with intrauterine viable pregnancy
- b- 30 pregnant women diagnosed as first trimester miscarriage.
- c- 30 women with ectopic pregnancy(proved by histopathology)

Full history was taken and clinical examination was done blood sampling was performed ,full routine investigation (complete blood picture , renal and liver indices ,blood group) and measurement of angiotensin 1 and 2 levels and B.HCG were taken.

Results: Mean angiotensin-1 and angiotensin-2 levels was significantly lower among women with ectopic pregnancy ($p<0.001$), in same way, there was a highly significant reduction in angiotensin-1 and angiotensin-2 mean among women with miscarriage than healthy women ($p<0.001$).

Angiotensin ratio was significantly lower among women with ectopic

Pregnancy ($p<0.001$). Validity results of angiotensin-2 in prediction of ectopic pregnancy and miscarriage in early pregnancy were better than angiotensin-1 and human chorionic gonadotropins ratio titre. Angiotensin 1&2 was not significant in differentiation between ectopic pregnancy and missed miscarriages ($p=0.5$).

Keywords: Angiotensin-1 , Angiotensin-2, Ectopic Pregnancy, Missed Miscarriage

Introduction

Ectopic pregnancy and miscarriage are two common complications seen in early pregnancy¹ . Ectopic pregnancy denotes the implantation of the gestational sac outside the uterus and is the most common life threatening emergency in early pregnancy² .

Miscarriage is the most common complication of pregnancy miscarriage and ectopic pregnancy present with similar features of abdominal pain and vaginal bleeding in the first trimester of pregnancy^{3,4}. Neovascularization, or new vessel formation, is essential for placental growth throughout gestation and is driven by changes in the balance between pro- and anti-angiogenic

factors present in the extracellular milieu⁵. Angiotensin 1 (Ang-1) and angiotensin 2 (Ang-2) are angiogenic factors that play a critical role in the development of the placental vascular system⁶.

The aim of the current study is To measure the level of serum angiotensin -1 and angiotensin -2 at early pregnancy & To evaluate whether a single serum measurement of angiotensin-1 and angiotensin-2 at 6-8 weeks gestation can differentiate failed pregnancies, whether ectopic pregnancies or missed miscarriages, from viable intrauterine pregnancies.

Methods

This study is a case control study conducted at Obstetric &

Gynaecological Department of Baghdad Teaching hospital /

Medical city through the period from 1st of March to end of August, 2017. Study population 60 pregnant women with confirmed diagnosis of ectopic pregnancy and missed miscarriage (30 women with ectopic pregnancy and 30 women with missed miscarriage) were Inclusion criteria for all groups. In addition of having the specific diagnostic criteria of pregnancy with ectopic, missed miscarriage and viable intrauterine

Pregnancy, they should meet the following condition to be admitted in the study:

1. Reproductive age group women
2. Early pregnancy (6th-8th weeks of gestational age).
3. Free from any chronic medical disease like e.g. : diabetes mellitus or hypertension full history and examination for all pregnant women were done, the pregnant women were referred to ultrasonography and confirmed diagnosis of ectopic pregnancy and missed miscarriages was made by Gynaecology Specialist. A 5ml

blood sample was taken in first visit before management from venous puncture for all pregnant women of three study groups. These blood samples were centrifuged in laboratory of the hospital for assessment of angiotensin 1, angiotensin 2 Measurements of angiotensins .The angiotensin 1 was measured in private laboratory using Elisa kit(CUSABIO ®). This assay had normal limit value of 1.25-80 ng/ml, the angiotensin 2 was measured in private laboratory using Elisa kit (CUSABIO ®) This assay had normal limit value of 1.25-80 ng/ml. HCG(The human chorionic gonadotropin) serum concentrations were measured in private laboratory by an electrochemiluminescence immunoassay (ECLIA) intended for use on the automated analyzer Modular Analytics E170. The results were expressed as HCG titer .

As mean angiotensin-1 and angiotensin-2 levels was significantly lower among women with ectopic pregnancy ($p<0.001$), in same way, there was a highly significant reduction in angiotensin-1 and angiotensin-2 mean among women with miscarriage than IUP women ($p<0.001$). Angiotensin ratio was significantly lower among women with ectopic pregnancy ($p<0.001$). Mean HCG titer was significantly higher among IUP women than miscarriage and ectopic pregnancy women ($p<0.001$). Post hoc test revealed a highly significant difference in angiotensin 1 and 2 levels between women with IUP and each of ectopic pregnancy and missed abortion women separately ($p<0.001$). There was no significant difference in angiotensins 1 and 2 means between women with ectopic pregnancy and those with miscarriage. Similarly the angiotensin ratio and HCG means were significantly different between women with IUP and each of ectopic pregnancy and miscarriage women separately ($p<0.001$), while not significantly different between women with ectopic pregnancy and those with miscarriage.

Table 1: Distribution of angiotensin 1, 2 and HCG titer according to study groups.

Variable	IUP	Ectopic	Miscarriage	P
	Mean±SD	Mean±SD	Mean±SD	
Angiotensin 1	1050.3±235.4	668.9±83	727.8±183.9	<0.001*
Angiotensin 2	1765.9±779.4	308.4±86.1	439.2±142.6	<0.001*
Ang2/Ang1ratio	1.73±0.75	0.47±0.16	0.66±0.36	<0.001*
HCG titer	20936.6±10891.2	2245±578.3	3473.6±1154.9	<0.001*
Post hoc test				
Angiotensin 1	IUP vs. Ectopic			<0.001
Angiotensin 1	IUP vs. Miscarriage			<0.001
Angiotensin 1	Ectopic vs. Miscarriage			0.4
Angiotensin 2	IUP vs. Ectopic			<0.001
Angiotensin 2	IUP vs. Miscarriage			<0.001
Angiotensin 2	Ectopic vs. Miscarriage			0.5
Ang2/Ang1ratio	IUP vs. Ectopic			<0.001
Ang2/Ang1ratio	IUP vs. Miscarriage			<0.001
Ang2/Ang1ratio	Ectopic vs. Miscarriage			0.2
HCG titer	IUP vs. Ectopic			<0.001
HCG titer	IUP vs. Miscarriage			<0.001
HCG titer	Ectopic vs. Miscarriage			0.7

*One way ANOVA test.

The appropriate cut off level and the corresponding validity tests values (sensitivity & specificity) for angiotensin-1 in prediction of ectopic pregnancy were of cutoff angiotensin-1 of 799 mg/mm and less had acceptable validity results (97% sensitivity & 100% specificity).

The appropriate cut off level and the corresponding validity tests values (sensitivity & specificity) for

angiotensin-2 in prediction of ectopic pregnancy were of cutoff angiotensin-2 of 467.7 mg/mm and less had acceptable validity results (100% sensitivity & 100% specificity).

The appropriate cut off level and the corresponding validity tests values (sensitivity & specificity) for HCG titer in prediction of ectopic pregnancy were of cutoff HCG titer of 6900.5 mIU/ml and more had acceptable

validity results (97% sensitivity & 100% specificity).

The appropriate cut off level and the corresponding validity tests values (sensitivity & specificity) for angiopoitin-1 in prediction of miscarriage were of cutoff angiopoitin-1 of 912 mg/mm and less had acceptable validity results (81.8% sensitivity & 86.7% specificity).

The appropriate cut off level and the corresponding validity tests values (sensitivity & specificity) for angiopoitin-2 in prediction of miscarriage were of cutoff angiopoitin-2 of 796.5 mg/mm and less had acceptable validity results (97% sensitivity & 100% specificity).

The appropriate cut off level and the corresponding validity tests values (sensitivity & specificity) for HCG titer in prediction of miscarriage were of cutoff HCG titer of 7790 mIU/ml and more had acceptable validity results (97% sensitivity & 100% specificity).

The appropriate cut off level and the corresponding validity tests values (sensitivity & specificity) for Ang2/Ang1 ratio in differentiation between ectopic pregnancy and miscarriage were of cutoff Ang2/Ang1 of 0.48 and less had acceptable validity results (60% sensitivity & 56.7% specificity) prediction of ectopic pregnancy while Ang2/Ang1 ratio of more than 0.48 is predictive for miscarriage.

Discussion

Many methods and tools were applied by Gynaecologists to examine pregnant women with early vaginal bleeding and/or pain like transvaginal ultrasonography and serum β -HCG. Although easily use of ultrasound imaging, it still inaccurate despite high prediction outcome acquired after combining ultrasound results with clinical suspicion⁷.

In the current study found higher gravidity mean among women with miscarriage outcome ($p=0.02$). This is similar to results of Yang et al⁸ study in China which found a highly significant association between higher gravidity and miscarriage.

Similarly, our study showed that women with miscarriage history were significantly associated with high miscarriage mean ($p<0.001$). This finding is in agreement with Nikitina et al study⁹ in Russia which stated that history of miscarriage is regarded as risk factor for recurrent miscarriage in early pregnancy. Inconsistently, Hyde et al¹⁰ study in Columbia stated that genetic effect is mainly responsible of recurrent

miscarriage and the role of miscarriage history is weak.

Present study revealed that angiopoietin-1 and angiopoietin-2 means were significantly reduced among women with ectopic pregnancy and miscarriage than women with IUP ($p<0.001$). This finding is consistent with results of Daponte et al⁷ case control study in Greece showed that angiopoietin-1 and angiopoietin-2 levels among women at 6-8 weeks of pregnancy were significantly decreased among women with ectopic pregnancy and missed miscarriage.

Scheneuer et al¹¹ cohort study in Australia on 4785 women measured the angiopoitin 1 and 2 levels at first trimester and found that low levels of angiopoitin-1 and angiopoitin-2 among early pregnant women were significantly associated with miscarriage.

The current study a finding regarding the angiopoitin-1 is in agreement with results of Alsamarai et al¹² study in Iraq which included 547 women with bad obstetric history and 291 women with normal pregnancy outcome. Serological study carried out to determine IL-6, IL-17 and Angiopoietin-1 using ELISA kits and observed a highly significant association between low angiopoietin level and women with missed miscarriage.

In UK, Richardson et al¹³ study measured the serum concentration of angiopoietin 1, angiopoietin 2 and vascular endothelial growth factor receptor-1 among 2500 women at early pregnancy and detected a significant linear relationship between each of angiopoietin-2 level and Flt-1 with future viability of pregnancy. The macerated placental vascular development is caused by disrupted angiogenic factors balance which leads to adverse pregnancy outcome. The angiopoietins are also predicting the placental growth and maternal vascular health during pregnancy¹⁴.

A Study in Netherlands by Plaisier et al reported that miscarriages pathogenesis was highly related to vasculature premature maturation. It was shown that in pregnancies with bad outcome, placental villous growth is variable and the process of angiogenic interaction between trophoblast and the uteroplacental circulation is incomplete. The low angiopoietin level is responsible of vessel destabilization and decrease in the angiogenic sprouting promoting vessel leakage¹⁵.

This study showed that Ang2/Ang1 ratio was significantly lower for women with ectopic pregnancy and miscarriage than IUP women ($p<0.001$). This finding

is similar to results of Lash et al¹⁶ study in UK which used the immunohistochemistry to study angiopoietins in the proliferative, early and late secretory phase endometrium from control women as well as in the late secretory phase of women with a history of recurrent miscarriage and detected that angiopoietin ratio could be used as a biomarker for recurrent miscarriage and ectopic pregnancy.^{17,18}

Recommendation:

1. Encouraging use of serum angiopoietins in antenatal care as biomarkers for early failed pregnancy (ectopic pregnancy and miscarriage) in high risk pregnancies.

2. Incorporation of serum angiopoietins with other biomarkers like human chorionic gonadotropins could increase their accuracy and help in using them for early diagnosis of ectopic pregnancy and miscarriage.

3. Further large sized longitudinal studies on benefits of serum angiopoietins in predicting adverse pregnancy outcome need to be supported.

Ethical Clearance- Taken from Baghdad Medical City committee

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Conflict of Interest- nil

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Maintaining Physical Activity of Elderly through Local Wisdom to Improve Quality of Life of Elderly in Yogyakarta, Indonesia

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Abstract

Background. Physical activity has been proven effective in improving and maintaining the health of the elderly. But the participation of the elderly in physical activity is not proportional to the number of elderly in the community. This is due to physical activity only meeting physical health, while other elderly needs such as social, psychological and environmental are not met. Interventions are needed to maintain sustainable physical activity that can improve the quality of life of the elderly.

Aim. This study aimed to determine the effects of psychoeducation and physical exercise for the elderly programs with local wisdom approach to quality of life of the elderly in the community.

Method. This research method used a Quasi-Experiment Pre-Post Test Design with Control Group. The sample of this study was 132 elderly who lived in rural and urban areas, using Multistage Random Sampling techniques. Data analysis used correlation pearson (*rho*), t test and multivariate analysis (regresi linier).

Results. The effect of program can improve the function of physical activity and quality of life of elderly. Meanwhile the factors that affect the quality of life of the elderly are education, mental status, function of physical activity and intentions.

Conclusion. This Program affects the function of physical activity and quality of life of the elderly in the community. Determinants of quality of life can be used as a basic for developing health care programs for the elderly.

Keywords: *physical activity, psychoeducation, local wisdom, elderly, quality of life.*

Introduction

The process of aging in human development throughout his life is a physiological process that is dynamic and can not be changed. In this condition the elderly experience biological, psychological, spiritual and social changes, in the form of various declines.^{1,2,3}

The condition causes the elderly are more vulnerable to various health problems including decreased cognitive function, emotional, psychomotor, behavioral changes,⁴ dementia, sleep disorders, emotional and depressed,⁵ loneliness, deprivation, and social roles will be reduced, depression commit suicide.^{6,7}

Various attempts have been made to prevent the effects of the aging process, one of which is by conducting a regular physical activity.⁸ Activities carried out in groups can motivate promote and maintain adherence to physical training programs.⁹

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Furthermore, the addition of psychoeducation is expected to strengthen the elderly in carrying out physical activities together so that ultimately it will reduce the impact of cognitive impairment to improve the overall quality of life (QoL) of the elderly.¹⁰

However, the observations of researchers through literature studies show that regular physical activity such as elderly exercise, only improves physical conditions, while other aspects such as psychological, social and environmental are not considered.¹¹

Through a local wisdom approach, this aspect can be changed with a psychoeducation program combined with physical exercise for the elderly (this program is called the *Psi-Segar* program) to provide knowledge support in maintaining a better quality of life for elderly.

The form of the approach to local wisdom is the using of Javanese songs as an accompaniment song for elderly exercise, utilizing humor with Javanese cultural style and the participation of elderly people who follow the way Javanese people gathering.

Materials and Methods

This study uses a method *quasi-experimental* with a *pre-post test design with control groups design*. The

sampling technique used multistage *random sampling*, where the sample is taken based on the proportion of representation of the elderly in the community. The sample size of this study is 132 elderly divided into 4 groups, those are elderly who live in rural areas (treatment and control) and elderly who live in urban areas (treatment and control). The research location is in the district of Sleman, Yogyakarta, Indonesia.

Data analysis using the SPSS program (version 13.0) with the following details bivariate analysis using the correlation test and t test to assess differences in values between the treatment and control groups. While multivariate analysis is used to determine the determinants that affect the quality of life of elderly in the community.

Results

Based on table 1, the demographic characteristics of the elderly in the community indicate that most of the elderly are aged 60-74 years, with female sex and married. Meanwhile, elderly education is the most dominant elementary school, with employment as laborers who earn less than 1.5 million/ month.

Table 1. Description of general data of the community dwelling older adults in Sleman District, Yogyakarta (n = 132)

Variable	n	%
Age		
a. 75 years and over	21	15.9
b. 60-74 years	111	84.1
Gender		
a. Male	32	24.2
b. Female	100	75.8
Religion		
a. Catholic	45	34.1
b. Islam	87	65.9
Status		
a. Not Married	3	2.3
b. Widowed	34	25.8
c. Married	95	72.0

Cont... Table 1. Description of general data of the community dwelling older adults in Sleman District, Yogyakarta (n = 132)

Education			
a.	Not attending school	18	13.6
b.	Elementary school	75	56.8
c.	Junior high school	21	15.9
d.	Senior high school	13	9.8
e.	University	5	3.8
Employment			
a.	Workers	8	6.1
b.	Farmers	9	6.8
c.	Retired	10	7.6
d.	House wife	46	34.8
e.	Labor	59	44.7
Income			
a.	More than 3 million	8	6.1
b.	1.5 million - 3 million	3	2.3
c.	Less than 1.5 million	121	91.7
Smoking status			
a.	Smoking	12	9.1
b.	Not smoking	120	90.9
Disease currently complained of			
a.	Diabetes mellitus (DM)	2	1.5
b.	Hypertension and DM	3	2.3
c.	Vertigo	8	6.1
d.	Pain	25	18.9
e.	Hypertension	35	26.5
f.	No complaints	59	44.7

Table 2. Description of health conditions of the community dwelling older adults in Sleman District, Yogyakarta

Variable	n	%
Person that means		
a. None	6	4.5
b. Extended family	24	18.2
c. Children	51	38.6
d. Spouse: husband/wife	51	38.6
Live with whom		
a. Live alone	15	11.4
b. Spouse : husband/wife	33	25.0
c. Nuclear Family	39	29.5
d. Extended family	45	34.1
Habits Sport		
a. Cycling	5	3.8
b. Walking	27	20.5
c. Physical exercise	29	22.0
d. No Exercise regularly	71	53.8
The duration of the physical activity		
a. more than 150 minutes in a week	15	11.4
b. 60-149 minutes in a week	46	34.8
c. within a week, less than 60 minutes	71	53.8
BMI Status (Body Mass Index)		
a. Less	18	13.6
b. Normal	71	53.8
c. Obesity	18	13.6
d. Excess	25	18.9
Status MMSE (<i>Mini Mental Status Examination</i>)		
a. Normal	114	86.4
b. Cognitive impairment	18	13.6
Planned behavior to physical exercise		
a. Intention	55	25.7
b. Attitude	52	24.3
c. Perceived behavior control	41	19.2
d. Behavior	40	18.7
e. Subjective norm	26	12.1

The most dominant data in table 2 consists of couples who are significant people for the elderly, not doing regular activities, and doing physical activity for less than 60 minutes / week.

The BMI status of the elderly is more dominant in the normal category, however there are still elderly people who are in an abnormal condition (less, over and obese).

Mental status (MMSE) for the elderly is mostly normal, but only a small proportion of the elderly have cognitive impairment. Data on planned behavior for the elderly doing exercise is largely dominated by intentions and attitudes.

Table 3. Correlation of predictor variables with the quality of life of the elderly in Sleman District, Yogyakarta

Variables	n	Pearson correlation	Sig, (2-tailed)
Demographic status			
a. Sex	132	.149	.132
b. Age	132	-.070	.428
c. Education	132	-.213*	.014
d. Works	132	-.210*	.016
e. Income	132	-.161	.066
Social support family			
a. Man who means	132	.211*	.015
b. Live with whom	132	.031	.724
Healthy status			
a. BMI status	132	.236**	.006
b. MMSE status	132	.313**	.000
c. Current illness	132	-.120	.172
Physical activity status			
a. Physical activity (physical activity scale for the elderly)	132	.461**	.000
b. Sports Habits	132	-.121	.166
c. Duration of physical activity	132	-.006	.948
Planned behaviour to exercise	132	.279**	.001

*Sig $\alpha < 0.05$; ** sig $\alpha < 0.001$

Predictor variables that are predicted to affect the quality of life of the elderly can be seen in table 3. The demographic status of the elderly that affects the quality of life is education, employment and social support from

people who are meaningful for the elderly. Health status variables related to the quality of life of the elderly are BMI and MMSE, while the variable for physical activity status of the elderly is PASE and plan behavior.

Table 4. The comparison results of the effect of *Psi-Segar* program intervention on the quality of life of elderly between the treatment and control groups

Variable	Mean ± SD		t	Sig α	95% CI	
	Interventions	Control			Lower	Upper
Physical activity	13.98 ± 11.78	1.57 ± 8.27	7.004	.001	8.89	15.91
Quality of life						
a. General	2.53 ± 1.79	-.40 ± 1.67	9.729	.001	2.339	3.534
b. Physical	2.48 ± 3.78	-2.46 ± 3.27	8.009	.001	3.701	6.141
c. Psychological	4.17 ± 4.15	.38 ± 3.27	5.826	.001	2.501	5.075
d. Social	2.56 ± 4.90	-.47 ± 2.95	4.299	.000	1.536	4.428
e. Environmental	7.95 ± 3.73	3.60 ± 5.49	5.335	.000	2.741	5.971

* sig α <0.01

T-test results on the effect of the intervention of the *Psi-Segar* program in table 4, show that there is a statistically significant difference in physical activity of the elderly between before and after the intervention. This is indicated by the t value of 7.004, 95% CI: 8.89-15.91 with a sig α <0.05, meaning that this intervention gives a difference in the physical activity of the elderly by 7 times greater than the elderly who do not participate in the *Psi-Segar* program.

Table 5. Results of multivariate analysis on variables related to the quality of life of the elderly in the community in Sleman District, Yogyakarta

Variable	Model 1 (R2 (R Square) = 38.3%)						Model 2 (R2 (RSquare) = 34.5%)					
	Mean square	F	t	Sig	95% Confidence interval		Mean square	F	t	Sig	95% Confidence interval	
					Lower bound	Upper bound					Lower bound	Upper bound
a. Education	28.29	10.97	-2.881	.005	-.724	-.134	44.64	16.71	-2.951	.004	-.733	-.144
b. MMSE			2.690	.008	.041	.269			2.534	.012	.032	.262
c. PASE			3.962	.000	.026	.078			5.028	.000	.038	.088
d. Plan behavior			3.180	.002	.025	.109			3.262	.001	.027	.112
e. Employment			-1.447	.150	-.447	.069						
f. Man who means			1.324	.188	-.116	.583						
g. BMI			1.476	.137	.082	.589						

The results of multivariate analysis in model 2 show that the variables of the elderly education, mental status, physical activity and plan behavior simultaneously correlate with the quality of life of the elderly (table 5).

Discussion

This research also shows that education is a factor that affects the cognitive of the elderly associated with quality of life. This is consistent with previous research which states that education,¹² gender is significantly related to the quality of life of the elderly.¹³ Changes that occur in older men are greater than women because the better cognitive status of elderly men is related to work conditions and income.¹⁴

The research provides the result that there is a significant influence of the *Psi-Segar* program on the quality of life of the elderly. The combination of exercise with counseling can have a positive effect on the quality of life of the elderly.¹¹ Improve health status, emotional, mental function is good in achieving the process of healthy aging.¹⁵ This indicates that physical activity that is consistent and routine can improve the quality of life of the elderly.¹⁶

Continuation of *Psi-Segar* program activities will provide longer life expectancies¹⁷ and improve better welfare.¹⁸ This activity also provides protection from degenerative processes and chronic diseases such as cancer.¹⁹

The results showed that the elderly who participated in the *Psi-Segar* program had an impact in the form of the continuation of regular exercise activities for the elderly. This sustainability will affect the quality of life of the elderly in the future. Studies that support this state that the sustainability of physical activity interventions in the elderly is determined by the form of the intervention itself so that there is an interest in these activities.²⁰

The results of multivariate analysis in model 2 (table 5) show that BMI is related to the quality of life of the elderly, as evidenced by the existence of a significant correlation. These results indicate that BMI status determines the quality of life-related to the health of the elderly, women and men with decreased body weight also have a decreased quality of life of health. Conversely, if obese, the satisfaction of his health has decreased which causes the quality of life to decline.^{21,22} Obesity is the worst predictor of health related to the quality of life of the elderly.^{23,24}

Conclusion

The *Psi-Segar* program affects the function of physical activity, and the quality of life of the elderly on physical, social, psychological and environmental aspects. Determinants that affect the quality of life can be used as a basic for stakeholders in developing health programs for the elderly.

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Assessment of Food Security Status and the Determinants of Food Security in Selected Households from Coastal Area of Noakhali, Bangladesh

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Abstract

Background: Household food insecurity means that people either do not have access or unable to purchase food. In either case, they had to suffer from hunger and poverty. Food security is an important determinant to fulfill sustainable development goals. This study aims at determining the food security status and determinants of food insecurity in selected households from the coastal belt region of the Noakhali district, Bangladesh.

Methods: A purposive sampling technique was employed for this cross-sectional study to select households. They were interviewed using a structured questionnaire in order to determine socioeconomic status and nutritional knowledge. Household Food Insecurity Access Scale was used to determine food insecurity.

Results: Our study findings indicated that the majority of households (90.33%) were food secure. The study also revealed that the respondent's level of education, level of nutritional knowledge, and level of monthly income are vital variables that have a significant correlation with food security in their households. However, the respondent's age, gender did not have any significant correlation with food security. Having poor nutritional knowledge (OR=1.604, 95% CI=1.1,87.4) and lower-income level (OR= 7.636, 95% CI=1.14-51.18) have significantly increased the risk of food insecurity. **Conclusion:** Although food security status is satisfactory, policies should be set up to support nutrition education as well as micronutrient intake to achieve nutritional security.

Keywords: Food Security, Coastal Area, Nutritional Knowledge, Malnutrition.

Introduction

Food insecurity is a condition that occurs when people are deprived of secure access to a sufficient amount of safe and nutritious food in order to sustain

healthy growth and development and to maintain an active and healthy life⁽¹⁾. The least difficult situation of food insecurity is primarily anxiety about getting enough food for consumption or having no money to buy more. Adults who think they are food insecure may attempt to prevent hunger by cutting meals, skipping meals, or even going one or more days without food^(2,3). Food security can be affected mainly by low income per capita, low and unequal income distribution, social discrimination, population growth, climate-induced insecurity: climate change, deforestation, flood, declining soil fertility, political instability, high maternal and infant mortality,

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etc., (4).

Bangladesh has graduated from low-middle income country status to middle-income countries in 2015. Since then Bangladesh has maintained steady economic growth over the last few years and achieved significant development gains, particularly in the areas of universal primary education, gender parity in elementary education as well as child and maternal mortality. Poverty and extreme poverty have declined sharply, settling at 31.5 and 17.6 percent, respectively, in 2010, with further declines to the present day (5). Because food security has been an ongoing concern in Bangladesh since its emergence as an independent nation, the governance structure for managing food security is relatively well advanced. However, despite progress and improved food availability due to increased development, 40 million people remain food insecure, and 11 million suffer from acute hunger (6).

Sustainable Development Goal (SDG) 2 of the United Nations, as part of a new international guideline, proposes that governments should aim to improve food security and nutrition as a response to the global sustainability challenge (7). Goal 2 aims to eradicate all forms of hunger and malnutrition by 2030, by ensuring access to adequate and nutritious food for all people, particularly children, throughout the year. This includes encouraging sustainable farming practices such as supporting small scale farmers and ensuring equal access to the land, modern technology, and markets. It also calls for international cooperation in confirming infrastructure and technology investment in order to improve agricultural productivity (8).

Bangladesh's government is committed to eradicating food insecurity and malnutrition. In this context, there is neither any lack of goals and commitments nor any shortage of programs and policies. The Bangladesh Second Country Investment Plan-2016-2020 (CIP2) is integral to the multisectoral approach needed to tackle hunger and malnutrition and to achieve the Sustainable Development Goals (SDGs). CIP2's overall objective is to achieve improved food security and nutrition for all at all times by making nutrition-sensitive and sustainable food systems, which will cost an estimated US\$ 9.25 billion (9). Bangladesh's coastal zone has an area of 47,211 km², which faces the Bay of Bengal or is close to the Sea. It is vulnerable to violent storms and tropical cyclones originating in the Indian Ocean and tracking from Bengal Bay (10). The

effects of climate change have severe consequences for the coastal population's subsistence patterns and their overall health status (11). Noakhali coast is located along the northeastern coast of the Bay of Bengal in the central coastal zone of Bangladesh. This study aims at determining the food security status and determinants of food insecurity in selected households from the coastal belt region of the Noakhali district, Bangladesh.

Methodology

1. Study design and participants

This study is a cross-sectional study. A multistage sampling technique was used to select the respondents. The sample size was calculated using the following formula (12):

$$\text{Sample size} = \frac{Z_{1-\frac{\alpha}{2}}^2 p(1-p)}{d^2}$$

Here, $Z_{1-\frac{\alpha}{2}}$ = Standard normal variate (at 5% type I error ($P < 0.05$)) is 1.96,

p = Expected proportion in the population is 0.25 (25.0%) according to the recent report of the World Food Programme on the state of food security in Bangladesh (6),

d = Absolute error or precision, which is set to 0.1.

According to formula, this study should have at least 37 subjects. Ninety-three households were selected for this study. A purposive sampling technique was employed for this cross-sectional study to select the 93 households from four randomly selected Upazilas: Noakhali Sadar and Hatiya. They were interviewed using a structured pretested questionnaire by following all necessary ethical guidelines. In this respect, data regarding their socioeconomic characteristics, food availability, food accessibility, and access to credit were obtained for analysis.

Determination of household food security status:

Household Food Insecurity Access Scale (HFIAS) Questionnaire was used to collect data on food security. The HFIAS is intended to capture household behaviors in terms of insufficient quality and quantity, as well as anxiety and uncertainty over insecure access or food supply to households (13). The following algorithm is applied to determine the food security category (Table

1).

Table 1: Algorithm to determine the category of food security

HFIAS category = 1 if [(Q1a=0 or Q1a=1) and Q2=0 and Q3=0 and Q4=0 and Q5=0 and Q6=0 and Q7=0 and Q9=0]
HFIAS category = 2 if [(Q1a=2 or Q1a=3 or Q2a=1 or Q2a=2 or Q2a=3 or Q3a=1 or Q4a=1) and Q5=0 and Q6=0 and Q7=0 and Q8=0 and Q9=0]
HFIAS category = 3 if [(Q3a=2 or Q3a=3 or Q4a=2 or Q4a=3 or Q5a=1 or Q5a=2 or Q6a=1 or Q6a=2) and Q7=0 and Q8=0 and Q9=0]
HFIAS category = 4 if [Q5a=3 or Q6a=3 or Q7a=1 or Q7a=2 or Q7a=3 or Q8a=1 or Q8a=2 or Q8a=3 or Q9a=1 or Q9a=2 or Q9a=3]

2. Determining factors influencing food security status of households:

A logistic regression model was used to determine factors influencing the food security status of

households and the variables included in the model are described as in Table 2 below, and a priori hypothesis is included in the table (Table 2).

Table 2. Explanatory variables used in the Logit Model Regression to determine factor influencing food security status of households

Variable	Descriptions	Measurement	A priori Expectation
Age-g-h-r	Age group of household respondent	<20 Years = 1 20-24 Years = 2 25-29 Years = 3 >30 Years = 4	+ / -
Gender-h-r	Gender of household respondent	Male= 1, Female = 0	+
Mon-hh-income	Monthly household income	Below 10,000 BDT = 1 10,000-14,999 BDT = 2 Above 15,000 BDT = 3	+
Edu-lev	Level of education	Primary school = 1 High school = 2 College & above = 3 No formal education = 4	+
Nutri-knowle-lev	Level of nutritional knowledge	Poor = 1 Moderate = 2 Good = 3	+
Hdds-lev	Level of Household dietary diversity	Inadequate= 1 Adequate= 2	+

Android-based Kobocollect application (version 1.23.3) was used to collect the data. Survey mapping was done using QGIS (version 3.8) software. Statistical analysis was carried out using IBM SPSS Statistics (version 23.0).

Results:

Table 3 indicates demographic information of the respondent’s gender, age, institutional background,

nutritional knowledge level, and his/her monthly family income. Of all respondents, 38% were male, while 46% were female. The larger group of respondents was between 26-30 years of age. The average monthly family income of almost half of households was between 10,000-14,999 BDT. The majority of the sample population were deprived of formal education, and only one-fifth of the sample received higher education (Table 2).

Table 3: Demographic characteristics of the individual

Variable (n= 93)	Frequency	Percentages (%)
Gender		
Male	41	38.13
Female	52	46.2
Age group		
18-25	12	11.13
25-34	39	36.27
34-49	21	19.53
>50	39	36.27
Educational Background		
No formal education	49	45.57
Primary education	23	21.39
Higher education	21	19.53
Monthly income (BDT)		
Below 10,000	11	10.23
10,000-14,999	49	45.57
Above 15,000	20	18.6

Using the method of Household Food Insecurity Access Scale (HFIAS), it has been found that 84 households are food secure. Only 10% of households are food insecure. Among them, 6.45% is severely food insecure, and 3.2 % is moderately food insecure (Table 4).

Table 4. Frequency and percentage of occurrence issues based on the categorization of food insecurity in households according to HFIAS.

HFIAS category	Frequency interval	Frequency	%
Food secure	≥1	84	90.33
Mildly food insecure	2-15	0	0
Moderate food insecure	16-23	3	3.22
Severely food insecure	24-27	6	6.45

The study also revealed that the respondent's gender, level of nutritional knowledge, and level of monthly income are vital variables that have a significant correlation with food security in their households, which have been found by the chi-square test (Table 5).

Table 5: Socioeconomic status of the study population and their correlation with a food security status

Variable		Food secured	Food insecure	Total	Chi-Square value	p-value
Gender	Male	40	1	41	4.395	0.036*
	Female	44	8	52		
Level of education	No formal education	44	5	49	0.894	0.639
	Primary education	20	3	23		
	Higher education	20	1	21		
Level of Nutrition Knowledge	Poor	21	7	31	10.762	0.005**
	Moderate	33	1	45		
	Good	30	1	17		
Level of income	Below 10,000	11	3	11	6.896	0.03*
	10,000-14,999	17	4	49		
	Above 15,000	56	2	20		
Level of Household dietary diversity	Inadequate	27	5	32	1.974	0.16
	Adequate	57	4	61		

**($p < 0.01$); *($p < 0.05$)

Binary logistic regression analysis shows that having less income, having poor nutritional knowledge, have a significant risk associated with food insecurity. On the other hand, there is no significant risk association was found between education level, household dietary diversity, and food security status (Table 6).

Table 6: Association of different socioeconomic factors with the incidence of food Insecurity

Variable		Odds Ratio	p-value	95% CI
Level of education	No formal education	3.000	0.467	0.249-20.741
	Primary education	2.273	0.359	0.287-31.347
	Higher education (Ref)			
Level of nutrition knowledge	Poor	1.604	.037*	1.144-87.428
	Moderate	0.909	.94	.54-15.184
	Good (Ref)			
Level of income	Below 10,000	7.636	0.04*	1.139-51.177
	10,000-14,999	6.588	0.04*	1.109-39.147
	Above 15,000 (Ref)			
Level of household dietary diversity	Inadequate	0.379	0.17	0.094-1.525
	Adequate (Ref)			

*(p<0.05)

Discussion

According to the study, around 90% of households are food secure, and this rate is satisfactory compared to the national level ⁽⁶⁾. In the current scenario, most of the people prefer to work in the office and avoid work involving physical labor. Although the study area is coastal, people are still inclined towards businesses or government jobs and oppose farming. As it is clear from Table 3, about 45.57 percent of people’s monthly income is 10000-14999 TK, which is higher from the national level ⁽¹⁴⁾. This means that they have higher access to food. If the income of a person is low, it affects the purchasing power of the person ⁽¹⁵⁾. It can limit caloric intake, which can cause food insecurity and eventually leads to malnutrition ⁽¹⁶⁾. Households with more considerable financial and food-management skills (i.e., managing bills, making a budget, stretching groceries, preparing meals) are less likely to be food insecure ⁽¹⁷⁾. The elevated incidence levels of hunger and food insecurity are not only detrimental to the welfare of the affected households and individuals but

also pose a danger to the local social and political setting ⁽¹⁸⁾. According to our study, nutritional knowledge plays a pivotal role in terms of food insecurity. Nutritional knowledge promotes a healthier lifestyle; thus, food security ⁽¹⁹⁾. Nutritionally educated parents can raise their children safer by supplying the baby with adequate nutrition. They can also decrease the frequency of gastroenteritis and respiratory infections and reduce the number of infant deaths ⁽²⁰⁾. The results show that the full 18-item food security scale is robust in classifying household food security among the general population. Assuming that one’s research and monitoring goals require the combination of food safety categories to be healthy, mild, moderate, and severe, the short form may be sufficient to assess household food safety rates when survey resources do not allow full-scale use. Despite its brevity, this measure maintains many essential indicators of food security. The indicators include self-perceived nutritional inadequacy, household food depletion, impaired eating patterns, and a repetitive pattern of reduced food intake. When concentrating on financial

constraints, the short form ignores many possible causes of food insecurity, such as the lack of a sufficient quantity of nutritious food in the community, the religious beliefs that make available food undesirable. the physical inability of some citizens to purchase food ⁽²¹⁾.

Conclusion

Increased purchasing power and rural employment through improved value-added, agro-processing, development of rural business, access to the market is the key to access food.

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Conflict of Interest: The authors have declared no conflict of interest.

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The Comparison between the Effectiveness of Laughter Therapy and Progressive Muscle Relaxation Therapy towards Insomnia in Elderly Community at St. Yoseph Kediri Nursing Home

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Abstract

Background: The elderly need support to maintain their health because of the declined changes in their physical and psychological. Sleep disorders are a collection of health problems experienced by the elderly, one of which is insomnia. Some elderly can manage sleep disorders (insomnia) without medicine, namely by modality therapy, such as laughter therapy and progressive muscle relaxation therapy.

Research Objectives: This study aims to compare the effectiveness of laughter therapy and progressive muscle relaxation therapy to decrease insomnia to the elderly community at the St. Yoseph Kediri Nursing Home.

Method: This research design was a Quasy experiment with two group pre-test and post-test design approach. The sampling technique used purposive sampling with a total of 28 respondents and then divided into 2 groups who got laughter therapy or progressive muscle relaxation therapy. This study measured insomnia with the ISI (Insomnia Severity Index) questionnaire. The statistical tests used the Wilcoxon sign rank test.

Results: The study suggests that there was the effect of laughter therapy ($p=0.002$ and z score= 3.025) and progressive muscle relaxation therapy ($p = 0.004$ and z score= 2.850) towards insomnia to the elderly.

Conclusion: The laughter therapy intervention gave a slightly higher impact that was evidenced by the reduction of Insomnia scale on 11 people in this group, whereas in the group with progressive muscle relaxation therapy reduced insomnia scale on 10 people.

Keywords: *Laughter Therapy, Progressive Muscle Relaxation Therapy, Elderly, Insomnia*

Introduction

Aging is not a disease but a process of decreased endurance in dealing with stressors from within and outside the body. Several issues such as cardiovascular disorders, elimination disorders, visual acuity disorders, hearing loss, easy to fall, fatigue, pain or discomfort, itching, and sleep disorders are experienced by the elderly.⁽¹⁾ The elderly experience declining in the form of a physical and psychological condition, so the elderly

requires conditions that can support their health. Sleep disorders are one of the health problems that are often faced by the elderly. Sleep quality is a state of sleep experienced by an individual resulting in freshness and fitness when awakened. Age is an influential factor in sleep quality, along with increasing age complaints of sleep quality increases. Entering the age, the elderly often do not have good quality sleep. One of the sleep disorders occurred in the elderly is insomnia.⁽²⁾ Insomnia is the most common sleep disorder, which characterized by nocturnal and diurnal symptoms. This involves major complaints of dissatisfaction with the quality or duration of sleep and is accompanied by difficulty in starting sleep at bedtime, frequent or long-standing, or waking up in the morning with an inability to go back to sleep.⁽³⁾

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Insomnia is not a disease, but only a symptom of some disease suffered by someone or because of a problem that afflicts someone's life. All of this can increase in frequency as we get older. Insomnia has a very serious impact on health in the elderly group. The effects of insomnia include psychological, physiological, physical or somatic, social impacts, and can even lead to death.⁽⁴⁾

The number of elderlies in East Java in 2007 reached 11.14 million people.⁽⁵⁾ Increased life expectancy will occur in developed countries and developing countries, including Indonesia. The number of elderlies around the world is estimated at 500 million with an average age of 60 years and it is estimated that in 2025 it will reach 1.2 billion. Developed countries such as the United States increased the number of elderly people by 1,000 per day in 1985 and an estimated 50% of the population aged over 50 years so that the term Baby Boom in the past changed to "The Explosion of Older Populations".⁽⁶⁾ Based on data from the register book at the St. Yoseph Kediri Nursing Home, the number of elderly is 28 people and the average elderly there complains of having sleep disorders, namely insomnia. Complaints experienced by the elderly in their sleep patterns are that when the elderly have woken up in the middle of the night and experiencing difficulty to start sleeping again.

Management of insomnia can be divided into a pharmacologically and non pharmacologically method. Pharmacologically that is by giving sedatives and hypnotic, this type of drug is very effective in accelerating the achievement when it starts sleeping, prolonging sleep, and reducing the frequency of waking. However, these medicines cause negative effects, including leaving a residual effect of the medicine, which is nausea and drowsiness during the day, and cause people with sleep disorders to experience drug dependence. While non-pharmacological management does not cause side effects and can be done alone by the elderly to maintain their health. There are several non-pharmacological treatments for insomnia such as laughter therapy, progressive muscle relaxation, diaphragmatic breathing, imagery training, biofeedback, hypnosis.⁽⁵⁾ The cheapest non-pharmacological therapy to date does not require imagination, perseverance or suggestion, no side effects, easy to do is laugh therapy and progressive muscle relaxation.

Laughter therapy is a therapy to achieve excitement in the heart that is released through the mouth in the form of laughter, a smile that decorates the face, a loose

heart and happy, smooth blood circulation so that it can prevent disease, maintain health, eliminate stress, and overcome sleep disorders⁽⁵⁾. Laughing in 5-10 minutes can stimulate the release of endorphins and serotonin, a type of body's natural morphine and melatonin.⁽⁷⁾ while progressive muscle relaxation therapy is a deep muscle relaxation therapy that does not require imagination, perseverance, or suggestion. Progressive muscle relaxation therapy focuses on muscle activity by identifying tense muscles and then reducing tension by doing relaxation therapy to get a relaxed feeling.⁽⁸⁾

Research conducted by Sari⁽⁹⁾ on the effect of laughter therapy on the incidence of insomnia with a paired t-test statistic results obtained $p = 0,000$ ($p < 0.05$) which means there is an influence of laughter therapy with the incidence of insomnia, besides that research on the effect Progressive muscle relaxation towards insomnia in the elderly has also been carried out by Nuryanti.⁽¹⁰⁾ obtained the results of data analysis using the Paired Samples T-Test at the significance level ($0,000 = 0.05$) which means there is an influence of progressive muscle relaxation on insomnia in the elderly. Research comparing the laughter therapy and progressive muscle relaxation therapy has not been much studied. Therefore, specific objectives in this study are to analyze the differences in the Effectiveness of Laughter Therapy and Progressive Muscle Relaxation Therapy towards Insomnia to Elderly Community at St. Joseph Nursing Home.

Material and Methods

The research was carried out at St. Joseph Nursing Home, Kediri. The research design was a Quasy experiment with two group pretest and posttest design approach. The study population was all the elderly at the St. Yoseph Kediri Nursing Home. The sampling technique used purposive sampling with a total of 28 respondents. The population was divided into 2 groups who received either the laughter or progressive muscle relaxation therapy.

A research ethics approval was granted prior to the research. After the ethical test, the researcher submitted a research permit to the research location and waited for the permit approval. The researcher conducted apperception with 5 student numerators in taking data. The data collection was conducted by the researchers and numerators. At the beginning of the data collection, the researcher introduced herself to prospective respondents

and conducted an assessment of respondents to determine the condition of the respondent in each elderly. The researcher explained to the respondent regarding the research carried out including the definition, objectives, procedures/implementation, time, benefits, and rights of the respondent and explains that the respondent might resign if the respondent felt uncomfortable. The researcher asked the respondent’s approval to become a research respondent as evidenced by the signing of the respondent’s consent letter.

This research was carried out by measuring insomnia in the elderly with the Insomnia Severity Index (ISI) before and after therapy. Researchers made 2 group of treatment; Group I received a manual about laughter therapy, and Group I received a progressive muscle relaxation therapy manual. Before conducting

therapy, respondents measured insomnia first. Group I was assessed and treated by 1 researcher and 2 students for 4 weeks in a week 2 times. The time needed was 10-15 minutes per elderly. Group II was observed and treated by 1 researcher and 3 students. The therapy exercises were carried out within 7 days, for 15-30 minutes/session. The measurement of the insomnia was then conducted at the end of the study.

The Shapiro Wilk Normality Test was used to assess the normality of the data in each group. The results of the normality test were used to determine the research hypothesis test. The Wilcoxon Statistical Test was then employed to determine the effectiveness of laughter therapy and progressive muscle relaxation therapy to decrease insomnia to the elderly community at the St. Yoseph Kediri Nursing Home.

Results

Table 1. Categories of Insomnia to Elderly in Treatment Group I in Elderly Community of St. Yoseph Kediri Nursing Home in June-July 2019 (n = 14)

Categories	Before		After	
	Amount	Percentage (%)	Amount	Percentage (%)
None Insomnia	0	0	7	50
Mild Insomnia	6	42.9	6	42.9
Moderate Insomnia	6	42.9	1	7.1
Severe Insomnia	2	14.2	0	0
Total	14	100	14	100

Table 2. Categories of Insomnia to Elderly in Treatment Group II in Elderly Community of St. Yoseph Kediri Nursing Home in June-July 2019 (n = 14)

Categories	Before		After	
	Amount	Percentage (%)	Amount	Percentage (%)
None Insomnia	0	0	5	35.8
Mild Insomnia	5	35.7	8	57.1
Moderate Insomnia	6	42.9	1	7.1
Severe Insomnia	3	21.4	0	0
Total	14	100	14	100

Table 3. Wilcoxon Statistical Test Results Signed Rank Test Effects of Laughter Therapy towards Insomnia to Elderly at St. Yoseph Kediri Nursing Home in June-July 2019 (n = 28)

		N	Mean Rank	Sum of Ranks	Post - Pre
Post – Pre-Laughter Therapy	Negative Ranks	11a	6.00	66.00	
	Positive Ranks	0b	.00	.00	
	Ties	3c			
	Total	14			
Z					-3.025a
Asymp. Sig. (2-tailed)					.002

Table 4. Wilcoxon Statistical Test Results Signed Rank Test Effects of Progressive Muscle Relaxation Therapy towards Insomnia to Elderly at St. Yoseph Kediri Nursing Home in June-July 2019 (n = 28)

		N	Mean Rank	Sum of Ranks	Post - Pre
Post – PreProgressive Muscle Relaxation Therapy	Negative Ranks	10a	6.00	66.00	
	Positive Ranks	0b	.00	.00	
	Ties	4c			
	Total	14			
Z					-2.850a
Asymp. Sig. (2-tailed)					.004

Discussion

Measurement Results of Insomnia Severity Index (ISI)

Tables 1 and 2 show that before laughter therapy or progressive muscle relaxation therapy 100% of the elderly experienced insomnia in mild, moderate, and severe categories and after therapy, decreasing insomnia from those in the moderate, mild categories, and none insomnia did not occur. From the data obtained, it is known that there were 2 respondents (14.2%) in Group 1 and 3 respondents in Group 2 (21.4%) experiencing difficulty in sleeping in the severe category before being given the intervention. Most of the respondents in Group I and II experienced mild and moderate insomnia at the

beginning of the study and no one of them was free from insomnia. The changing of the categories of insomnia after treatment is discussed at the later stage of the paper.

The need of rest and sleep in every person is different. There are those whose needs are met properly, some experience disturbances. One of the factors that cause sleep disturbance is age, the more we age, the less the total time needed for sleep. This is influenced by the growth and physiology of organ cells, whereas the elderly has begun to degenerate cells and organs that affect the function and mechanism of sleep. In elderly sleep about 6 hours a day, 20-25% REM sleep, sleep stage IV markedly reduced sometimes absent, may experience insomnia and often wake up during sleep at

night.⁽²⁾ There are specific sleep disorders that are often found in the elderly, namely primary insomnia, chronic insomnia, and idiopathic insomnia. Insomnia is a state of inability to get adequate sleep both quality and quantity, with a state of sleep that is only brief or insomnia.⁽¹¹⁾

Also, the results obtained more than 50% of respondents aged > 75 years, as many as 8 respondents (57.1%). This was in line with the theory of Reny⁽²⁾ which was that as people age, the total time they needed to sleep decreases. This was influenced by the growth and physiology of the cells of the organ, in neonates, high sleep needed because it was still in the process of adaptation to the environment from inside the mother's womb, while elderly had begun to degenerate cells and organs then there was a decrease in the production of the hormone melatonin by the pineal gland in the brain so that it affected the function and mechanism of sleep. This was also supported by the results of Dewi's research,⁽¹²⁾ which stated that most insomnia occurred at the age of 70 years because the aging process or aging affected the work system of the human body, causing the elderly to experience sleep disorders in the form of insomnia. The elderly tend to experience decreased sleep time and rest periods because the older they were, the less sleep they needed. There was a physiological change in the elderly and degeneration of body cells which causes the elderly to have difficulty sleeping properly. This condition was in line with the theory that complaints of difficulty sleeping (insomnia) increased with increasing age.⁽¹³⁾

Effect of Laughter Therapy towards Insomnia

Based on Table 3, the statistical of Wilcoxon Signed Rank Test above the Z value of -3.025 with the significant level specified being $\alpha = 0.05$ and the value of $p = 0.002$, the results of the data set was $p < 0.05$ which meant H1 was accepted, then it could be concluded that there was an effect of laughter therapy towards insomnia to elderly.

Laughter therapy is a laugh that starts to step wisely. So, the effects felt for those who laugh are beneficial. Laughter Therapy to reduce stress has been practiced by many people. Laughing 5-10 minutes can stimulate endorphin and serotonin expenditure, which is a type of body's natural morphine and also melatonin. These three substances are good substances for the brain so we can feel calmer. Laughter therapy is an easy technique to do, but its effect is extraordinary; one of which is the relief of insomnia.⁽⁶⁾ Laughter therapy can be given to clients for

diseases related to the mind, such as anxiety, depression, neurological disorders, and those experiencing insomnia. A laughter session is generally a perfect combination of various stimulus laughter techniques combined with breathing and stretching exercises. Laughter is one of the best ways to relax muscles. Laughter widens blood vessels and sends more blood to the ends and all muscles throughout the body. Laughter has also helped many people who use antidepressants and sedatives. Now they are easier to sleep and have decreased levels of depression.⁽¹⁴⁾

From the results of the study after being given laughter therapy using the Insomnia Severity Index questionnaire to the elderly at St. Yoseph Kediri Nursing Home found 11 respondents (78.6%) elderly experienced decreased difficulty to sleep. This was in line with Setyoadi's theory⁽⁵⁾ that one of the non-pharmacological therapies that can overcome insomnia is laughter therapy. Laughter stimulates the release of the endorphin hormone, also known as morphine, to facilitate blood circulation, making the body more comfortable, relaxed, and easier to sleep. Based on the research that has been done by researchers when conducting laughter therapy with respondents, laughter makes the elderly feel calm, joyful, and more excited in living their lives.

A total of 14 respondents (100%) (Table 1) of the elderly were quite satisfied to the point of being very satisfied with current sleeping habits after being given laughter therapy. This is in line with Kataria's theory.⁽¹⁴⁾ which states that laughter has helped many people use antidepressants and sedatives. Now they are easier to sleep and have decreased levels of depression. Laughter widens blood vessels and sends more blood to the ends and all muscles throughout the body so that laughter provides a relaxing effect on the body and can relax the muscles of the body which affects the sleep satisfaction of the elderly. This is also because one of the benefits of laughter therapy is that as an anti stress, laughter can provide a relaxing effect on the body and mind of the elderly so that it has an impact on your needs and good sleep patterns.

Effect of Progressive Muscle Relaxation Therapy towards Insomnia

Based on Table 3, the statistical Wilcoxon Signed Rank Test above the Z value of -2.850 with the significant level specified being $\alpha = 0.05$ and the value of $p = 0.004$,

the results of the data set was $p < 0.05$, which meant H1 was accepted. Thus, it could be concluded that there was an effect of progressive muscle relaxation therapy on insomnia to elderly.

Progressive relaxation is an exercise to get a relaxed sensation by tensing a muscle group and stopping tension.⁽¹⁵⁾ The results of this study indicated that there was a significant difference between the levels of insomnia before and after progressive muscle relaxation therapy. Where after progressive muscle relaxation therapy, there was a decrease in the level of insomnia in respondents where as many as 10 people experienced a decline in the value of insomnia (71.4) and 4 respondents did not experience a decrease in insomnia (28.6%).

Sleep is not just a routine for humans, but also a necessity for the body and mind. In general, adult humans need 7-9 hours a day to sleep, unlike the elderly who experience decreased sleep time, which is about 6-7 hours a day. In addition to quantity, quality of sleep also needs attention. Sleep must be sound so that we can feel the benefits optimally. Sleeping at night, of course, the quality of our sleep will be much better than during the day. At night in the dark conditions, the body produces the hormone melatonin. This hormone has a big influence on health.⁽¹⁶⁾

The research results of the effect of progressive muscle relaxation therapy on changes in insomnia levels to the elderly showed that there was a significant decrease in insomnia before and after progressive muscle relaxation therapy was carried out for approximately 15-30 minutes, once a day regularly for one week (Table 2). This was evident from the decrease in insomnia scores to the elderly that was, after being given the intervention of progressive muscle relaxation therapy exercises there was a decrease in the number of elderly. The interview results show that respondents also said that they had difficulty starting to sleep and often woke up at night and had difficulty falling asleep again, even though falling asleep again had to wait a few minutes or several hours. According to Martono and Pranarka,⁽¹⁷⁾ in old age, there is also a change in the normal circadian rhythm of sleep which is to be less sensitive to changes in dark and light. This is in accordance to Akmal⁽¹⁸⁾ who states that the elderly spend more time in bed to start sleeping, the frequency of awakening increases so that the fragmentation of sleep due to frequent awakening increases. Sleep quality does not only depend on the amount but depends on meeting the body's needs for

sleep.

This decrease in insomnia was due to the effects of progressive muscle relaxation therapy. The National Center for Complementary and Alternative Medicine⁽¹⁹⁾ mentions the effects of progressive muscle relaxation helping the elderly in increasing their sleep needs and decreasing sleep disorders that tend to increase in the elderly. This nursing intervention in increasing the fulfillment of sleep needs can be done by doing relaxation techniques that are progressive muscle relaxation so that it can meet the quality of sleep needs of the elderly. Physiologically progressive muscle relaxation therapy exercises can have a relaxing effect involving the parasympathetic nerve in the central nervous system. When the physiological condition is relaxed, the psychological condition is also calm. Muscle relaxation can reduce the structuration of tension and individuals who are relaxed can automatically facilitate the process of changing their mindset that is not logical or rational beliefs to rational thought patterns or rational beliefs.⁽²⁰⁾

The results are consistent with the theory of Triyanto⁽²¹⁾ that relaxation techniques are increasingly being performed proven effective in reducing tension and anxiety, overcoming insomnia, and asthma. It is also by the theory put forward by Mashudi⁽²²⁾ that said relaxation will give results after doing as much as 3 times the exercise. Likewise, research conducted by Erna Erliana⁽²³⁾ found that every elderly at BPSTW Ciparay Bandung felt the benefits of progressive muscle relaxation exercises. Before progressive muscle relaxation exercises, most of the elderly experience mild insomnia, and a small proportion experience severe and very severe insomnia. After progressive muscle relaxation exercises, most of the elderly are at the level of no insomnia complaints, and a small proportion experience mild insomnia

Conclusions

The study of the laughter therapy was conducted at the St. Yoseph Kediri Nursing Home. It is suggested that there was an effect of both laughter and progressive muscle relaxation therapy towards insomnia in the Elderly Community at the St. Yoseph Kediri Nursing Home. There was a slight difference in the effect of laughter therapy and progressive muscle relaxation therapy towards insomnia in the studied Elderly Community. The laughter therapy intervention gave a more evident decrease in 11 people in this group

experienced a decrease in the insomnia scale, whereas in the group with progressive muscle relaxation therapy the insomnia scale decreased by 10 people.

Ethical Clearance: This research has been conducted ethical conduct tests at the Ethics Committee of the STIKES RS Baptis Kediri no. 026/07/V/EC/KEPK-2/STIKES RSBK/2019.

Conflict of Interest: No conflict of interest

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Percentage of Niesseria Gonorrhea among Symptomatic Women Attending Infertilty Clinic of Baghdad Teaching Hospital

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Abstract

Background: Niesseria Gonorrhea is a major cause of morbidity among sexually- active individual worldwide. The precise global burden of N. Gonorrhea is difficult to establish because of the lack of diagnostic capability and/or reporting system in many parts of the world.

Aim of the Study: To assess the percentage of Neisseria Gonorrhea in infertile women detected by conventional agar and polymerase chain reaction (PCR).

Study design: A cross sectional study

Setting: carried out in infertility clinic/Department of Obstetrics and Gynecology in Baghdad Teaching Hospital/Medical city for Ten months duration from the 1st of Feb 2017 to the 1ST of Dec 2017.

Patients and method: one hundred infertile women were included in the study. From each patient two endocervical sterile swabs were obtained.

Results: The mean age of the studied group was (27.8±4.2) years, more than one fourth (27%) of infertile women had previous history of sexually transmitted infection. Only 3 (3%) infertile women had positive culture test for Niesseria Gonorrhea while 17 (17%) infertile women had positive PCR test for Niesseria Gonorrhea. The validity results of PCR regarding diagnosis of Niesseria Gonorrhea in comparison to culture were sensitivity (100%), specificity (85.5%), +ve predictive value (82.4%), -ve predictive value (100%) and accuracy (86%)

Conclusion: The PCR is more accurate than culture for diagnoses of Niesseria Gonorrhea infection.

Keywords: *Niesseria Gonorrhea, Female infertility, Endocervical swab*

Background

Neisseria Gonorrhea is a major cause of morbidity among sexually-active individuals worldwide. In the United States, it is the second most commonly reported communicable disease, with more than 350,000 cases reported annually, with probably an equal number of cases that remain unreported^(1,2).Gonorrhea is a major cause of urethritis in men, cervicitis in women; the latter can result in pelvic inflammatory disease (PID), infertility, ectopic pregnancy, and chronic pelvic pain.

The growing threat of antimicrobial resistance in *N. Gonorrhea* highlights the importance of ensuring the availability of appropriate diagnostic modalities for surveillance⁽¹⁾. The World Health Organization (WHO) has estimated the global incidence of several sexually transmitted infections (STIs) among individuals aged 15 to 49 years based on data from regions that have good case-based surveillance systems as well as data from population-based studies⁽³⁾.

The highest incidence areas included Africa and the Western Pacific (including China and Australia) regions

(4). The prevalence of gonorrhoea infections reported in developing countries range from 2 –7 %⁽⁵⁾. In **Iran** in a study done by Afrasiabi S et al.⁽⁶⁾, 2014 found that the prevalence of the N. gonorrhoea was (2.38%), while Shokrollahi MR et al.⁽⁷⁾ study 2017, in **Saudi Arabia** mentioned that the prevalence of N. gonorrhoea was (4.1%). The aim of this study is to assess the percentage of Neisseria Gonorrhoea in symptomatic infertile women detected by conventional agar and PCR.

Patients and Method

Study design and setting

A cross sectional study carried out in infertility clinic /Obstetrics and Gynecology Department in Baghdad Teaching Hospital/Medical City for ten months duration from the 1st of Feb 2017 to the 1st of Dec 2017.(one day a week, four hours per day)

Sample size and sampling:

Endo cervical swab samples were obtained from 100 infertile women during the period of study. All the patients' details were taken, followed by pelvic exam. The inclusion and exclusion criteria of the study were marked. From each patient two endo cervical sterile swabs was obtained.

Principle of PCR Detection

Neisseria Gonorrhoea DNA detection by the polymerase chain reaction (PCR) is based on the amplification of the pathogen genome specific region using specific *Neisseria Gonorrhoea* primers. The fluorescent dyes are linked to oligonucleotide probes that bind specifically to the amplified product during thermo cycling. The real-time monitoring of fluorescence intensities during the real-time PCR allows the detection of accumulating product without re-opening the reaction tubes after the PCR run. M13-*opa*-Fw (TGT AAA ACG ACG GCC AGT GTT GAA ACA CCG CCC GG) and M13-*opa*-Rv (CAG GAA ACA GCT ATG ACC CGG TTT GAC CGG TTA AAA AAA GAT) primers (300 nM each) were used for amplification by PCR technique.

AmpliSens® Neisseria Gonorrhoea-screen-FRT PCR kit is a qualitative test that contains the Internal Control (Internal Control-FL (IC)). It must be used in the extraction procedure in order to control the extraction process of each individual sample and to identify possible reaction inhibition.

AmpliSens® Neisseria Gonorrhoea-screen-FRT PCR kit uses “hot-start,” which greatly reduces the frequency of nonspecifically primed reactions. In variant FRT, “hot-start” is guaranteed by the separation of nucleotides and Taq-polymerase using a wax layer. Wax melts and reaction components mix only at 95 °C. In variant FRT-100 F, “hot-start” is guaranteed by the separation of nucleotides and Taq-polymerase using chemically modified polymerase (TaqF). The chemically modified polymerase (TaqF) is activated by heating at 95 °C for 15 min.

AmpliSens® Neisseria Gonorrhoea-screen-FRT PCR kit is produced in 2 forms: AmpliSens® Neisseria Gonorrhoea-screen-FRT PCR KIT variant FRTREF R-B51(RG)- CE, REF R-B51(iQ)-CE. AmpliSens® Neisseria Gonorrhoea-screen-FRT PCR kit variant FRT-100 F REF R-B51-F(RG, iQ)-CE.

AmpliSens® Neisseria Gonorrhoea-screen-FRT PCR kit variant FRT in

Data Analysis

Analysis of results is performed by the software of the real-time PCR instrument used by measuring fluorescence signal accumulation in two channels:

- The signal of the *Neisseria Gonorrhoea* DNA amplification product is detected in the channel for the FAM fluorophore.

- The signal of the IC amplification product is detected in the channel for the JOE fluorophore. Results are interpreted by the crossing (or not-crossing) the fluorescence curve with the threshold line set at the specific level that corresponds to the presence (or absence) of a Ct value of the DNA sample in the corresponding column of the results grid. Principle of interpretation is the following:

- *Neisseria Gonorrhoea* DNA is **detected** in a sample if the Ct value is determined in the results grid in the channel for the FAM fluorophore. Moreover, the fluorescence curve of the sample should cross the threshold line in the area of exponential growth of fluorescence.

- *Neisseria Gonorrhoea* DNA is **not detected** if its Ct value is not determined (absent) in the results grid (the fluorescence curve does not cross the threshold line) in the channel for the FAM fluorophore, whereas the Ct

value determined in the results grid in the channel for the JOE fluorophore does not exceed the specified boundary value.

– The result is **invalid** if the Ct value is not determined (absent) in the channel for the FAM fluorophore, whereas the Ct value in the channel for the JOE fluorophore is not determined (absent) or exceeds specified boundary value. In such cases, PCR should be repeated for this sample.

The PCR was done in a private lab and by a Kit name (AmpliSens[®]Neisseria Gonorrhoea- screen-FRT PCR kit)(Manufactured by Ecoli s.r.o., Studenohorska 12 Russia)

Statistical Analysis

All patients’ data entered using computerized statistical software; Statistical Package for Social Sciences (SPSS) version 21 was used. Descriptive statistics presented as (mean ± standard deviation) and frequencies as percentages. Kolmogorov Smirnov

analysis verified the normality of the data set. One way ANOVA analysis was used to compare between more than two means. ROC curve was used to clarify validity tests. In all statistical analysis, level of significance (p value) set at ≤ 0.05.

Result

This study enrolled 100 infertile women with mean age of 27.8±4.2 years; 35% of them were 21-25 years age, 39% of them were 26-30 years age and 26% of them were 31-35 years age. Mean infertility duration of infertile women was 7.1±2.6 years; 9% of women had infertility duration of less than 5 years, 70% of women had infertility duration of 5-9 years and 21% of women had infertility duration of 10-14 years. About one third (27%) of infertile women had previous history of sexually transmitted infection (STI). Only 3 (3%) infertile women had positive culture test for Nisseria Gonorrhoea while 17 (17%) infertile women had positive PCR test for Nisseria Gonorrhoea. (**Table1**)

Table 1: Nisseria Gonorrhoea culture and PCR findings of infertile women

Variable	No.	%
Culture results		
Positive	3	3.0
Negative	97	97.0
Total	100	100.0
PCR		
Positive	17	17.0
Negative	83	83.0
Total	100	100.0

No significant difference was observed between infertile women with positive PCR of Nisseria Gonorrhoea and those with negative PCR regarding their age (p=0.1). No significant difference was observed between infertile women with positive PCR of Nisseria Gonorrhoea and

those with negative PCR regarding duration of infertility (p=0.2).(**Table2**) There was a significant association between infertile women with previous history of STI and positive PCR of Nisseria Gonorrhoea (p=0.01).

Table 2: Distribution of infertile women age according to PCR results and history of STI

Variable	Positive PCR		Negative PCR		P
	No.	%	No.	%	
Age					
21-25 years	3	21.7	32	39.0	0.1*NS
26-30 years	11	56.5	28	33.8	
31-35 years	3	21.7	23	27.3	
Mean±SD (years)	28.7±4.2		27.4±4.1		0.2** NS
Variable	Positive PCR		Negative PCR		P
	No.	%	No.	%	
Duration of infertility					
<5 years	0	-	9	11.7	0.2*NS
5-9 years	15	78.3	55	67.5	
10-14 years	2	21.7	19	20.8	
Mean±SD	7.7±2.8		6.9±2.5		0.1** NS
Variable	Positive PCR		Negative PCR		P
	No.	%	No.	%	
Previous history of STI					
Positive	8	47.8	19	20.8	0.01*S
Negative	9	52.2	64	79.2	

*Chi-square test, **Independent sample t-test, NS=Not significant.

No significant difference was observed between infertile women with positive culture of Nisseria Gonorrhoea and those with negative culture regarding their age (p=0.3), however, mean age of infertile

women with positive culture of Nisseria Gonorrhoea was significantly higher than infertile women with negative culture. (**Table3**)

Table 3: Distribution of infertile women age according to culture results

Variable	Positive culture		Negative culture		P
	No.	%	No.	%	
Age					
21-25 years	0	-	35	35.2	0.3*NS
26-30 years	2	66.6	38	39.3	
31-35 years	1	33.3	27	26.5	
Mean±SD (years)	32.8±4.2		27.4±4		0.002** S

* *Fishers exact test*, ***Independent sample t-test*, S= *Significant*, NS=*Not significant*.

No significant difference was observed between infertile women with positive culture of Neisseria Gonorrhoea and those with negative culture regarding infertility duration ($p=0.5$), however, infertility duration of infertile women with positive culture of Neisseria Gonorrhoea was significantly higher than infertile women with negative culture. Regarding to the +ve PCR in N. gonorrhoea about 53% (9/17) were abnormal cervixes and 47.0% (8/17) were within normal cervixes.

Table 4: Relation between duration of infertility and culture results, and PCR distribution

Variable	Positive culture		Negative culture		P	
	No.	%	No.	%		
Duration of infertility						
<5 years	0	-	9	9.6	0.5*NS	
5-9 years	2	66.7	67	70.2		
10-14 years	1	33.3	21	20.2		
Mean±SD (years)	9.1±1.6		6.9±2.5		0.04** S	
Variable	Abnormal cervixes		Normal cervixes		Total	
	No.	%	No.	%	No.	%
+ve PCR	9	53.0	8	47.0	17	100.0

* *Fishers exact test*, ** *Independent sample t-test*, S= *Significant*, NS=*Not significant*.

No significant difference was observed between infertile women with positive culture of Neisseria Gonorrhoea and those with negative culture regarding previous history of STI ($p=0.1$). The validity results of PCR regarding diagnosis of Neisseria Gonorrhoea in comparison to culture were sensitivity (100%), specificity (85.5%), +ve predictive value (82.4%), -ve predictive value (100%) and accuracy (86%). (**Table 5**)

Table 5: Validity test results of PCR in comparison to culture in diagnosis of Nisseria Gonorrhoea.

Validity test			Culture			
			Positive	Negative	Total	
			No. (%)	No. (%)	No. (%)	
PCR	Positive	No. (%)	3 (17.6)	14 (82.4)	17 (100.0)	
	Negative	No. (%)	0 (-)	83 (100.0)	83 (100.0)	
	Total	No. (%)	3 (6.0)	97 (31.7)	100 (100.0)	
Sensitivity			100%			
Specificity			85.5%			
+ve predictive value			82.4%			
-ve predictive value			100%			
Accuracy			86%			

Discussion

Infertility is a common public health concern worldwide; globally 9% of reproductive-aged women are infertile. The burden of infertility can reach up to 30% in reproductive-aged women. (8)

The mean age group of the patients in the current study was (27.8,±4.2 years) similar to the Shokrollahi MR study when it was (28.73±5.52). (8) Te Velde ER, (9) in the study carried on 2002 mentioned that the fertility of women reach peaks in the early and mid-20s years, after which it starts to decline, then this decline being accelerated after age 35. Which is in agreement with the current study in which it’s revealed that about more than two third of the infertile patients was in the age below the 30 years old. (9) Likewise to the Afrasiabi S, 2014 in Iran when he assesses the frequency of the Endocervical infection of N. Gonorrhoea among female carrier and changing trends of antimicrobial susceptibility patterns in Kashan, Iran. (6)

As mentioned by US preventive Task force, that most common age group infected with N. Gonorrhoea was between 15-24 years old. (9) The current study mentioned

that the majorities of the infertile women who infected with N. Gonorrhoea and with +ve PCR results were in the age less than 30 years old, same that concluded by Kasanda G. (10) study in 2012 in Zambia to assess the prevalence and determination of N. Gonorrhoea and C. trachomatis in PID patients when (58.6%) were in the age group of 20-29.

Regarding to the patients with history of sexual transmitted disease, it was found that 27 (27%) of the infertile women were previously infected with STD, less than that found by Kasanda G when the prevalence of STI were (32%). (10)

In Egyptian study done recently by Elkayal NM et al, in 2015 to detect of C. Trachomatis and N. Gonorrhoea in women with infertility, this study was revealed that the PCR technique was the best and the gold standard method to detect the N. Gonorrhoea in comparison with ELISA and culture, and the culture method is less sensitive than PCR for detection of the N. Gonorrhoeae. (11) This is in agreement with current study in which the validity results of PCR regarding diagnosis of Nisseria Gonorrhoea in comparison to culture were sensitivity

(100%), specificity (85.5%). Likewise Gilson and Mindel,⁽¹²⁾ study revealed that PCR have a sensitivity of at least 90% compared with 60% - 70% for culture. The sensitivity of culture method in Gaydos CA, et al⁽¹³⁾ study is (63.0%) and it is very close to Elkayal NM et al.⁽¹¹⁾ With same value, in a study carried by E. van Dyck, et al,⁽¹⁴⁾ culture method shows (67.8%) sensitivity. Also, An Egyptian study found that the sensitivity and specificity of culture were 58.2% and 100%, respectively⁽¹⁴⁾.

The present study revealed that there is high percentage of detection of the N. Gonorrhoea infection by PCR (17%) than that by culture (3%) respectively, while in Rostami MN et al,⁽¹⁵⁾ in 2017 the *N. Gonorrhoeae* infection was detected in 5 (1.2%) specimens by using culture and biochemical tests. Gaydos CA, et al, study in 2013, mentioned that in real-time PCR assay, only 17 (4.1%) were positive in detection of N. Gonorrhoea infection.⁽¹⁶⁾ This may be attributed to the small sample size in our study (n=100), while in Rostami MN et al, study the sample size were (n=420)⁽¹⁴⁾ and in Gaydos CA et al, in 2013 were⁽¹⁶⁾ (1,722 female).

Conclusion

The PCR is more accurate than culture for diagnoses of Neisseria Gonorrhoea infection. It is recommended that large sample size with enough period of time for future further study, and more than two samples supposed to be drawn from the patients.

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The Correlation between Thyroid Function Status and Bone Mineral Density among Postmenopausal Women

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Abstract

Background: the relationship between thyroid function and bone has been empirically known for ages. Loss of bone with aging in universal phenomenon effecting both men and women and associated with reduces bone strength and increased fracture risk. The link between bone mineral dignity, bone quality and the risk of fracture with thyroid hormones in normal postmenopausal women suggest a role for these hormones, even with the range of normal thyroid in these diseases.

Objective: To investigate the relation between thyroid function status and bone mineral density among postmenopausal women.

Study design: A cross-sectional study

Setting: Department of Obstetrics and Gynecology of Al-Yarmouk teaching hospital in cooperation with Lab of National Institute of Diabetic Center and Dexa unit.

Patients and methods: The study has included one hundred postmenopausal women with age between (45-70) years old, who attended outpatient clinic or DEXA unit. Inform consent had been taken from all participants about nature of study. Demographic information and medical history were collected using a detailed questionnaire. After the collection of data, blood samples had been taken for evaluation of thyroid function by measuring the serum level of TSH, FT3 and FT4. Dual energy X ray (DEXA) was used to assess bone mineral density.

Results: The mean age of the study group was 58.8 years and the mean of BMI was (33.2 ± 5.35). The highest proportion of study patients diagnosed as Euthyroid was (63%).Proportion of osteoporosis diagnosed in spine was higher than osteoporosis diagnosed in left femur (35% versus 4%), while osteopenia was higher in left femur than spine (49% versus 45%).The highest proportion of study patients with hypothyroidism and those with Euthyroid was not osteoporotic (60% and 76.2% respectively), while those with hyperthyroidism, more than half of them were osteoporotic (55.6%) with a statistically significant association (P=0.013) between Thyroid function and bone mineral density levels.

Conclusion: There is a significant direct correlation between thyroid function and bone mineral density among postmenopausal women, but further investigations are needed to recognized all factors effecting this relationship with using wide sample size.

Keywords: Thyroid Function , Bone Mineral Density, Postmenopausal Women

Background

Menopause is defined by **12 months of amenorrhea after the final menstrual period** in the absence of any other pathological or physiological causes. At this point,

nearly all the oocytes have undergone atresia, although a few remain and can be found on histologic examination. It is characterized by complete, or near complete, ovarian follicular depletion and absence of ovarian estrogen

secretion⁽¹⁾.

In the US only there are about 37.5 million women reaching or currently at menopause. The average age of menopause is 51 years; however there is a wide age distribution⁽²⁾. It has been suggested that there is correlation between thyroid function status and bone mineral density among postmenopausal women. Osteoporosis is the most common bone disease and represents a major public health problem. Osteoporosis and associated fractures cause considerable disability poor quality of life, and mortality.

Osteoporosis is a common postmenopausal condition which impacts upon women's quality of life and increases the risk of fracture, which can in turn lead to heavy ongoing healthcare service load and economic burden for the family. The risk of osteoporosis-induced fracture increases with menopausal women's age, especially in those older than 65 years⁽³⁾.

Thyroid hormone affects the rate of bone replacement. Data from scientific reports indicates that TSH is considered as a negative regulator of bone turnover. Its direct action on bone tissue cells leads to enhanced bone remodeling and osteoporosis.⁽⁵⁾ The aim of this study is to investigate the correlation between thyroid function status and bone mineral density (BMD) among postmenopausal women.

Patient and Methods

This cross-sectional study was conducted in Baghdad city at Al-Yarmouk teaching hospital in cooperation with Lab of National Institute of Diabetic Center and DEXA unit, the study started from (July-December) 2017. The study protocols were approved by Scientific Council of Obstetrics and Gynecology Specialization / Iraqi Board for Medical Specialization.

Patient and Data Collection:

The study included one hundred post menopausal women with aged between (45-70) years old, who attended outpatient clinic or DEXA unit. Informed consent had been taken from all participants about nature of the study. Demographic information and medical history were taken using a detailed questionnaire. Exclusion criteria were clearly defined. After the collection of data, blood samples had been taken for thyroid function test then send them for DEXA scan. Dual- energy X-ray absorptiometry scan (DEXA), was

used to assess bone mineral density, and thyroid function test was carried out. All the assay steps are performed automatically by the instrument. The reaction medium is cycled in and out of the solid phase receptacle (SPR) several times.

Statistical Analysis

Statistical analysis was performed using SPSS windows version 23 Software. Suitable tables and graphs were used to describe the data. Chi square test was used to test qualitative and frequency data and to find any relations between many risk factors and the incidence of osteoporosis. Logistic regression analysis applied, using the presence of osteoporosis as the dependent variable and the variable that were found significant in the binary analysis were included in the model as the independent variable. P value less than 0.05 was considered significant.

Results

The total number of patients in our study was 100 postmenopausal women. This study was conducted at obstetrics and gynecology department in Al-Yarmouk teaching hospital.

Thyroid hormones

Table 3.2 shows the distribution of study according to thyroid hormones levels. This study showed that the mean \pm SD of T3, T4, and TSH for study patients were (5.12 ± 2.22 pmol/L, 14.51 ± 4.8 pmol/L, and 1.93 ± 3.17 umol/L respectively). Regarding levels of these hormones, the highest proportion of study patients had normal T3, T4, TSH levels (74%, 81%, and 63% respectively) which means Euthyroid. According to our Lab, the normal range of Free T3 (4-8.3) pmol/L, normal range of Free T4 (9-20) pmol/L, while the normal range of TSH (0.25-5) pmol/L.

3.3. Thyroid function condition (Diagnosis)

The distribution of study patients by thyroid function test (T3, T4 and TSH) is shown in table (3.3). The highest proportion of study patients diagnosed as Euthyroid is (63%).

3.4. DEXA scan result (bone mineral density)

The distribution of study patients by site and levels of bone mineral density (BMD) is shown in table (3.4). DEXA scan for study patients showed that the mean and

SD of T-score in left femur and spine was $(-1.05 \pm 0.88$ and -2.04 ± 1.15 respectively). We noticed that the highest proportion of study patients was diagnosed by DEXA scan as osteopenia regardless the site used for scanning is (49%). Proportion of osteoporosis diagnosed in spine was higher than osteoporosis diagnosed in left femur (35% versus 4%), while osteopenia was higher in left femur than spine (49% versus 45%).

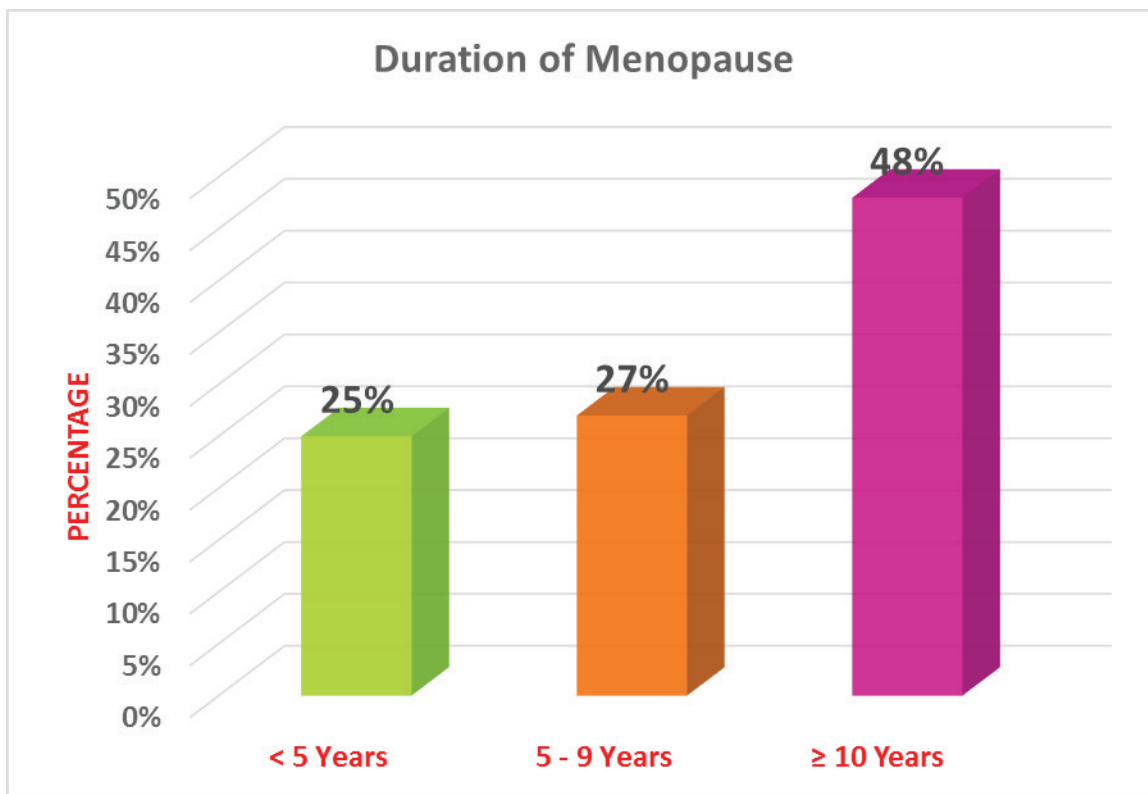


Figure 3.2: Distribution of study patients by duration of menopause

Table 3.2: Distribution of study patients by thyroid hormones levels

Thyroid hormones level	No. (n=100)	Percentage (%)
T3 level		
Low	13	13.0
Normal	74	74.0
High	13	13.0
T4 level		
Low	5	5.0
Normal	81	81.0
High	14	14.0
TSH level		
Low (Hypothyroid)	8	8.0
Normal (Euthyroid)	63	63.0
High (Hyperthyroid)	29	29.0

Table 3.3: distribution of study patients by thyroid function condition according to T3, T4 and TSH levels

Variable	No. (n=100)	Percentage (%)
Thyroid function condition		
Hypothyroidism	10	10.0
Euthyroidism	63	63.0
Hyperthyroidism	27	27.0

Table 3.4: Distribution of study patients by site and levels of bone mineral density (BMD)

Bone Mineral Density level	No. (n=100)	Percentage (%)
Regardless site (Overall)		
Normal	17	17.0
Osteopenia	49	49.0
Osteoporosis	34	34.0
In left femur		
Normal	47	47.0
Osteopenia	49	49.0
Osteoporosis	4	4.0
In lumber spine		
Normal	20	20.0
Osteopenia	45	45.0
Osteoporosis	35	35.0

3.5. Association between bone mineral density levels with demographic factors and thyroid Function

The association between bone mineral density levels and demographic factors is shown in table (3.5). The highest proportion of study patients with hypothyroidism and those with Euthyroid were not osteoporotic (60% and 76.2% respectively), while those with hyperthyroidism,

more than half of them were osteoporotic (55.6%) with a statistically significant association ($P=0.013$) between Thyroid function and bone mineral density levels. There was no significant association ($P\geq 0.05$) between bone mineral density level and demographic factors including (age, parity, BMI, and duration of menopause).

Table 3.5: Association between TSH levels and bone mineral density levels

Variable	Bone mineral density level		Total (%) n=100	P- value
	Osteoporosis (%) n=34	NO osteoporosis (%) n= 66		
Agegroup(Years)				
< 50	2 (14.3)	12 (85.7)	14 (14.0)	0.078
50 – 59	8 (26.7)	22 (73.3)	30 (30.0)	
≥ 60	24 (42.9)	32 (57.1)	56 (56.0)	
Parity				
< 3	8 (29.6)	19 (70.4)	27 (27.0)	0.478
3 – 5	11 (29.7)	26 (70.3)	37 (37.0)	
> 5	15 (41.7)	21 (58.3)	36 (36.0)	
BMI level				
Normal	2 (33.3)	4 (66.7)	6 (6.0)	0.329
Overweight	10 (47.6)	11 (52.4)	21 (21.0)	
Obese	22 (30.1)	51 (69.9)	73 (73.0)	
Duration of menopause (Years)				
< 5	6 (24.0)	19 (76.0)	25 (25.0)	0.409
5 – 9	9 (33.3)	18 (66.7)	27 (27.0)	
≥ 10	19 (39.6)	29 (60.4)	48 (48.0)	
Thyroid gland function				
Hypothyroidism	4 (40.0)	6 (60.0)	10 (10.0)	0.013
Normal	15 (23.8)	48 (76.2)	63 (63.0)	
Hyperthyroidism	15 (55.6)	12 (44.4)	27 (27.0)	

Binary logistic regression analysis was done regarding thyroid gland function and revealed that hyperthyroidism was a significant risk factor (P=0.023) that might cause osteoporosis with Odd's ratio of (2.89) and 95% C.I (1.15 – 7.24).

Discussion

Thyroid dysfunction and osteoporosis are considered as a common disorder in menopausal women. Overt hyperthyroidism and hypothyroidism have long been known as risk factors for low bone mineral density and

osteoporotic fractures⁽⁶⁾. The current study shows that the mean age of menopausal patients group was 58.8 years, which is in agreement with the Iranian study done by Keramat A et al.,⁽⁷⁾ where the mean age was 58.2 Years, but it was more than (48.7 years) in Adamopoulos D et al,⁽⁵⁶⁾ who studied 1333 Greek postmenopausal lady. This may be due to difference in sample size collection in which the last study was with large sample size.

Hassa H et al,⁽⁹⁾ in the study carried on menopausal Turkish women failed to find a correlation between BMD and menopausal age. In contrast, Demir B et al,⁽¹⁰⁾ revealed an increased prevalence for osteoporosis in Turkish women at age under 40 years and with menopause onset. This age was not present in our study. Moreover the current study revealed that parity is not associated with abnormal bone mineral density which was in agreement with Ho Sc et al 2005, This study measure's the educational level and risk factors of osteoporosis in Chinese postmenopausal women⁽¹¹⁾.

Also our study was in agreement with Waugh EJ, et al,⁽¹²⁾ in 2009 who did a systemic review of literature and found that there was no relation between parity and BMD in women aged 40-60 years old. Moreover in accordance with that found by Sioka C et al, in 2010 study which in title of: (Age at menarche, age at menopause and duration of fertility as risk factors for osteoporosis in Greece women)⁽¹³⁾. With regard to the time duration of the menopause and its association with bone mineral density, we found that there is no association between them, this was in agreement with Takada H, et al 1997 who confirmed no association between the duration of the menopause and BMD⁽¹⁴⁾.

The most important finding of the present study is the significant association between the hyperthyroidism and the osteoporosis, these results were similar to that revealed in many studies: Kim DJ et al⁽¹⁵⁾2006 found the association between the low BMD in healthy postmenopausal women and low normal TSH level, while Morris MS et al 2007⁽¹⁶⁾found associations between low-normal serum TSH and osteopenia and osteoporosis, plus a graded increase in BMD with increasing serum TSH across the normal range in healthy American women of both black and white races.

Likewise, Mazziotti G, et al⁽¹⁷⁾2010 assess the Serum level of TSH and vertebral fractures risk in euthyroid post-menopausal lady with low bone mineral density conclude that Low-normal TSH values are

associated with high prevalence of vertebral fractures in women with post-menopausal osteoporosis or osteopenia, independently of thyroid hormones, age and BMD. Additionally, they were in agreement with a suggestion that TSH exerted a dose-dependent protective role on bone. In a comparative estimation of TSH levels either below or above the median level recorded among the euthyroid women enrolled in Acar B et al, study, low-normal TSH levels were associated with lowered BMD values in the L1–L4 lumbar vertebrae and femoral neck⁽¹⁸⁾.

Two meta-analyses, Grimnes G, et al in 2008 studied the correlation between TSH serum level and BMD in men and postmenopausal women and Jamal SA et al, 2005 studied the Clinical utility of laboratory testing osteoporosis women, they clearly demonstrated an association between subclinical hyperthyroidism and decreased BMD values^(19, 20). Regarding to the effect of the normal range of the TSH level on bone mass density, a study carried by Kim D et al, revealed that low-normal TSH levels applied an effect on BMD values, a finding supported by Morris M et al study⁽¹⁵⁾. In addition, Mazziotti G et al, found that low-normal TSH levels were associated with vertebral fractures among postmenopausal women⁽¹⁷⁾. In our study we found that 4/10 of the patients with osteoporosis had hypothyroidism but with no significant association due to small sample size in the current study.

The limitations of this study include: small sample size with short period duration of the study; single center study; single sample of blood were taken from the patients; and the investigation was done by two or three biochemical person.

Conclusion

There is a significant direct correlation between thyroid function and bone mineral density among postmenopausal women. For further future study, large sample size with long duration time should be adopted, and should be a multicenter study. More than one sample should be tested. The osteoporosis found to be independently related with TSH level rather than with elevated concentrations of T3 or T4. Therefore, clinicians should aim to maintain TSH levels within the upper limit of the reference range during treatment of hypothyroidism.

Ethical Clearance- Taken from Al-Mustansiriya University

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Conflict of Interest- Nil

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The Effect of Soy Milk and Boiled Peas to Waist Circumference in Postmenopausal Women

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Abstract

Background: A woman's life period after 12 months from the last menstruation is called the postmenopause period. Estrogen affects the accumulation of gluteo-femoral fat. Decreased estrogen levels cause abnormal redistribution of fat and increase central fat. Postmenopausal women are at greater risk of central fat accumulation. This can be detected by measurement of waist circumference. Soybeans (*Glycine max*) has antioxidant and hypolipidemic effects also reduce waist circumference and waist-hip circumference ratio. Peas (*Pisum sativum*) contain soluble fiber which can reduce blood lipid levels. The aim of this study was to analyze the effect of soy milk (*Glycine max*) and boiled peas (*Pisum sativum*) on waist circumference in postmenopausal women. **Method:** This study is an experimental research with pre-post test and control group design. The population of study is were postmenopausal women patients in Magelang, Central of Java. The sample of study amounted to 39 postmenopausal women divided into three subject groups, one control group, the second group given treatment 240 ml soymilk per day 4 weeks, and the third group was given the intervention of 100 g boiled peas per days 4 weeks. Data is presented as mean (*mean*) and standard deviation (SD). The mean values of the three study groups were statistically tested with the ANOVA test. **Results:** The findings of the study is consumption 240 ml of soymilk per days 4 weeks in postmenopausal women decrease waist circumference but not statistically significant. Consumption 100 g of boiled peas per days 4 weeks in postmenopausal women decrease waist circumference statistically significant ($-0,19 \pm 0,38$ cm, $p=0,096$). **Conclusion:** Consumption 100 g of boiled peas per days 4 weeks in postmenopausal women decrease waist circumference statistically significant ($-0,19 \pm 0,38$ cm, $p=0,096$).

Keywords: Soy milk, boiled peas, waist circumference, postmenopause women, estrogen

Introduction

A woman's life period after 12 months from the last menstruation is called the postmenopause period¹. Decreased estrogen during and after menopause causes changes in physiological and biochemical structures that will affect general health status². Estrogen affects the accumulation of gluteo-femoral fat. Decreased estrogen levels cause abnormal redistribution of fat and increase central fat³. Postmenopausal women are at greater risk

of central fat accumulation. This can be detected by measurement of waist circumference⁴.

Dietary planning mainly containing plant protein, fiber, phytosterols and nuts can overcome hyperlipidemia. Soybeans (*Glycine max*) contain high quality protein (40%), polyunsaturated fatty acids (18%), carbohydrates (8%) and fiber (17%)⁵. Lunasin as a peptide in soybeans has antioxidant and hypolipidemic effects⁶. Soy lecithin and saponin play a role in regulating blood lipids. Phytosterols and linoleic acid cause hypolipidemia effects⁵. Soy milk combined with green bean porridge per day for 4 weeks can reduce waist circumference and waist-hip circumference ratio^{7,8}. Peas (*Pisum sativum*) contain soluble fiber which can reduce blood lipid levels^{9,10,11}. The aim of this study was to analyze the

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effect of soy milk (*Glycyn max*) and boiled peas (*Pisum sativum*) on waist circumference in postmenopausal women.

Method

This study is an experimental research with pre-post test and control group design. The population of study is were postmenopausal women patients in Magelang, Central of Java. The sample of study amounted to 39 postmenopausal women. Inclusion criteria in this study are the women aged 50-70 years old and have stopped menstruating for more than 12 months. While the exclusion criteria in this study are weight loss diet, consume alcohol, have been diagnosed coronary heart disease, heart failure, severe kidney failure, stroke and cancer from history and medical records, allergic to soybeans and peas, immobility and smoking. Immobility found as one of the risk factors for obesity¹⁵. Severe diseases such as stroke, heart disease, kidney failure and cancer due to security the subject when going on a diet and sport suit suggestion.

The sample was divided into three subject groups, namely one control group and two treatment groups. All groups were given nutrition education and a healthy lifestyle. The control group was only given education without continued treatment. The second group was not only given education but also given treatment in the form of giving soy milk, and the third group after being given education was given the intervention of boiled peas.

Treatment group 1 was given 1x240 ml soy milk per day for 4 weeks. Soymilk is delivered directly by the medical team to the homes of study subjects and confirmed to be drunk by each study subject. Treatment group 2 was given 1x100 g boiled peas for 4 weeks. The peas were delivered directly by medical team to the study subject's house and confirmed to be eaten all by the study subjects.

To prepare the soymilk, 800 g soybeans (for a portion of 20 people) that have been rinsed and washed first, soaked for 8 hours in a water ratio of 1: 2 (800 g of soybeans in 1600 ml water), then cleaned by removing the soybean husk. Steah, boiling for 15 minutes. Boiled soybeans are blended with a ratio of soy and water 1:

3.5. Furthermore, soybeans that have become soybean porridge are taken and boiled until boiling, stirring, then cooled and then added 0.5g (1 kcal) low-calorie sweet sweetener brand of Tropicana slim sweetener for every 240 ml. Giving was carried out for 4 weeks in treatment group 1. Making boiled peas is the 1,300 g peas which have been rinsed and washed first, are soaked for 24 hours with a water ratio of 1: 2 (1,300 g of peas soaked in 2,600 ml of water). In the morning, it is cleaned and cooked until it boils. The boiled peas are then drained and weighed 100 g and given for 4 weeks in treatment group 2.

The waist circumference in each group was measured two times, that is before (pretest), and after (posttest) intervention.

Data is presented as mean (*mean*) and standard deviation (SD). Then to find out whether there is a meaningful difference in the mean data before and after intervention in one group, in groups with normal distribution paired t tests were performed, in groups that were not normally distributed Wilcoxon was tested. The mean values of the three study groups were statistically tested with the ANOVA test.

Results and Discussion

The subjects who participated in this study were 39 people. The research subjects were divided into three groups, each group consist of 13 participants, and no dropout. Characteristics research subjects are measured, consists of nutritional status, education level, employment, average age, average index mass body (BMI), and score of Global Physical Activity Questionnaire (GPAQ).

According to table 1, participants who overweight and preobese were most common in the soy milk group and boiled peas group. The soy milk and boiled peas treatment group also had a lower level of education compared to the control group. The work in the three groups is mostly housewives. Based on the table, it can be concluded that there is no significant difference in nutritional status and occupation. Education level data from the three groups have different proportions between education.

Table 1. Characteristics of Subjects

Characteristic	Control (n=13) %	Soymilk (n=13) %	Boiled peas (n=13) %	P
Nutritional status				0,197
Normal	8 (61,54%)	5 (38,46%)	5 (30,77%)	
Overweight	1 (7,69%)	2 (15,38%)	5 (30,77%)	
Preobese	4 (30,77%)	6 (46,15%)	3 (23,08%)	
Obese	0 (0%)	0 (0%)	0 (0%)	
Education level				0,018
Elementary school	2 (15,38%)	7 (53,85%)	7 (53,85%)	
Junior High School	6 (46,15%)	0 (0%)	0 (0%)	
Senior High School	4 (30,77%)	5 (30,77%)	5 (30,77%)	
Graduate	1 (7,69%)	1 (7,69%)	1 (7,69%)	
Employment				0,517
Housewife	9 (69,23%)	7 (53,85%)	8(61,54%)	
Private	3 (23,08%)	5 (30,77%)	5 (30,77%)	
Teacher	1 (7,69%)	0 (0%)	0 (0%)	

Table 2. Mean with One Way ANOVA

Characteristic	Control (n=13) %	Soymilk (n=13) %	Boiled peas (n=13) %	P
Status nutrition				0,197
Normal	8 (61,54%)	5 (38,46%)	5 (30,77%)	
Overweight	1 (7,69%)	2 (15,38%)	5 (30,77%)	
Preobese	4 (30,77%)	6 (46,15%)	3 (23,08%)	
Obese	0 (0%)	0 (0%)	0 (0%)	
Education level				0,018
Elementary school	2 (15,38%)	7 (53,85%)	7 (53,85%)	
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Senior High School	4 (30,77%)	5 (30,77%)	5 (30,77%)	
Graduate	1 (7,69%)	1 (7,69%)	1 (7,69%)	
Employment				0,517
Housewife	9 (69,23%)	7 (53,85%)	8(61,54%)	
Private	3 (23,08%)	5 (30,77%)	5 (30,77%)	
Teacher	1 (7,69%)	0 (0%)	0 (0%)	

Table 3. T-test

Group	n	Waist Circumference (Mean ± SD) pretest (cm)	Waist Circumferences (Mean ± SD) posttest (cm)	Δ Mean	P
Control	13	87,69 ± 6,96	87,50 ± 7,11	-0,19 ± 0,38	0,096
Soymilk	13	93,15 ± 6,11	92,92 ± 6,19	-0,23 ± 1,09	0,461
Boiled peas	13	93,85 ± 8,68	93,34 ± 8,45	-0,50 ± 0,76	0,036

From table 2 show that mean of waist circumference in the control group did not change after research. Mean of waist circumference in the soybean milk group decreased after being treated. In the boiled peas group after being treated there was also a decrease in the mean waist circumference.

Table 3 informed that the mean of waist circumference decrease statistically significant in group of boiled peas ($-0,50 \pm 0,76$ cm, $p = 0,036$).

In this study, it was found that consumption 100 g boiled peas for 4 weeks in postmenopausal woman can reduced waist circumference significantly. Postmenopausal period results decline in the hormone estrogen level. Estrogen affects the accumulation of gluteo-femoral fat, and decreased estrogen levels are associated with an increase in central fat. Postmenopausal woman have high risk of increased waist circumference because increasing age, lack of activity, consumption more carbohydrate and fat. Soybean contain isoflavones around 99-159 mg/ 100 g. Peas have a hypolipidemic effect similar to soybean. Isoflavones in peas and soybean have an antiobesity effect by inhibiting lipogenesis, increasing the oxidation of fatty acid and reducing the supply of fat in the body. Isoflavones have an important role to reduce waist circumference. Both of peas and soybeans also have a linolenat acid. It decreases machroflag infiltration to help reducing *gluteo-femoral* fat¹². Every 100 g of boiled peas contains 8 g of protein, and 8 g of fiber. Consumption of 100 g of boiled peas can meet about 33% of fiber needs per day. Based on the Institute of Medicine's recommendation, the fiber requirement for women aged 19-50 years is 25 g/ day and women over 50 years is 21 g/ day. Peas contain a lot

of soluble fiber which is very important in reducing lipid levels blood¹³.

The education about nutrition once a week during the study. Fiber can reduce lipid and waist circumference⁹. The fiber content in peas is mostly soluble fiber which decreases blood lipid levels¹⁴. Soluble fibers are non-cellulose polysaccharides or oligosaccharides such as gum, pectin, β-glucans. Soluble fiber can reduce serum triglyceride levels and waist circumference. Soluble fiber contains almost no calories, increases satiety by regulating satiety hormones such as cholecystokinin, glucagon-like peptide-1, and Y peptide^{10,11}.

This study had different result with the previous studies. The consmption of 240 ml of soy milk every day for 5 weeks with a randomized controlled trial cross over design with a washout period of 2 weeks in 24 nonmenopausal women showed a significant decrease in waist circumference⁷. Giving soybeans to older women and as much as 40 g of soy protein can reduce waist circumference but not lose weight¹⁵. Research in postmenopausal women with consumption of 240 ml of soy milk per day for 4 weeks can reduce waist circumference by -2.40 cm and also decrease the waist-hip circumference ratio by -0.02 cm⁸.

Conclusion

The conclusion of this study shows that consumption 100 g of boiled peas per days 4 weeks in postmenopausal women decrease waist circumference statistically significant ($-0,19 \pm 0,38$ cm, $p = 0,096$).

Conflict of Interest; The author states there is no conflict of interests.

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Nutrient Content of Traditional Food in the Tourism Area of Buleleng Regency, Bali Province

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Abstract

The development of traditional foods must be supported by complete information about these traditional foods. The information needed includes name, regional origin, shape or appearance, taste, and nutrient content. This study aims to determine the nutritional content of traditional foods in Buleleng Regency.

The study is descriptive observational. There are 6 types of traditional foods namely snacks, vegetables, drinks, side dishes, complete meals and chili sauce with a total of 93, but 40 traditional foods are analyzed.

The content of nutrients in traditional food in Buleleng Regency are water levels ranging from 11.62 - 93.43%, ash content in the range of 0.05 - 13.67%, fat content in the range of 0.18 - 28.32%, protein in the range of 0.33 - 23.26%, carbohydrates in the range of 1.58 - 74.01%, and total energy ranges from 25.21 - 386.40 Cal. Energy Adequacy Rate and Protein Adequacy Rate The highest average is found in traditional side dishes, which is 11.63 Cal and 30.77 g.

Keywords: *traditional food, nutrients, energy, fat, carbohydrates, protein*

Background

Traditional food is food, snacks, beverage and mixed ingredients that have traditionally been used and developed in regions or Indonesian society ⁽¹⁾. Traditional food has an important role in the local identity of a region, consumer behavior, cultural transfer, and heritage for future generations ⁽²⁾. In the field of tourism, traditional food is an attraction for tourists and gives a deep impression to them. Traditional food is a gateway to other cultures through its taste and preparation process ⁽³⁾.

Traditional food consists of food and drinks including snacks and mixtures that have been passed down for generations produced or consumed, using locally produced ingredients, processed in a typical manner with a distinctive taste received by the community ⁽⁴⁾ ⁽⁵⁾ ⁽²⁾.

Traditional food is very closely related to local customs, where these dishes are processed, served and eaten in a sustainable or hereditary way by the community by using local ingredients, helping the community to consume diverse, nutritious and balanced and safe food ⁽⁶⁾ ⁽⁷⁾. Traditional foods contribute to people's daily food and nutritional evaluation of traditional foods is needed to accurately estimate people's food intake ⁽⁸⁾.

Balinese traditional food is plentiful, has a variety of types and nutritional content, raw materials used in processing are available locally and have flavors that are preferred by most people in Bali ⁽⁵⁾. Traditional foods are classified into two major groups namely staple foods (rice, side dishes, and sambal) and snacks (beverage, salad, snacks, chips, and beans)⁽⁶⁾.

The development of traditional foods must be supported by complete information, both in terms of name, origin, shape or appearance, taste, and nutritional content. ⁽⁵⁾. Consuming traditional foods must be accompanied by knowledge of traditional food nutrients so that they can be used as an alternative diet in maintaining body shape ⁽⁹⁾. One way to identify

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traditional foods and nutrients can be done through competitions or traditional food exhibitions ⁽¹⁰⁾

Referring to the potential that exists in traditional Balinese food and the prospect of developing good functional food in the future, the development of traditional Balinese food can be directed into functional food with the priority of its development to become Balinese souvenirs ⁽⁵⁾.

The purpose of this study was to determine the nutritional content of traditional foods in the tourism area of Buleleng Regency, Bali Province.

Research Methods

This research is an observational study, in which the researcher observes and analyzes the nutritional content of traditional foods in Buleleng Regency, Bali. Identification of types and quantities of traditional food is done by survey method. Measurement of water content using the Oven Method (SNI 01 - 2891 - 1992 point 5.1. Food and beverage test method), fat content by the Soxhlet method, ash content is determined by dry method (SNI 01 - 2891 - 1992 item 6.1. Food and beverage test method), the protein content is determined by the Semimicro Kjeldahl method (SNI 01-2891-1992 item 7

How to test food and drinks), and the determination of carbohydrates by means of rough calculations (proximat analysis) or also called Carbohydrate by Difference (11). Data analysis was performed descriptively for each of the variables observed in this study.

Result

Sampling was carried out in 10 villages in Buleleng Regency, namely Tejakula, Les, Sambirenteng, Tembok, Sangsit, Bungkulan, Penglatan, Ringdikit, Lokapaksa, and Sukasada Villages. Based on a survey in Buleleng Regency, 93 types of traditional food can be identified. The types of traditional food taken as a sample are 40 types of food (43.0%) of all identified traditional foods consisting of; 19 types of snacks (47.5%), 6 types of vegetables (15.0%), 6 types of side dishes (15.0%), 4 types of complete food (10.0%), 3 types of beverage (7.5%), and 2 types of Sambal (5.0%).

1. Nutritional Content of Traditional Foods

a. Traditional snacks

Types of snacks are the largest proportion of traditional foods in Buleleng Regency. The results of the analysis of the nutrient content of snacks are as shown in Table 1.

Table 1: Nutrient Analysis Results in Types of Traditional Snacks

No	Sample Name	Water content (%)	Ash Rate (%)	Fat level (%)	Protein Level (%)	Carbohydrate Level (%)	Energy (kcal)
1	Tulud	50.70	0.676	2.36	4.46	41.80	206.30
2	Sumping Kuwud	48.96	0.815	3.67	3.70	42.86	219.24
3	Jaja Kupe	47.23	0.757	6.44	3.47	42.11	240.25
4	Cerorot	47.70	0.616	0.30	4.00	47.39	208.24
5	Jaja Pesor	56.76	0.695	4.42	4.30	33.83	192.31
6	Dodol	19.70	0.734	1.44	4.12	74.00	325.49
7	Layah Sapi	67.23	0.679	2.11	2.19	14.80	86.96
8	Jaja Gadung	66.65	1.139	5.69	1.83	24.70	157.31
9	Jaja Beras	58.47	0.532	2.81	2.47	35.72	178.01
10	Jaja Sirat	40.28	0.792	11.36	2.96	44.61	292.53
11	Jaja Olen	54.95	0.371	6.26	3.76	34.65	210.05
12	Jaja Putu	21.36	1.390	5.56	3.84	67.85	336.82
13	Bantal Tepung	37.60	0.695	10.28	5.01	46.41	298.22
14	Jaja Remu	59.29	0.571	2.55	3.69	33.91	173.30
15	Jaja Klaudan	56.63	1.717	3.86	4.00	33.80	185.89

Cont... Table 1: Nutrient Analysis Results in Types of Traditional Snacks

16	jaja Tumbeg	19.84	0.453	13.52	3.20	62.99	386.40
17	Jaja Orog	14.48	0.962	6.70	5.60	72.26	371.70
18	Jaja Keladi	39.69	2.052	6.57	3.97	47.71	265.89
19	Bulung	90.27	0.61	0.43	1.41	7.29	38.63
	Average	47.25	1.54	5.07	3.58	42.56	230.19

b. Vegetable and Side Dish

Vegetable is a dish that is served with staple food served with soup or without sauce. Side dishes are a source of protein. Vegetable and side dishes samples analyzed in this study as in Table 2.

Table 2: Nutrient Analysis Results in Traditional Vegetable Types and Side Dishes

No	Sample Name	Water content (%)	Ash Rate (%)	Fat level (%)	Protein Level (%)	Carbohydrate Level (%)	Energy (kcal)
A	Vegetables						
1	Plecing Montong Keladi	88.11	2.02	1.79	2.37	5.70	48.41
2	Jukut Kelor	79.91	1.81	2.30	5.49	10.48	84.62
3	Kelentang	88.86	0.05	0.28	3.03	7.78	45.74
4	Jukut Buangit	70.36	0.69	1.25	6.35	21.35	122.07
5	Jukut Rambanan	74.96	1.32	4.91	2.11	16.69	119.41
6	Jukut Undis	77.53	0.92	1.24	1.60	18.72	92.45
	Average	79.96	1.14	1.96	3.49	13.45	85.45
B	Side Dishses						
1	Lawar Getih	60.04	2.00	23.28	5.74	8.93	268.24
2	Sudang Lepet	11.62	6.26	1.49	21.64	58.99	335.89
3	Be Siap Serati	65.79	3.81	5.95	20.53	3.92	151.36
4	Lawar Kebo	59.08	1.07	7.43	15.01	17.40	196.56
5	Muluk Gajian	48.03	2.35	28.32	19.73	1.57	340.07
6	Plongos	58.77	3.69	4.72	22.59	10.24	173.75
	Average	50.56	3.20	11.86	17.54	16.84	244.06

c. Complete food and Sambal

This complete food is a ready-to-eat food consisting of a source of carbohydrates in the form of rice, rice, or noodles, side dishes, and vegetables. Sambal is one of the special elements of Indonesian and Malay dishes. Traditional beverage are beverage made from local food raw materials, which are usually intended to relieve thirst, sometimes even as medicine. The results of the analysis of nutrients can be seen in Table 3.

Table 3: Nutrition Substance Analysis Results in Traditional Complete Foods, Sambal's and Beverage

No	Sample Name	Water content (%)	Ash Rate (%)	Fat level (%)	Protein Level (%)	Carbohydrate Level (%)	Energy (kcal)
A	Complete Food						
1	Nasi Bayam	75.18	1.74	4.08	16.05	2.94	112.71
2	Belayag Be Pasih	62.42	1.16	2.20	20.25	13.96	156.67
3	Blayag Siap	71.40	1.47	4.33	12.77	10.03	130.15
4	Mangguh Cina	67.77	0.79	6.67	3.67	21.10	159.11
	Average	69.20	1.29	4.32	13.19	12.01	139.66
B	Sambal's						
1	Sambal Tuwung	70.88	1.09	4.65	3.59	19.79	135.36
2	Sambel Batun Kacang	41.10	7.52	9.14	23.26	18.98	251.22
	Average	55.99	4.31	6.89	13.43	19.38	193.29
C	Beverage						
1	Loloh Blimbing	93.43	0.49	0.18	0.44	5.46	25.21
2	Es Ancruk	67.52	0.19	1.70	0.48	30.11	137.63
3	Cendol Kelor	78.76	0.23	1.93	0.33	18.75	93.70
	Average	79.90	0.31	1.27	0.42	18.11	85.51

Discussion

1. Snacks

Based on the test results of water content, traditional snacks are classified in the groups of snacks with low water content or dry snacks, semi-wet snacks, namely snacks with moderate water content, and wet snacks, namely snacks with high water content. Water content in the types of snacks is related to the shelf life of these snacks.

The average water content in traditional snacks in Buleleng Regency is 47.25%, with a water content range of 14.48% - 90.27%. The lowest water content is in Jaja Oog, where in Jaja Oog does not use a lot of water and is indeed cooked until dry, while the highest water content is in Jaja Bulung because seaweed which is the basic ingredient of making bung is added a lot of water and the ingredients are liquid which is rather thick and allowed to become solid like jelly so that the highest water content.

Protein content in the types of snacks is 5.07%, with a range of 0.43% - 13.52%. The variation of protein content in traditional snacks depends on the composition of the ingredients used and the water content of the snacks.

The level of fat in traditional snacks in Buleleng Regency is on average 3.58%, with a range of 1.41% - 5.60%. The value of the range of fat content in snacks is not too high, it depends on the composition of the ingredients and the way of processing of the snacks. Traditional snacks prepared by frying will have higher fat content. The average carbohydrate content of traditional snacks in Buleleng Regency is 42.56% with a range between 7.29% - 74.00%.

The range of carbohydrate content in the types of snacks is very high. This is caused by the composition of the ingredients used and the water content of these snacks. Jaja bulung is a snack with the lowest carbohydrate content, because the water content of these snacks is very high at 90.27%, while dodol has the highest carbohydrate content because dodol is a semi-wet snack with a water content of 19.70%, with the basic ingredients of flour and sugar which is a group of food sources of carbohydrates.

2. Vegetables

Based on the results of the analysis of the water content of all types of vegetables classified in dishes with high water content that is above 70%, because almost all vegetables are vegetables with a lot of soup.

3. Side dish

The highest fat content is in grandiose side dishes, while the highest protein content is in plongos. High levels of fat in the mouth of the payroll due to the basic ingredients of making payday payload is the binding fat in the intestine of pigs which is the main source of fat in pork. Plongos has the highest protein content because plongos are made from plongos which are high in protein content

4. Complete meal

The highest levels of fat and carbohydrates are found in Chinese Mours, while the highest levels of protein are in Be Pasih. High levels of carbohydrate in Chinese brew is due to being made from rice, Chinese brew is also added mikering which is a source of carbohydrate in the manufacturing process. Blayag be Pasih has high

protein content due to the addition of sufficient fish in its presentation as a side dish from Blayag.

5. Beverage

Carbohydrate content in Es Ancruk was detected the highest because it is the main component of Ancruk ice made from rice which is a source of carbohydrates and there is the addition of bananas which are also high in carbohydrate content

6. Sambal

Peanut sauce has a higher protein content than tuwung sauce, which is 23, 26%. This is because one of the components of batun tuwung sauce is fried anchovies mixed with other seasonings in raw conditions.

7. Average Energy and Protein Adequacy

Energy Adequacy Rate (AKE) is the amount of a person's food intake that is balanced with his expenditure in accordance with the composition and size of the body, the level of physical activity in a healthy state and able to carry out life's tasks economically in the long run (12). Humans need enough food for the growth and development of their bodies and keep up their good activities (13)

Carbohydrates have the main function to provide the body's energy needs. Carbohydrates as the cheapest energy source compared to other nutrients (fat and protein) and every 1 gram of carbohydrate produces 4 kcal (14). As an energy source, protein is equivalent to carbohydrates, producing 4 kcal for every 1 gram of protein. Fat is the most dense energy source, which produces 9 Kcal for every gram of fat, or 2.5 times more than the energy produced by carbohydrates and protein in the same amount (15). Energy sufficiency is the amount of energy that can be provided by one type of food to meet the average energy sufficiency for adults, which is 2100 kcal, while the protein adequacy figure is 57 grams per capita per day (12).

The highest average AKE and PPA are found in traditional side dishes, which is 11.63 kcal and 30.77 grams, meaning that every 100 grams of traditional side dishes can meet 11.63% of 2100 Kcal of energy sufficiency and 30.77% of 57 grams of protein adequacy.

Conclusions

Based on the results of the study it can be concluded:

1. In Buleleng Regency there are 6 types of traditional foods namely snacks, vegetables, beverage, side dishes, complete meals and chili sauce with a total of 93, but 40 traditional foods are analyzed.

2. Nutrient content in traditional food in Buleleng Regency, namely water content ranged from 11.62 to 93.43%, ash content ranged from 0.05-13.67%, fat content ranged from 0.18-228.32%, protein ranged from 0.33-223.26%, carbohydrates ranged between 1.58–74.01%, and the total energy ranges from 25.21 - 386.40 kcal.

3. Energy Adequacy Figures and Protein Adequacy Figures The highest average is found in traditional side dishes of 11.63 Kcal and 30.77 grams, meaning that every 100 grams of traditional side dishes can meet 11.63% of the 2100 kcal of energy adequacy and 30.77% of 57 grams of protein adequacy.

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Conflict of Interest: The authors declare that they have no competing interests.

Ethical approval: The study was approved by the Institutional (Poltekkes Kemenkes Denpasar) Ethics Commite.

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Epidemiology of Female Infertility among Reproductive Age Women in Tikrit City

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Abstract

Background: Infertility is defined as failure to conceive after one year and 6 months of a regular unprotected relationships between couples, it is classified as primary infertility when there is no history of pregnancy have occurred , or secondary when inability to conceive occurs after one or more successful pregnancies . Female infertility is a multifactorial condition caused by many causes like ovarian, PCOS, uterine, and cervical factors, and associated with many risk factors as family history, obesity, blood group types, age and educational level of women. Some medical diseases implicated in causing female infertility mainly thyroid disorders by hormonal disturbance and menstrual irregularity. **Aim:** This study aims to identify the epidemiological factors among reproductive age women attending Obstetrics and gynecology outpatient department in sallahuddin teaching hospital. **Subject and Methods:** This is a cross section study conducted on reproductive age women attending gynecological and obstetrical outpatient department in Salahuddin Teaching Hospital during the period from 15th October 2018 to 15th April 2019 to identify the frequency, types, causes and sociodemographic associated factors with female infertility. The information regarding the problem and demographic characteristics was obtained according to questionnaire and body weight, height and BMI were recorded. **Results:** This study revealed that frequency of female infertility was 25% with a highest percentage of primary infertility 57% . PCOS where the main ovulatory causes of female infertility constituted about 41%. followed by other risk factors as tubal, uterine, and cervical factors. **Conclusion:** female infertility constituted about quarter the causes of infertility among reproductive age women in Tikrit city .Primary infertility were the commonest type, most frequent among those between (20_24 years age) .PCOS were the major ovulatory causes.

Keywords: Infertility , Epidemiology, Tikrit

Introduction

Infertility is a very important issue for couples of childbearing age all over the world⁽¹⁾. It is different from the other diseases by it considered as a special reproductive health defect . Although the great effect of infertility on couples ,their families and the whole community ,but it is not a life threatening condition ^(1,2). It considered a global health issue . Globally 60-80 million infertile couples suffer from infertility problems . The prevalence of infertility ranges from 3.5 % to 16.7% in the developed countries , from 6.9 % to 9.3%

in the developing countries ,with an estimated overall median frequency of 9% .^(3,4)

Infertility is defined as failure to conceive after two years of regular unprotected relationship between couples ⁽⁴⁾, other definitions defined as inability to conceive after one year and 6 month of a regular unprotected relationship between couples ^(5,6) .

Infertility classified as primary when there is no history of pregnancy having occurred ;or secondary when inability to become pregnant occurs after one or more successful pregnancies ⁽³⁻⁵⁾.

There are many causes of infertility , male infertility constitute about 30 % of infertility causes ,but female infertility constitute in about 70 % of infertility causes which are as the following : ⁽⁶⁻⁸⁾. Ovulatory Factor:

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responsible for about 25% of causes of infertility⁽⁸⁻⁹⁾ Tubal factor: responsible for about 15% of causes of infertility ⁽¹⁰⁻¹³⁾.Uterine factor :responsible for 5% of female infertility causes ⁽¹¹⁻¹⁴⁾.Un explained infertility constitutes about 25% of infertility, which means any of unexplained causes⁽¹¹⁻¹⁶⁾.

Subjects and Methods

This cross section study was conducted on 600 infertile women (both primary and secondary infertility) of reproductive age group aged 20-49 years attending gynecological outpatient clinic in Salahuiddin teaching hospital from 15th October 2018 -15th April 2019.The

sample were divided to primary and secondary infertility based on WHO definition and terminologies ⁽¹⁾.The sample study individuals demographic information was obtained according to structured designed questionnaire and by direct interview, weight ,height and BMI were recorded.

Statistical Analysis: Data were coded and entered to computer for statistical analysis,and was conducted by using SPSS program (Statistical Package For Social Science) version 24. Since the variables studied were qualitative data,all data were arranged in frequencies and associations between variables were tested by using the chi-square and p-value below or = 0.05 was considered as significant.

Findings

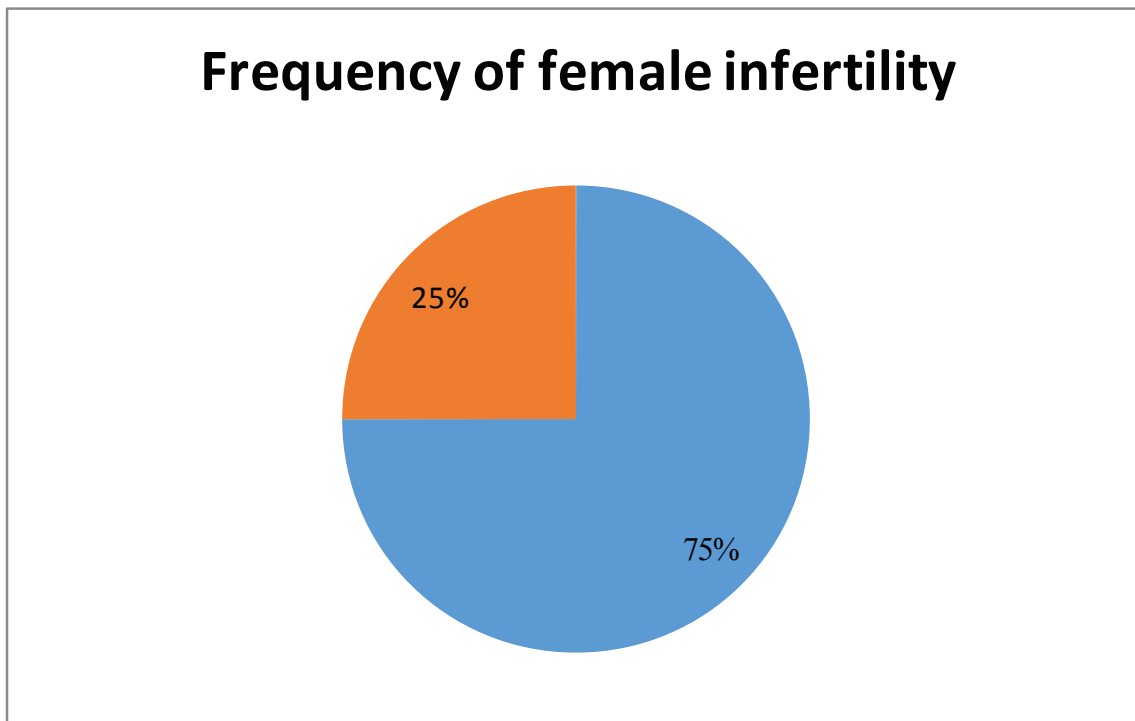


Figure (1): Frequency of female infertility among reproductive age group women

Figure (1) shows that 150 (25%)cases of infertile women were recorded among 600 women attending Sallahuddin Teaching hospital.

Table (1) revealed that primary infertility cases represented about (86 cases) (57%) of cases and the rest

were with secondary infertility (64 cases)(43%), and PCOS was the most frequent causes of infertility (53.3%) followed by other ovulatory causes (23.3%) but without significant difference. The ovulatory causes of infertility represented (56.6%) of all causes.

Table (1) Distribution of infertility cases according to causes types.

Infertility types Causes	Primary No. %	Secondary No. %	Total No. %
PCOS	45 (52.3%)	35 (54.7%)	80 (53.3%)
Others ovulatory causes	25 (29.1%)	10 (15.6%)	35 (23.3%)
Tubal	7 (8.1%)	8 (12.5%)	15 (1%)
Uterine and cervical	4 (4.7%)	7 (10.9%)	11 (7.4%)
Unexplained causes	5 (5.8%)	4 (6.3%)	9 (6%)
Total	86 (100%) (57.3%)	64 (100%) (42.7%)	150 (100%) (100%)

The chi-square statistic is 5.5676. The *p*-value is .233848. *Not significant at p < .05.*

Table (2) Shows that the most frequent cases of infertility was among age group (20-24 years and age group 30-34 years (27.3%) For each of them followed by the age group (25- 29 years (20%). The most frequent cases of primary infertility was coming from age group (20-24 years) (44.2%) While the most frequent cases of secondary infertility was coming from age group (30-34 years)(46.9%).

Table (2) Distribution of infertile women according to age.

Women's age (year)	Primary infertility No. %	Secondary infertility No. %	Total No. %
20-24	38 (44.2%)	3 (4.7%)	41 (27.3%)
25-29	21 (24.4%)	9 (14.1%)	30 (20%)
30-34	11 (12.8%)	30 (46.9%)	41 (27.3%)
35-39	6 (7%)	17 (26.5%)	23 (15.4%)
40-45	10 (11.6%)	5 (7.8%)	15 (10%)
Total	86 100%	64 100%	150 100%

Chi square = 48,22 P-value = <0.0001 (significant)

Table (3)revealed that the most frequent cases of infertility cases came from unemployed(66.7%). **Most frequent cases of primary and secondary infertility cases came from unemployed women (66.3%, 67.2% respectively).**

Table (3) Distribution of infertile women according to occupation

Women's occupations	Primary infertility No. %	Secondary infertility No. %	Total No. %
Employed	29 (33.7%)	21 (32.8%)	50 (33.3%)
Unemployed	57 (66.3%)	43 (67.2%)	100 (66.7%)
Total	86 (100%)	64 (100%)	150 (100%)

Chi-square=0.014 p-value=0.970 (insignificant)

Table (4)revealed that the most frequent cases of infertility cases came from women with normal weight (BMI=18-24 Kg/M²)(51.3%) followed by women with overweight (25-29 Kg/M²)(34%). **Most frequent cases of primary and secondary cases came from normal weight women (60.5%, 39.1% respectively) with a significant difference.**

Table (4) Distribution of infertile women according to BMI

BMI Kg\M2	Primary infertility No. %	Secondary infertility No%	Total No. %
18-24 (normal)	52 (60.5%)	25 (39.1%)	77 (51.3%)
25-29(over weight)	28 (32.5)	23(35.9%)	51 (34%)
30-<40 (obese)	6 (7%)	16 (25%)	22 (14.7%)
Total	86 (100%)	64 (100%)	150 (100%)

Chi-square=11.52 p-value =0.0031 (significant)

Table (5)revealed that the most frequent cases of infertility cases came from women with negative family history(56%). **Most frequent cases of primary cases came from women with positive family history (53.5%) while those secondary infertility came from women with negative family history(68.7%) and there is a significant difference.**

Table (5) Distribution of infertile women according to family history.

Family History	Primary infertility No. %	Secondary infertility No%	Total No. %
Positive	46 (53.5%)	20 (31.3%)	66 (44%)
Negative	40 (46.5%)	44 (68.7%)	84 (56%)
Total	86 (100%)	64(100%)	150 (100%)

Chi-square=6.654 p-value= 0.007 (significant)

Discussion

In the current study the frequency of infertility among reproductive age women was (25%). This result is higher than that found in Iran (22%)⁽²²⁾, India (12%)⁽¹⁶⁾and Saudi Arabia (18.93%)⁽²⁸⁾.

It has been documented that the primary infertility cases were more frequent (57.3%)than secondary infertility cases (42.7%). This results agree with results of a study done in Baghdad in year 2015⁽¹³⁾ and study done in Egypt⁽²³⁾.On the contrary a study in Nigeria it has been found that secondary infertility cases were

more frequent than primary infertility cases (77%), (22% respectively)⁽¹⁹⁾.

The most frequent cause of infertility in the current study was PCOS (53.3%) followed by other ovulatory causes (23.3%) , so in general the ovulatory factors are the most frequent cause of infertility(76.6%) of causes. This results agree with study results reported in Baghdad and Egypt(Alexandria)^(13,23) while in Nigeria ,it has been reported that the most frequent cause of infertility were tubal factors ,uterine factors ,and ovarian (39.5%,30%,and 13% respectively ⁽¹⁹⁾.

It has been documented in this study that most frequent cases were among age group (20-24 years and 30-34 years) (27.3% for each of them). In other studies the most frequent infertile cases were among women with age group over 30 years in addition our result was lower to that reported by these studies as in India, Baghdad, Nigeria (59%,30%and 31.5% respectively)^(21, 13,19).

Regarding the employment factor on frequency of infertility cases distribution in the current study, it has been documented that the most frequent cases of infertility were among unemployed women(66.7%) and this result was applied on primary and secondary infertility cases. This results agree with that reported in Iran and Al- Najaf^(22,27).

In the current study the high frequency of primary infertility cases among age group (20-24 years) and the high frequency of secondary infertility cases among age group(30-34 years).This differences are attributed to that women with primary infertility seeking for a pregnancy after marriage while those with secondary infertility may have children before becoming infertile.

In our study results the most frequent cases of women infertility cases were from normal weight women (51.3%) followed by those from over weight women(34%). This results agree to results obtained by studies done in India, Baghdad and Turkey^(21,13,14). In China it has been reported that the most frequent cases of women infertility were among underweight women⁽³⁰⁾.

In our study the most frequent cases of women infertility were from women with negative family history (56%) but according to type of infertility cases the primary infertility cases came from women with positive family history and the reverse of secondary infertility cases. For relation of primary infertility cases and positive family history agree to study results in Egypt, Basra and Al-Nagaf^(23,25,27). This result can be attributed to effect of genetic factors in causing primary women infertility.

Author's contributions:Both authors played a key role in carrying out the study to conductive outcome. All authors were involved in the study design ,data analysis,data collection,implementation of research and in the critical revision the final approval of manuscript.

Conflict of interest: the authors declare that there

are no conflict of interest.

Source of Fundings: Self

Ethical Clearance: Nil

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The Chemical Composition of Trigona Honey in Bone, South Sulawesi

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Abstract

Introduction Trigona honey (*Tetragonula biroii*) is a type of honey produced by stingless bees that is one of the local products in South Sulawesi with the *Tetragonula* species widely known to the public. **Objective** This study was to determine the nutritional content of trigona honey and components of its secondary metabolite compounds as herbal therapy for the disease. **Method** This study aims to analyze the content of bioactive compounds of trigona honey is using phytochemical test and proximate test method. **Result** Phytochemical test show trigona honey had bioactive compounds flavonoid, alkaloid and triterpenoid. Proximate test using thin-layer chromatography (TLC) showed that methanol extract of honey trigona (*tetragonula biroii*) contains vitamin C 0.15%, flavonoids 159.62 ppm, polyphenols 133.52 ppm, and there are magnesium, calcium, zinc and beta carotene. **Conclusion** Trigona honey contains metabolite compounds such as polyphenols, flavonoids, alkaloids, and triterpenoids.

Keywords : Trigona honey, Nutritional, bioactive compounds

Introduction

There is a new interest in the treatment of different diseases using herbal products as they are normally safe and recommended by WHO when there is a lack of modern medicines¹. Indonesia as a developing country with abundant natural resources encourages its citizens to use natural ingredients or herbal products as a therapy for various diseases. More than one-tenth of plant species, approximately 50,000 species are used for pharmaceutical products².

Several herbal products can be used as therapy for infectious and non- infectious diseases, like *Curcuma xanthorrhiza* *Sygium aromaticum*³, *Musa L.paradisiaca*

*L (MPL)*⁴, Red fruit (*Pandanus conoideus*)⁵, *Curcuma longa*⁶, Miana Leaves (*Coleus scutellarioides (L)*)⁷, Andaliman (*Zantoxylum acanthopodium DC*)⁸, Curcumin⁹, Sapodilla fruit¹⁰, Ajwa dates¹¹ and *Thalassia hemprichi* grass¹².

Trigona honey is produced by stingless bees¹³, and has unique characteristics in terms of color, taste, viscosity, water content, sugar, calcium, protein, fat, and carbohydrates¹⁴. Honey produced by bees without sting has a different taste and aroma, more liquid texture, a darker color, and slightly sour taste and undergoes slow crystallization¹⁵. The taste comes from the resin of the plant where the bees build hives and pots. It varies depending on vegetation including flowers and trees that bees visit¹⁶.

Trigona honey contains vitamins that function as antibiotics, antitoxins, and antioxidants and increase the immune system. It also (*Teragonula Biroi*) contains protein, fat, carbohydrates, sugar, energy, vitamin C, beta carotene, calcium, magnesium, zinc, flavonoids,

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and polyphenols because trigona bees can collect nectars from the deepest part of flowers. It results in the high nutritional values it contains¹⁷

According¹⁸, honey contains more than 150 polyphenol compounds including flavonoids, phenolic acids, catechins, and derivatives cinnamic acid which function as antioxidants. The flavonoid compound is the largest group in phenolic compounds.

Material and Methods

Sample Preparation

1 bee boxes of the fresh sample was taken from a beehive, after that, the clean sample was put in bottle and stored in the refrigerator during the analysis. Honey sampling was repeated three times. The livestock was obtained from the beekeeping in Bontocane Village, Kahu Subdistrict, Bone Regency of South Sulawesi.

The Nutrition Test (Proximate)

The solution was made by mixing 10 mL of honey with 1 Liter of water, then was homogenized by stirring, aerated. The honey sample was analyzed at the Food Chemistry Laboratory, Faculty of Animal Husbandry, Hasanuddin University, Makassar.

Phytochemical Test

0.1 gram extract was added with 10 mL chloroform and a few drops of ammonia. The chloroform fraction was separated and acidified with a few drops of concentrated H₂SO₄. The acidic fraction was taken and divided into 3 tubes, then was added with *dragendorf*, *Meyer*, and *Wagner* reagents. The presence of alkaloids was characterized by the formation of white deposits in *Meyer's* reagents, red deposits in *dragendorf's* reagents, and brown deposits in *Wagner's* reagents^{19,20}.

Steroid / Triterpenoid test

A total of 1 g of sample was dissolved with 25 mL of hot ethanol (50°C), then filtered into a porcelain dish and evaporated until dry. The residue was dissolved with ether and transferred into a test tube, then added with 3 drops of anhydrous acetic acid and 1 drop of concentrated H₂SO₄ (*Test Lieberman Burchard*). Red or purple color indicates the presence of triterpenoids while green or blue indicates that there are steroids there.

Flavonoid Test

The sample was added with 0.1 mg magnesium powder and 0.4 mL of amyl alcohol (a mixture of 37% hydrochloric acid and 95% ethanol with the same volume) and 4 mL of alcohol then the mixture was shaken. The formation of red, yellow, or orange in the amyl alcohol layer shows the existence of flavonoids.

Alkaloid Test

The sample was weighted and extracted with ammoniacal chloroform. It was then filtered with cotton and transferred to tubes A and B. *Dragendorff's* and reagents *Wagner's* were added into tubes A and B. Sample positively contained alkaloids if there was reddish deposit formed in tube A and brownish deposit in tube B.

Triterpenoid Test

The sample was weighted and extracted with ethanol. After that, it was strained using cotton and heated to dry. It was extracted again with chloroform and water (1: 1). 2 drops of chloroform extract was dried. 1 drop of concentrated sulfuric acid and anhydrous acetic acid were added. The sample positively contains triterpenoids if it experiences red or brown discoloration but positively contains steroids if it changes in blue, purple, or green.

Measurement of total phenols / polyphenols

The blank used was a mixture of 0.5 mL methanol, 2.5 mL of Folin Ciocalteu reagent dissolved in water, and 2.5 mL of NaHCO₃ 7.5%. The samples were then incubated at 45°C for 45 minutes. Repetition was carried out three times and the absorbance was measured at a wavelength of 765 nm.

Measurement of Total Flavonoids

A total of 10 mg of extract was dissolved in 10 mL of distilled water, then 5 mL of Honey solution was taken and added with 0.3 mL of NaNO₂ 5%. In the next step, the Honey mixture was added with 0.3 mL AlCl₃ 10% which was dissolved with methanol and incubated at room temperature for 5 minutes. After incubation, 2 mL of 1 M NaOH and distilled water, were added until the volume reached 10 mL²¹.

Results and Discussion

Phytochemical Compounds of Trigona Honey

Table : 1 Results of Phytochemical Tests of Trigona Honey (*Tetragonula Biroi*)

No	Phytochemical test	Result	Conclusion
1.	Flavonoid	With mayer reagents there was yellow deposits formed	Positive
2.	Saponin	Brownish ring was not formed	Negative
3.	Alkaloid	With Dragendorff reagents, there was orange deposits formed	Positive
4.	Tannin	Foam formed as high as 1,5 cm for 30 second, there was not greenish black	Negative
5.	Triterpenoid	With LB, Intensive yellow fluorescence there was formed	Positive

From the table 1, Phytochemical test results of Trigona Honey indicate that there are bioactive compounds in Trigona Honey which are flavonoid, alkaloid, and triterpenoid compounds .

Table 2 : Composition of Trigona Honey (*Tetragonula Biroi*), Bone, South Sulawesi

Parameters	Trigona honey
Vitamin C	0.15 %
Protein	1.32 %
Fat	0,23 %
Carbohydrate	64.12 %
Flavonoid	159.62 ppm
Beta carotene	10.61 ppm
Polyphenol	133.52 ppm
Calcium	273.23 ppm
Magnesium	338.94 ppm
Zinc	12.49 ppm
pH	5.76

The table 2 show that of Trigona Honey, show that there was 0.15% vitamin C, 1.32% Protein, 0.23% Fat, 64.12% carbohydrates, 10.61 ppm beta carotene, 273, 23 calcium, 338.94 magnesium, and 12.49 ppm zinc and the pH was 5.76. The results of measurements on

total phenol generally show that trigona honey contains more phenols. The polyphenol value of trigona honey was 133.52 ppm while the total flavonoid of trigona honey (ethanol test of 96%) was 159.62 ppm. Stingless bee honey has a different taste and aroma, a more liquid

texture and undergoes slow crystallization.

Discussion

Table 1 shows the data we obtained about bioactive compounds including flavonoids, alkaloids, and triterpenoids. Trigona honey with ethanol solvent showed a positive response to the Flavonoid test. This indicated that Trigona honey (*Tetragonula Biroi*) contains flavonoid bioactive compounds.

Analysis of the secondary metabolite compounds of trigona honey used two methods, namely phytochemical screening as a qualitative test and measurement of polyphenols and flavonoids as a quantitative test. Phytochemical screening aims to determine the chemical content in the form of secondary metabolites of a sample. Phytochemical test results showed that trigona honey contains chemical compounds, namely alkaloids, flavonoids, and triterpenoids, but does not contain tannins and saponins. The polyphenols in this study were regarded to be gallic acid because the measurement standard for total phenols used gallic acid.

Flavonoids have many good effects on the health of the human body including antioxidants that act as an anti-inflammatory by identifying the metabolic effects pathway of arachidonic acid, affecting prostaglandin production and histamine release, having antitumor activity by cutting tumor promoter activity, and antiviral agents that can break the synthesis of nucleic acids²². Flavonoids and various compounds *phenolic* in honey are the most important pharmacological compounds. These compounds have been proven to be able to ward off free radicals, protect lipids and other compounds (vitamin C) that are easily oxidized²³.

Flavonoids with free hydroxyl groups have a radical capture activity and the presence of more than one hydroxyl group, especially on ring B will increase their antioxidant activity. Also, the presence of ortho-catechol groups in the B flavonoid ring becomes a factor determining the high antioxidant capacity. The active ingredient of trigona honey (*Tetragonula biroi*) has antioxidant properties. The antioxidants substances can configure the important oxidative compounds to capture and prevent the establishment of chain reaction configuration and can donate hydrogen atoms that also affect the activity in reducing free radicals²⁴.

Alkaloids are compounds that have the ability to regenerate pancreatic β cells that have been damaged.

Alkaloids can reduce glucose levels by stimulating and inhibiting glucose synthesis by inhibiting the enzymes of glucose 6- phosphatase, fructose, 1, 6-biophosphatase, and can increase the oxidation of glucose glycogen through glucose 6- phosphate dehydrogenase. glucose 6- phosphatase and fructose 1,6-bisphosphatase are enzymes that can reduce the formation of glucose from the substrate²⁵.

Based on flavonoid data (Table 2), trigona honey has a high flavonoid content enough of 159.62 ppm. Therefore, it can be stated that the total flavonoids are more soluble in 96% ethanol solvent. In honey, there are more than 150 *polyphenolic* compounds including *flavonoids*, *phenolic acids*, *catechins*, and derivatives *cinnamic acid* which function as antioxidants²⁶. The *flavonoid* compounds are the largest group in phenolic compounds¹⁸.

Vitamin C is the main antioxidant in plasma against free radical (ROS) and also plays a role in cells. As a free radical scavenger, vitamin C can react directly with *superoxide* and *hydroxyl anions*, as well as various *hydroperoxides* fat²⁷. Beta carotene, lutein, and lycopene are included in this antioxidant. It was found that carotenoids reduce the risk of heart disease and some types of cancer, and strengthen the body's defense system. In addition to vitamins, minerals, and beta carotene, Trigona honey also contains polyphenols.

Polyphenols contain antioxidant compounds that are able to reduce oxidative stress by preventing the chain of changes of *superoxide* (O₂) to *hydrogen peroxide* (H₂O₂) through the reaction of *habe wells* and *fentors* will form *hydroxy radicals* (OH). Polyphenols donate hydrogen atoms from the aromatic hydroxyl (-OH) group to bind to free radicals and remove them from the body through the excretion system²⁴. In general, decreasing oxidative stress can reduce insulin resistance, delay, slow down, and prevent lipid oxidation processes that play a role in the process of MDA production, inhibit pancreatic β cell damage, nDNA and mtDNA²⁷. The health benefits of polyphenols are to prevent or treat chronic degenerative diseases such as diabetes, cancer, and blocked arteries²⁶.

Conclusion

Based on the result of this study, trigona honey (*Tetragonula Biroi*) contains bioactive compound in the form of flavonoid, alkaloid, triterpenoid and polyphenol which have the potential to be antyhyperglychemic.

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Ethical Clearance: The research has been approved by the Research Committee on the Ethical use of Human and Animal, medicine Faculty University of Hasanuddin, Makassar, Indonesia with registration number UH19020081.

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Determinants of Rabies Prophylaxis Involvement based on Children's Experiences and Perspectives in An Endemic Area of Indonesia

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Abstract

Rabies studies involving children are still rare despite their vulnerability. As the critical preventive measure, understanding factors associated with their involvement in rabies post-exposure prophylaxis (PEP) is needed. A storytelling interview was conducted for 23 dog-bite and non-bite child-victims, aged 7-15 years, in an endemic area in Indonesia. Content analysis was carried with the help of Atlas.ti.7. Unreported wounds and PEP delays were occurred. Children's capabilities, motivations, and opportunities can be critical to prevent it. Knowing the source of rabies, its visible features and consequences, and the first aid technique are needed. Children's willingness to report and follow PEP seem to be regulated by their attitude towards vaccine, familiarity of dog ownership, perceptions of wound type, and emotions around rabies consequences, parental punishment, and injection. Mother, peers, neighbours and dog owners need to be empowered in PEP measure. In conclusion, rabies PEP program should attentive to factors influencing children's behaviour to support PEP uptake.

Keywords: *post-exposure prophylaxis, rabies, children, qualitative*

Introduction

Rabies is a re-emerging disease in Asia⁽¹⁾. In South and Southeast Asia, 14 out of 17 countries are categorized as being rabies endemic⁽²⁾. Annually, rabies claims up to 39.000 lives in Asia⁽³⁾, of which children are the majority⁽⁴⁾

Children's vulnerability to rabies is not without reasons. Children were found unable to recognize abnormal dog behaviour, lacking knowledge to avoid an attack, and more likely to be injured for curiosity to play with dogs⁽⁴⁻⁶⁾. Moreover, dog-bite wounds commonly take place on the upper extremity of their bodies such as the face, neck, and head, hence escalating the chance to develop rabies instantly^(7,8). Children who live in a community where dogs tend to be part of life, usually in endemic location, will also be more susceptible⁽⁹⁾

With such vulnerability, implementation of post-exposure prophylaxis (PEP) for children is the key, especially because PEP is the last preventive measure for rabies⁽¹⁰⁾. Although, PEP is a series of procedure which should be immediately taken after dog exposure and completely follow WHO recommendation⁽¹¹⁾, its implementations were often difficult according to studies^(5-7,10,12,13). These studies, however, were majority derived from adults, which is often proven to be inadequate to contribute in children-impacting program⁽¹⁴⁾, looking at numbers of children affected. Provide children's perspective towards rabies PEP practice.

Methods

The study was conducted in East Nusa Tenggara, Indonesia because of its status as a rabies endemic and a need to well actualize PEP⁽¹⁵⁾. Participant recruitment was done by purposive sampling. The inclusion criteria were children aged between 7 to 15 years who had at least an experience of a dog exposure (bite or non-bite) in the past. Recruitment was done by searching on the dog-bite

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victims register and door-to-door. Data saturation was reached after 23 participants.

Before data collection, consent was requested to one of parents/guardians and assent was sought for the children. Both were carefully explained about the research. First explanation was made to the parents/guardians, and then to the children in front of their parents/guardians. Chances to ask questions, to decide participation and setting convenient for data collection were given.

Storytelling-interview was used. It is a friendly way to collect data from children, as it allows them to express and decrease power-inequality to the adults^(16,17). During data collection, for convenience, parents/guardian and a government officer were present and observe from a distance. Children were asked to write a story themed "a child who gets bitten by a dog". No limitation set to the story length, the writing time, and the places to write. After finished writing, storytelling in front of the researcher began. Positive feedback was given and continued with an interview. Open-ended questions, 'do not know' and silence were allowed to prevent biases in children⁽¹⁸⁾. A maximum of 30 minutes were decided for children rapport. Without notified previously, new stationaries as an appreciation were given. All storytelling interviews were audiotaped and written works were stored.

Content analysis approach were used with Atlas.ti 7 and COM-B from Michie et al⁽¹⁹⁾ as a guide. The study was approved by the Wageningen University Social Sciences Ethical Committee. Prior to commence, this research also received approval from the local Public Safety and Politics Department, the local Department of Husbandry and Agriculture, and Department of Health.

Results

Below are the explored factors associated with post-exposure rabies prophylaxis involvement based on children's experience and perspectives.

Knowing rabies source and its visible features

Canine and human rabies terms were familiar to all children. Canine rabies were associated mostly with strange physical appearances, referred to its sharp teeth, tucked tail, cocked ear or tail, big posture, and excessive saliva; and with abnormal behaviours, such as tendency to attack unreasonably. A couple mentioned

unvaccinated dogs as rabid. Almost all children wrote that dog-bite can transmit rabies to human, yet could not describe human rabies features. Rabies was only said to cause a hard time surviving in human. A few, however, addressed a feature of mimicking dog's behaviours, such as the tendency bite, scratch, scream, and fear of light. These consequences were feared by the children. Most of them expressed the need to be treated.

Familiarity to dog ownership status

Most children addressed that any type of dogs whether familiar (domestic) or not (stray) can transmit rabies. A small number of children, however, considered that only stray dog is risky. Domestic dogs either owned by them or acquaintance were perceived safe from rabies.

Is this wound safe or unsafe?

All types of wound were addressed risky by many. However, a small group of children who experienced scratch addressed its insignificance to cause rabies due to its small size which can easily be treated at home and its low degree of pain, hence, does not need to be vaccinated or even reported. Only a deep wound, irrespective of size, or a torn with blood presence were considered risky. A worsened wound was also signed as rabies-poisoned.

Knowing wound cleaning as a must

Wound cleaning was repeatedly mentioned as a must action to do after attacked. Yet, nearly all did not know 'why' it is performed. Only one child addressed that it is to prevent rabies. For the procedure, soaping and rinsing the wound with water occurred a lot. Some added extreme techniques such as brushing, wiping, or scrubbing the wound with a tool, hand, or cloth. The disappearance of teared skin was regarded as a 'clue' to end wound cleaning.

Vaccine as a 'drug', timing, and injection experience

Children added 'injection' (vaccination) as a part of wound treatment and protector against rabies. Vaccination was viewed as having drug function which can kill the virus, heal the wound, or heal someone from rabies. For the timing, most mentioned vaccination must not be delayed. Others mentioned the ability to delay if incident happens in the evening or out of vaccination centre operational hours. Some children described

negative experiences with injection, either prior to or after having first vaccination series. This made some of them avoid immediate vaccination or completing its series.

Mother as helper, model, and treatment organizer

Among other members, mothers were very often cited as the first party to whom children will seek help. Children often felt less confident with their wound cleaning skill and refer to mother's help which gave them the feeling of cleanliness. Mother was also act as a model for children's first aid skill. A child felt confident to do the wound cleaning after four times observing his mother. In addition, mother was depicted as the organizer for the vaccination. Children mentioned an active role of mothers in arranging schedules to complete the vaccination series.

Fear of parental punishment

The likelihood of parental punishment, both verbally and physically, seems high if children are found injured by a dog. Children's response to this fear appears in two distinct reactions. Some were hiding because they did not want to be beaten or scolded. Other children did the opposite for fear of being punished

Peers as reference and reporter

Children seem to take peers as their reference for rabies and PEP knowledge. Some children addressed that their peers triggered fear which made them uneasy to accept the treatment. Peers also said to have the role as an incident reporter, especially when the incident happens when children are playing together.

Neighbours' fast response support

Neighbours were written to provide fast response support upon the injury by locating and bringing the helpless child home. When parents are not around, children would also seek help from the neighbours. Having a health worker as a neighbour was mentioned to also be beneficial as he/she can provide a fast response wound treatment and vaccination.

Receiving responsible gesture from dog owners

Children addressed that the owner whose dog injured them had made the treatment possible. Children described how the dog owner connected them to the paid private vaccination service when the free vaccination

centre operated by the government was closed. Dog owner also bore the transportation cost.

Discussion

Knowledge regarding visible rabid features in animal can promote children's involvement in PEP. The need of accurate knowledge to correctly identify rabid features in animal are also reported in other studies^(5,6). There is a tendency, however, that in endemic area, children overrated the features. For example, sharp teeth and big posture were also said to be part of it. This may need to be corrected to avoid unnecessary fear among children, while still keeping their attitude alert toward dogs. Not only in animal, but also the depiction of rabies impact in humans seems accelerating PEP involvement. Children awareness related to the human rabies features, however, is still more to the furious type of rabies. None delivered the paralytic symptoms which are known to be more subtle⁽¹¹⁾.

Children in endemic area also tend to see the wound caused by all types of dogs, familiar or not, as risky therefore will react in a faster report. Some however still based the risk on familiarity toward dogs. This can be dangerous as familiarity has contributed to a slower response to PEP^(13,20).

Children who consider minor wounds as unimportant can leave their parents unnoticed. Similar reason has made delayed reports and PEP in other studies^(6,10,13,21). Beside minor wounds, this study also adds that some children may perceive risk only if the wound has been worsened. Helping children to notice risks in wounds should be done to prevent PEP delays.

Knowledge and skills of wound cleaning appears to be low among children, although it is essential⁽¹²⁾. Many children could not describe the procedure according to recommendation⁽¹⁴⁾. Instead of using duration, children used the disappearance of wounded skin to determine when the washing can be ended. Inappropriate tools and techniques was also mentioned, which in practice can worsen the wound condition⁽²⁷⁾

Despite its emergency, vaccination had been delayed in some children for reasons beyond the reach of them. This may need to be investigated further. Meanwhile, positive injection experience is also imperative to be looked, as it can increase willingness to comply the entire series⁽²²⁾. This signals the need of pain-management skills among local health personnel.

Parents, especially mothers, are the key for children involvement in PEP as they cited repeatedly. It is well known that in developing countries, mother is the most important player to regulate children's involvement in treatments^(23,24) and influencing other family members to child's treatment^(25,26). Mothers should be empowered for their optimal role in children's PEP journey. Parents whom children are mostly relied upon, at the same time can be feared for their punishment. Parental punishment can drive a faster response⁽²⁷⁾ to report, yet should not be made as the norm in dog-bite cases. Instead of reporting, the response given by some children can be undesirable such as hiding the incident from the adults.

Children's peers need to be empowered as they tend to be the reference to other children for rabies and PEP knowledge and can act as the reporter when incident occurs at the playfield setting. Friendship, support, care, and mutual giving and taking which are valued during childhood period^[38], can be brought along in the process of knowledge building and children empowerment on rabies and PEP.

Finally, neighbours and dog owners have a crucial role to support faster response to PEP as they were also being sought when children need help and had helped the treatment possible. The role of neighbours should be made known in the community to improve social responsibility to protect the children altogether.

Conclusions

Various factors could determine children's PEP uptake success in an endemic area. For children this includes having knowledge to distinguish features of abnormalities in rabid animal, being aware of the rabies consequences in human, understanding the rabies PEP benefits, timing, and correct wound cleaning method, having correct attitudes and beliefs toward risks around dog ownership status and types of wound. Mothers need to be a competent teacher and organizer throughout the PEP schedule and should note that punishment norm can backfire, producing undesired response towards incident. Children peers should be empowered as a responsible resource and incident reporter. Finally, the role of neighbours and dog owners should be made known as an important part of prevention measure in the community.

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Declarations

Ethics approval: This study was approved by the Wageningen University Social Sciences Ethical Committee. Consent was obtained from all parents or guardians and assent from all the children participants.

Competing interest: The authors declare no conflict of interest.

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Burnout Syndrome among Undergraduate Dental Students in Majmaah University, Al Zulfi, Saudi Arabia

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Abstract

Aims: to assess the burnout syndrome among dental students and to compare and correlate the burnout parameters according to the age and year of study.

Materials and Methods: all male undergraduate students (n=125) from the college of dentistry participated in the cross sectional study. Maslach Burnout Inventory-Student Version (MBI-SS) questionnaire was used as an instrument in this study. SPSS 23, software was used to analyze descriptive data; Pearson's correlation coefficient was used to correlate three sub scales of MBI-SS with age and year of study.

Results: the response rate was 100%, statistically significant correlation was found for emotional exhaustion with age and year of study, and in year wise comparison only second year showed high depersonalization and diminished personal accomplishment. Positive correlation among all three sub scales was also seen.

Conclusion: emotional exhaustion increased with the increase in age and year of study, among all the study year 2nd year students showed high values of depersonalization and diminished personal accomplishment, over all the burnout among students was low.

Keywords: Burnout syndrome, Saudi Arabia, dental students, MBI-SS.

Introduction

Burnout is defined by Maslach and Jackson as a working environment syndrome, characterized by a process of chronic response to occupational stress, when coping methods fail or are insufficient, thus having negative consequences both at the individual and the professional level, and further affecting the family and social interactions. It is referred to as a multidimensional syndrome consisting of emotional exhaustion, dehumanization and reduced accomplishment at work.¹

Burnout is characterized by three components: Emotional tiredness/exhaustion, depersonalization/dehumanization, and low personal realization/accomplishment. It is an abnormal response of an individual to a chronic emotional stress, and initially, this syndrome was described in professionals with an intense and emotional interpersonal contact; however, more recently the concept of burnout has been extended to all occupational groups, including students.²

Dental students may not reveal or display any signs to the world outside, but it is appropriate to identify the condition before it intensifies. It can be intellectually debilitating and can have detrimental effects on an individual's academic performance. Contemporary curricula require professional students to attain manifold proficiencies, including the acquisition of theoretical

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knowledge, clinical efficiency, and interpersonal skills. Arduous academic pressure, limited social and personal time can append to the normal stress of life and thus can lead to a negative impact.³

Dental students seem to be prone to professional burnout, anxiety disorders and clinical depression because of the variety of sources of stress encountered throughout the professional career, and there is the possibility of beginning as early as university.⁴

The development of burnout syndrome, however, is directly related to the way individuals behave regarding stressors, which may result in a risk or in protection behaviors.⁵

Besides the prevalence of burnout syndrome among college students, considerable researches have revealed that students' burnout is related to perceived workload, perceived stress, examination anxiety, and academic performance.⁶

Sources of stress affecting dental students could be examinations and grades, full working day, receiving criticism from supervisors, lack of time to do assigned work, financial resources, and fear of employment after graduation or facing parents after failure.⁷

The dental education system in Saudi Arabia is a hierarchical system, in which there is an initial preparatory General Science year, followed by 5 years of dental school education in which the 1st and 2nd years include both basic sciences, medical and dental courses. The 3rd year introduces the students to the clinical disciplines, while the 4th and 5th year are mainly clinical oriented courses. The internship year is spent training on rotation in different hospitals around the kingdom. Dental schools are segregated into male and female campuses.⁸

The male section of our dental college has students studying in all the year of study where as the female section has been recently started in this academic year (2016-17) with only the first year students, so only the male section of dental college was targeted in this study. The objective of this study was to assess the burnout syndrome among dental students and also to compare the burnout parameters according to the age and year of study.

Materials and Methods

A cross sectional study was conducted; all the undergraduate students at the college of dentistry, were invited to participate in the study, as this study was about their academic experience in the university all the students in all the level of study year agreed to participate in the study.

The present study was approved by the research ethical committee of the college of dentistry, and there is no conflict of interest, written informed consent was taken from the students.

The questionnaire were administered to all the students in their respective classrooms (from level 1st to 5th year) and 15 minutes were given to the students to read, fill and return it back to the investigator, the students who were absent on that particular day were again targeted in their next lectures. The data was collected between October and November 2016.

The questionnaire consisted of the Maslach Burnout Inventory - Student Survey (MBI-SS), used to assess the Burnout syndrome. The MBI-SS is a self-assessment, seven-point Likert-type scale, with categories ranging from "never" to "every day". The instrument consists of 15 questions, which are divided into three dimensions, emotional exhaustion with 5 items, Cynicism/Depersonalization with 4 items and Professional Efficacy with 6 items.

As the cutoff point for Exhaustion and Cynicism, we used the percentile 66 (P66), and for Professional Efficacy we used the percentile 33 (P33), as proposed by Maslach and Jackson. Individuals that presented Exhaustion and Cynicism mean values above P66 and Professional Efficacy results below P33 were considered to have Burnout Syndrome¹.

Data was analyzed using IBM SPSS Statistics 23, Pearson Correlation test was used to correlated different subscales in the questionnaire and with the age and year of study,

Results

A total of 125 male dental undergraduate students participated in the study. All the students from 1st year to the 5th year of study were targeted in the study; the

response rate was 100%. Table 1 shows the age of the students the minimum age of students were 19 years and maximum was 25 years.

Table 1 Age distribution of study subjects

	N	Minimum	Maximum	Mean	Std. Deviation
Age	125	19.00	25.00	21.5280	1.79415

The distribution of students according to the year of study, first year 29 students, second year 26 students, third year 24 students, fourth year 24 students and fifth year 22 students. The overall percentages of the responses by the students for the questionnaire are shown in table 2.

Table 2: Total responses of All Levels (%)

All Levels n= 125							
Questions	Never	Less than 12 times a year	Once a month	More than once a month less than once a week	Once a week	2 or 4 times a week	5 times a week or everyday
I feel emotionally drained (tired by my studies)	12	9.6	13.6	14.4	31.2	14.4	4.8
I feel used up at the end of a day at University.	7.2	6.4	8	11.2	30.4	24.8	12
I feel tired when I get up in the morning and I have to face another day at the University	20.8	4.8	16.8	12	22.4	16	7.2
Studying or attending a class is really a strain for me	19.2	4	16	14.4	24	17.6	4.8
I feel burned out from my studies	14.4	8.8	22.4	15.2	25.6	10.4	3.2
I have become less interested in my studies since my enrollment at the university	29.6	14.4	22.4	12.8	14.4	4.8	1.6
I have become less enthusiastic (excited) about my studies	24	9.6	24.8	8.8	24.8	5.6	2.4
I have become more cynical (belief that it cannot be successful) about potential usefulness of my studies	45.6	10.4	16.8	9.6	6.4	8	3.2
I doubt this significance (Importance) of my studies.	39.2	10.4	10.4	14.4	13.6	7.2	4.8
I can effectively solve the problems that arise in my studies.	14.4	8.8	9.6	13.6	20.8	16	16.8
I believe that I make an effective contribution to the classes that I attend.	8.8	9.6	12.8	12	24.8	24.8	7.2
In my opinion, I am good Student.	2.4	3.2	7.2	8.8	16	28.8	33.6
I feel stimulated (encouragement, enthusiasm) when I achieve my study goals.	2.4	5.6	6.4	8	16.8	26.4	34.4
I have learned many interesting things during the course of my studies.	2.4	0.8	8	6.4	16.8	33.6	32
During class I feel confident that I am effective in getting things done.	3.2	3.2	6.4	6.4	21.6	32.8	26.4

In this study as for emotional exhaustion scale 12% of study population never felt emotionally drained by their studies but 31% felt emotionally drained once a week, the same percentage around 30% felt used up at the end of the day in university once a week. Around 21% students never felt tired when they got up in the morning with the feeling of facing university another day but 24% of students felt tired once a week and 7 % felt tired almost every day. Studying or attending the class was never a strain for 19% of students but for 24% it was for once a week and for 5 % of students of students every day. Around 14% of students were never felt burnout from their studies but 25.6% of students felt once in a week and 3% of students felt every day.

The depersonalization aspect shows that 29.6% of students never became less interested in their studies after enrollment at university, but 1.6% student’s everyday thinks they have become became less interested in their studies after enrollment at university, the majority 45.6% of students never doubted the usefulness of their studies but 3.2% still doubts every day.

Talking about diminished personal accomplishment

scale majority of students can effectively solve their problems arising from their studies but around 14 % said they can never solve their problems arising from studies. The majority of students (33.6%) think in their opinion they are good students where as 2.4% never thought they are good students. majority of students (34.4%) every day felt stimulated when they achieve their study goals, (32%) said they learnt many interesting things during studies, and (26.4%) felt confident in effectively getting things done.

The correlation of age and year of study with three different subscales in the questionnaire were shown in Table 3 and Table 4 respectively. There was a positive correlation with age and emotional exhaustion scale, the results showed as the age was increasing their emotional exhaustion was also increasing. The same is true for year of study also as the level of year of study was increasing the emotional exhaustion was also increasing. Whereas for the depersonalization and diminished personal accomplishment there was no correlation with age or year of study. The results also showed that there was a positive correlation between all the three subscales in the questionnaire.

Table 3: Correlation of burnout subscales with age

		Age	Emotional exhaustion	Depersonalization	Diminished Personal Accomplishment
Age	Pearson Correlation	1	.324**	.130	.160
	Sig. (2-tailed)		.000	.147	.074
	N	125	125	125	125
Emotional exhaustion	Pearson Correlation	.324**	1	.575**	.389**
	Sig. (2-tailed)	.000		.000	.000
	N	125	125	125	125
Depersonalization	Pearson Correlation	.130	.575**	1	.342**
	Sig. (2-tailed)	.147	.000		.000
	N	125	125	125	125
Diminished Personal Accomplishment	Pearson Correlation	.160	.389**	.342**	1
	Sig. (2-tailed)	.074	.000	.000	
	N	125	125	125	125
**. Correlation is significant at the 0.01 level (2-tailed).					

Table 4: Correlation of burnout subscales with year of study

		Emotional exhaustion	Depersonalization	Diminished Personal Accomplishment	year
Emotional exhaustion	Pearson Correlation	1	.575**	.389**	.237**
	Sig. (2-tailed)		.000	.000	.008
	N	125	125	125	125
Depersonalization	Pearson Correlation	.575**	1	.342**	.030
	Sig. (2-tailed)	.000		.000	.740
	N	125	125	125	125
Diminished Personal Accomplishment	Pearson Correlation	.389**	.342**	1	.132
	Sig. (2-tailed)	.000	.000		.142
	N	125	125	125	125
Year	Pearson Correlation	.237**	.030	.132	1
	Sig. (2-tailed)	.008	.740	.142	
	N	125	125	125	125
** . Correlation is significant at the 0.01 level (2-tailed).					

Discussion

The recognition of Burnout as a public health problem led to its inclusion in the list of occupational diseases related to work. The literature has shown that the chronic nature of this stress, combined with factors such as lack of energy and enthusiasm, feelings of

exhaustion, job dissatisfaction and emotional instability, may lead to the onset of Burnout syndrome. It is possible for the syndrome to have an early onset, during the graduate course, and this may enhance the future onset of the syndrome in these professionals. To address this situation, there is a need for an early identification of

symptoms related to Burnout, which should preferably take place when workers are still in training that is during their graduate course.¹

The present study was conducted on 125 dental undergraduate students from 1st to 5th year of their study, to assess the burnout syndrome. The response rate was 100% indicating the interest of the students in participating in this study.

As the burnout questionnaire by MBI-SS has three subscales, we correlated the age of the students and their year of study with these sub scales, we found that as the level of year of study increase the emotional exhaustion among the students was also increasing, the final and the pre final year reported with highest emotional exhaustion similarly where students had high emotional exhaustion were reported in the studies.¹⁻⁷ The explanation for this result would be the 1st and 2nd year are initial years 3rd year is the preclinical year and 4th and 5th year are the clinical year where students along with their academic responsibilities also manage the clinical responsibilities, and it's mentioned that examinations and completing clinical requirements are the highest sources of stress among dental students.⁸

We also found emotional exhaustion component of burnout to be increasing as the age increases, the similar finding have been reported by the studies.⁹⁻¹² Well along with the academic and clinical responsibilities, the social responsibilities also increases along with the age, their recognition in the community increases as they are treating the patients, and at the same time the expectations from them also increases, in order to fulfill those expectations, students many a times overload themselves which may result in exhaustion.

The depersonalization and diminished personal accomplishment scores were significantly high among the second year dental students, for these sub scales we have seen different results from different studies, the study^{12, 14} said first year students, study¹⁵ said fourth year students, study¹⁶ said third year students were more affected but in contrast to our study, the study⁹ said the second year students were least affected. The explanation of our results would be, in the second year our students has a combination of medical and dental subjects along with some preclinical introductory courses and labs and certainly all together they are required to do lot of

activities in this particular year, failing to which may result in depersonalization and diminished personal accomplishment.

We also saw positive correlation among the three sub scales which has also been reported by the study.¹³ The first year students showed the highest correlation in emotional exhaustion and depersonalization scales, the second year students also showed in emotional exhaustion and depersonalization scales, the third and fifth year students showed maximum correlation in emotional exhaustion and diminished personal accomplishment, where as fourth year students showed highest correlation in depersonalization and diminished personal accomplishment. Similar results of correlation between the sub scales were reported in the systematic review.¹⁷

Burnout can be considered a serious risk to the dental profession, causing both a threat to the work force and a tragedy to the individual dental student and thus is considered as a public health issue. Physiological, psychological and behavioral dimensions are affected by burnout, and several symptoms can subsequently occur. The continuous exposure to stress inducers may cause depressive symptoms. Burnout is considered as an occupational health issue, one of the most important work related problems in today's society.¹⁸

Though the burnout syndrome collectively among our dental students was low, there is evidence of separate studies and review of literature stating high level of stress among dental students during their professional courses.

Conclusion

This study showed the correlation between year of study and age with emotional exhaustion, as the students progressed through their study years their emotional exhaustion was also increased, the depersonalization and diminished personal accomplishment were not significantly related with the year of study except the second year students who showed depersonalization and diminished personal accomplishment. There were also the correlations between different sub scales and year of study respectively. Though the occurrence of burnout was less in this study, the stressful events can be eliminated with appropriate measures to alter student's maladaptive perceptions and reactions to those events.

Conducive environment needs to be created in the institution, workshops involving students and teachers to be conducted on a regular basis.

Ethical approval and consent: obtained

Financial support – Nil

Conflict of Interest – Nil

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Liver, Kidney Function Enzymes and Biochemical Parameters Evaluation for Hepatitis B and C in Iraqi Patients

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Abstract

Hepatitis is inflammation of the liver tissue. Hepatitis is *acute* if it resolves within six months, and *chronic* if it lasts longer than six months. Acute hepatitis can resolve on its own, progress to chronic hepatitis, or (rarely) result in acute liver failure. Chronic hepatitis may progress to scarring of the liver (cirrhosis), liver failure, and liver cancer. As hepatitis B and C are transmitted through blood and multiple bodily fluids, prevention is aimed at screening blood prior to transfusion, abstaining from the use of injection drugs, safe needle and sharps practices in healthcare settings, and safe sex practices. This study aimed to assess the liver function enzyme and other biochemical test in Iraqi patients infected with Hepatitis B and C in addition to patient treated with silymarin drug. The results showed the ability of silymarin drug to decrease the elevated liver enzyme level of hepatitis B (137.52 ± 5.71 vs. 350.19 ± 2.15 , 196.70 ± 9.10 vs. 210.33 ± 29.43 and 76.63 ± 4.30 vs. 178.12 ± 23.50) (U/L) for ALP, GPT and GOT respectively. The results of biochemical test matches the results of liver enzymes through decreasing the level of treated patients (42.50 ± 3.37 , 1.13 ± 0.06 and 2.81 ± 0.68) (mg/dL) in compared to hepatitis patients (66.01 ± 1.7 , 2.28 ± 0.20 and 5.16 ± 0.28) (mg/dL) for blood urea, creatinin and total bilirubin respectively. The results indicated that hepatitis C patients suffered from elevated liver enzymes level compared to treated humans (347.41 ± 2.15 vs. 207.25 ± 11.94 , 256.07 ± 29.43 vs. 137.61 ± 2.186 and 167.6 ± 4 vs. 95.2 ± 4.7 Unit/L) or healthy humans (64.89 ± 25.01 , 39.43 ± 12.10 and 35.56 ± 12.59) U/L for ALP, GPT and GOT respectively and the biochemical test agreed with the previous results in which the level of treated humans decrease after treatment with silymarin in compared to elevated level for hepatitis patients (42.01 ± 3.72 vs. 66.01 ± 1.70 , 1.33 ± 0.13 vs. 2.280 ± 0.2 and 1.60 ± 0.11 vs. 4.16 ± 0.28) mg/dL for for blood urea, creatinin and total bilirubin respectively.

Keywords: Iraqi patients; Hepatitis B and C; kidney Function Enzymes; Health

Introduction

Hepatitis is the most common type of disease that occurs in the world and it is a state of inflammation of the liver due to a variety of causes, of which viral infection is the most important, and leads to significant morbidity and mortality. Viral hepatitis is caused by infection with one of the five known viruses, which predominantly affect the liver, where they A, B, C, D and E viruses^(1,2) The hepatitis Viruses differ widely in their morphology, genomic Organization, taxonomic classification and modes of replication.

⁽³⁾ that's mean it may be caused by drugs, alcohol use, or certain medical conditions. The conditioning hepatitis can be self limiting or it can cause fibrosis i.e., scarring, cirrhosis or liver cancer. The group of viruses (hepatitis A, B, C, D and E) that cause acute and/or chronic infection and inflammation of the liver gives rise to a major public health problem globally. Hepatitis B and C viruses are major causes of severe illness and death. The global burden of disease due to acute hepatitis B and C and to cancer and cirrhosis of the liver is high (about 2.7% of all deaths) and is forecast to become a higher ranked cause of death over the next two decades. recent study founded that people were

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estimated to die from hepatitis C-related liver diseases each year(4). Hepatitis A and hepatitis E are emblematically induced by consumption of pestiferous water and food. Hepatitis B, hepatitis C and hepatitis D are ordinarily stimulated as an outcome of Parenteral, adjoin with infected bodily fluids. Usual modality of contagion for these viruses admits acknowledge of pestiferous blood/blood products, incursive medical procedures using be foul apparatus and for hepatitis B hauling from mother to child at birth, from clan members to adolescent and through erotic association. Severe contamination may occur with finite or no manifestation or may include indications such as jaundice (yellowing of eyes and skin), dark urine, extreme fatigue etc⁽⁵⁾. In some cases, the immune system mistakes the liver as a harmful object and begins to attack it. It causes ongoing inflammation that can range from mild to severe, often hindering liver function. It's three times more common in women than in men. For some people, hepatitis B is an acute, or short-term, illness but for others, it can become a long-term, chronic infection. Risk for chronic infection is related to age at infection: approximately 90% of infected infants become chronically infected, compared with 2%–6% of adults. Chronic hepatitis B can lead to serious health issues, like cirrhosis or liver cancer. The best way to prevent hepatitis B is by getting vaccinated while hepatitis C is a short-term illness but for 70%–85% of people who become infected with Hepatitis C, it becomes a long-term, chronic infection. Chronic Hepatitis C is a serious disease than can result in long-term health problems, even death. The majority of infected persons might not be aware of their infection because they are not clinically ill. There is no vaccine for Hepatitis C. The best way to prevent Hepatitis C is by avoiding behaviors that can spread the disease, especially injecting drugs.

Materials and Methods

Study Cases and Sample collections

Two types of Hepatitis patients were enrolled in the study: Hepatitis B (10 patients) and Hepatitis C (10 patients) who treated with silymarin drug in addition to untreated patients(10 patients) and healthy humans⁽¹⁰⁾. They were referred to the gastroenterology and hematology teaching hospitals, Baghdad, Iraq during the period from September to December 2018 for

diagnosis and treatment. The diagnosis was based on a clinical examination and laboratory evaluations, which were carried out by the consultant medical staff at the hospital. The patients were Iraqi Arabs, and their age ranged between 25-40 years.

Blood Sampling

An overnight fasting venous blood samples were obtained from all twenty patients (Hepatitis B and C) with healthy persons (10 persons) and un treated patients (10 persons). serum alanine aminotransferase, and serum aspartate aminotransferase, serum alkaline phosphatase, serum total bilirubin, serum urea, serum creatinin were measured using autoanalyser device (Automated Mindray Ps200).

Table (1): reference levels for biochemical tests used in this study

Biochemical Test	Normal Levels
SerumTotal Bilirubin	0-1.4mg/Dl
Urea	20-45 mg/dL
Creatinin	0.6-0.9 mg/dL
Serum ALP 7-9years (male) 7-9years (female) 10-12years (male) 10-12years (female)	86-315 U/L 69-325 U/L 42-362 U/L 51-332 U/L
SGPT (serum ALT)	0-50 U/L
SGOT (serum AST)	0-60 U/L

ALP: alkaline phosphatase; SGPT: serum glutamic transaminase test; ALT: alanine aminotransferase; SGOT: serum glutamic oxaloacetic transaminase test; AST: aspartate aminotransferase; mg/dL: milligram per deciliter; gm/dL:gram per deciliter; U/L: unit per liter; IU/L: international unit per liter.

Ethical Consideration: Informed consent was obtained from the patients with their agreement.

Statistical Analysis

One mode examination of variance ANOVA (Duncan) was made to test whether group alteration was important or not, statistical significance was defined as $p \leq 0.05$. Data were expressed as mean \pm standard error and statistical significances were carried out using Graph Pad Prism version 6 (Graph Pad Software Inc., La Jolla)

Results and Discussion

Table 2 declared that treated patient with silymarin drug had significantly lower concentrations of serum

ALP, GPT and GOT to (137.52 \pm 5.71, 196.70 \pm 9.10 and 76.63 \pm 4.30)(Unit/L) in compaired to hepatitis patients(350.19 \pm 2.15, 210.33 \pm 29.43 and 178.12 \pm 23.50) (U\N) respectively. The results of blood urea, creatinin and total bilurbin matches the results of liver enzymes in which the drug possess the ability to decrease the level of test indicated above to (42.50 \pm 3.37, 1.13 \pm 0.06 and 2.81 \pm 0.68) (mg\dL) in compared to hepatitis patiens (66.01 \pm 1.7, 2.28 \pm 0.20and 5.16 \pm 0.28) (mg\dL) for blood urea, creatinin and total bilurbin respectively (Table 2).

Table (2): Effect of Silymarin on liver function enzyme and kidney function test for hepatitis B patients

Biochemical Test		No. of cases	Healthy humans (Control negative) (mean \pm S.E.)	Hepatitis B patients (Positive control) (mean \pm S.E)	Patient Treated with silymarin Drug (mean \pm S.E.)
ALKALINE PHOSPHATASE- ALP	U\N	10	76.23 \pm 25.01	350.19 \pm 2.15	137.52 \pm 5.71
ALT-SGPT		10	32. \pm 2.9	210.33 \pm 29.43	196.70 \pm 9.10
AST-SGOT		10	26 \pm 2.659	178.12 \pm 23.50	76.63 \pm 4.30
BLOOD UREA	mg\DI	10	28.1 \pm 3.8	66.01 \pm 1.7	42.50 \pm 3.37
CREATININE		10	0.85 \pm 0.1	2.28 \pm 0.20	1.13 \pm 0.06
TOTAL BILIRUBIN –TBI		10	0.4 \pm 0.09	5.160 \pm 0.28	2.81 \pm 0.68

Hepatitis C showed a significant increased in all liver enzymes level compared to treated humans (347.41 \pm 2.15 vs. 207.25 \pm 11.94, 256.07 \pm 29.43 vs. 137.61 \pm 2.186 and 167.6 \pm 4 vs. 95.2 \pm 4.7Unit/L) or healthy humans(64.89 \pm 25.01, 39.43 \pm 12.10 and 35.56 \pm 12.59) U\N for ALP, GPT and GOT respectively.

the other investigated biochemical test agreed with the previous results in which the level of treated humans decrease after treatment with silymarin in compaired to elevated level for hepatitis patients(42.01 \pm 3.72 vs. 66.01 \pm 1.70, 1.33 \pm 0.13 vs. 2.280 \pm 0.2 and 1.60 \pm 0.11 vs. 4.16 \pm 0.28) mg\dL for for blood urea, creatinin and total bilurbin respectively.

Table 3: Effect of silymarin on liver function enzyme and kidney function test for hepatitis C patients

Biochemical Test		No. of cases	Healthy humans (Control negative) (mean \pm S.E.)	Hepatitis C patient (Positive control) (mean \pm S.E.)	Treated patient with silymarin (mean \pm S.E.)
ALKALINE PHOSPHATASE-ALP	IU	10	64.89 \pm 25.01	347.4 \pm 2.159	207.2 \pm 11.94
ALT-SGPT		10	39.43 \pm 12.10	256 \pm 29.43	137.61 \pm 2.186
AST-SGOT		10	35.56 \pm 12.59	167.6 \pm 4	95.2 \pm 4.7
BLOOD UREA	mg/dL	10	32.5 \pm 3.37	66.01 \pm 1.70	42.01 \pm 3.72
CREATININE		10	0.85 \pm 0.1	2.28 \pm 0.2	1.33 \pm 0.13
TOTAL BILIRUBIN –TBI		10	1.19 \pm 0.68	4.16 \pm 0.28	1.60 \pm 0.11

This study was based on people with viral hepatitis B and C and all tests were done for them include ALT-SGPT, AST-SGOT, ALKALINE PHOSPHATASE-ALP, Blood urea, Creatinine and Total bilirubin –TBI . The results were calculated on healthy peoples, a certain number of patients hepatitis B and C and people treated with silymarin drug.

Liver has a pivotal role in regulation of physiological processes. It is involved in several vital functions such as metabolism, secretion and storage. Furthermore, detoxification of a variety of drugs and xenobiotics occurs in liver⁽⁶⁾. Most of the hepatotoxic chemicals damage liver cells mainly by inducing lipid peroxidation and other oxidative damages, but medicinal plants or their products may counteract such damages⁽⁷⁾. Silibinin (INN), also known as silymarin (both from *Silybum*, the generic name of the plant from which it is extracted), is the major active constituent of, a standardized extract of the milk thistle seeds, containing a mixture of flavonolignans consisting of silibinin, isosilibinin, silicristin, silidianin, and others and considered as a supportive element in treatment of alcoholic and child grade ‘A’ liver cirrhosis⁽⁸⁾. Oxidative stress is considered to play a prominent causative role in many diseases, including liver damage

⁽⁹⁾. Silymarin, like other flavonoids, has been shown to inhibit P-glycoprotein-mediated cellular efflux⁽¹⁰⁾. The modulation of P-glycoprotein activity may result in altered absorption and bioavailability of drugs that are P-glycoprotein substrates. It has been reported that silymarin inhibits cytochrome P450 enzymes and an interaction with drugs primarily cleared by P450s cannot be excluded and by inhibiting HCV entry and fusion⁽¹¹⁾, promoting HCV-induced oxidative stress, precluding HCV transmission, and blocking viral production⁽¹²⁾.

The impact of treatment with silymarin on patients with viral hepatitis in different studies is difficult to compare because of the disparity in treatment populations and treatment regimens. However, as a general trend there is improvement in the transaminases with treatment compared with baseline, but only equivocal effects on other liver enzymes It was found that the effect of silymarin on patients with viral hepatitis C type had a positive effect and a decrease in the proportion in the analysis, ALT-SGPT, AST-SGOT, Blood urea, Creatinine and Total bilirubin –TBI⁽¹³⁾. The effect of the drug on people with viral hepatitis B has a strong and obvious effect through the results in the test table(14).

The result agree with who state that silymarin was found to decrease ALT and AST in patient with hepatitis caused by viral infection through multiple mechanisms including the accumulation of genetic damage due to immune-mediated hepatic inflammation and the induction of oxidative stress and there direct effects of the viral proteins HBx and HBs on the cell biology⁽¹⁵⁾. Integration of HBV-DNA into the human genome is considered an early event in the carcinogenic process and can induce, through insertional mutagenesis, the alteration of gene expression and chromosomal instability¹⁶⁾.

Conclusion

Hepatoprotective effects of the silymarin from plant source was overwhelmed by their potentials in reducing the hepatic and kidney damage caused by viral infection which had the ability to elevate level of liver function enzyme and kidney function test.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict Of Interest: The authors declare that they have no conflict of interest.

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Gender Effect on Post-Operative Pain after Different Instrumentation Techniques

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Abstract

This study was conducted to assess gender effect on post-operative pain after different instrumentation techniques. One hundred and twenty patients (60 female, 60 male) were incorporated into this investigation, those patients requiring endodontic treatment on their permanent molar teeth with asymptomatic irreversible pulpitis preoperatively to do access opening and instrumentation at a similar visit. Patients ranged in age from 19 to 50 years of age, and all were healthy, as decided from a composed medical history and oral interview. The patients were relegated into two gatherings: first gathering (30 female and 30 male): Teeth were instrumented utilizing ProtaperNext System (Full Rotary method), second gathering (30 female, 30 male): Teeth were instrumented utilizing Wave One System (Reciprocating method). (Pain evaluation completed at day 1, 3 and 7 utilizing Verbal Rating Scale (4 -Point Scale). Patients recorded the occurrence and seriousness of pain experienced. Patients were called at 24, and 72 hours to acquire their reports for the initial three days. Seven days after treatment their records were inspected and percussion test performed. The information acquired were examined factually utilizing Chi-Square test. Result demonstrated that all gatherings incited Post-operative Pain both sexual orientation. The outcome appeared there were significant differences between sexual orientation from the outset and third day, while there were non-significant contrasts between sexes at 7day.

Key word: Wave one, Protaper Next, Verbal rating Scale

Introductio

Postoperative agony in endodontic techniques is unwanted for both patient and dentist. After the chemical and mechanical preparation of the root canal, the bothering of the periapical tissues results in irritation, discharging gathering of synthetic substances that start inflammation reactions. Arrival of these substances can either straightforwardly bring down the pain threshold sensory nerve or cause pain by implication by expanding the vascular porousness and creating edema and swelling. In spite of the fact that the purposes behind these intensifications are not clear, a number of theories, for example, physiologic changes chemical, physical

or immunological and microbiological factors, are offered⁽¹⁻²⁾.

Expulsion of contaminated debris to the per radicular tissues during chemo mechanical preparation is one of the chief reasons for postoperative pain. All preparation procedures and instruments are related with expulsion of debris, , even when the preparation is maintained short of the apical end and manual instrumentation appears to create more prominent expulsion contrasted and motor driven turning preparation⁽³⁻⁶⁾.

During root canal instrumentation procedure, dentin chips, pulp tissue, microorganisms, as well as irrigants might be expelled into the per radicular tissues. Acareful control of the working length may diminish this hazard, yet in any case any expulsion of debris may possibly cause postoperative complications, for example, flare-ups. Flare-up is portrayed as the

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event of pain, swelling, or the blend of both during root canal system treatment causing unscheduled visits of the patients. This phenomenon is also called inter appointment emergency. Irritants left inside the root canal system, iatrogenic elements, and (local) have host are identified with postoperative pain. (3) Counteractive action and the executives of post endodontic pain (PEP) is a vital piece of endodontic treatment. Educating patients about expected post endodontic t pain (PEP) and recommending medication to oversee it can expand patient trust in their dental specialists, increase patients' threshold, and improve their disposition toward future dental treatment(7).

Method and Materials

120 patients were chosen and incorporated into this investigation, those patients requiring endodontic treatment on permanent I molar teeth with asymptomatic irreversible pulpitis preoperatively. These patients went in age from 19 to 50 years of age, and all were healthy, as decided from a composed health history and oral interview. Age, sex, tooth area, pulp imperativeness and radio graphical assessment were recorded. A solitary clinician assessed all patients, utilizing radiographic and clinical discoveries, and a similar clinician was appointed for treatment everything being equal (8). The patients were allocated into two gatherings (each gathering 30 female, and 30 male) relies upon file system utilized in root canal treatment, the gatherings were close comparable worried in curvature of the roots and the quantity of root canal.

- First gathering (30 female and 30 male): Teeth were instrumented utilizing Protaper Next System (Full Rotary method).
- Second gathering (30 female, 30 male): Teeth were instrumented utilizing Wave One System (Reciprocating method)

The burs and all instruments were disposed of following every patient to dispense with any contamination. In the wake of managing a nearby anesthesia utilizing 2% lidocaine 1:100,000 epinephrine and applying rubberdam, end of all carious tissue to counteract presenting of microbes and their items from carious injury to root canal system, at that point access was made. Working length was resolved with the Root

ZX Apex locator and computerized radiograph with X-Pod My ray remote advanced System. Working length was viewed as at apical narrowing. During instrumentation, the root canal were flushed with typical saline (8,9,10)

Protaper next gathering:

Root canal was set up with ProTaper Next file as indicated by the maker guidance utilizing (X Smart Plus). The X Smart in addition to had pre-programmed setting to (300Rpm and 2.0 Ncm) the instrumentation was finished in crown down way utilizing delicate in and out movement. The instrumentation grouping was begun as following X1 was utilized in at least one goes, until working length is come to, X2 was utilized to full working length as MAF(11,12)

Wave one gathering:

The root canal were set up with a reciprocation Wave one Primary (25/0.07) file with responding The structure was made with in-and-out pecking movement until going to the WL. All root canal were instrumented on the buccolingual extensions with brushing movement, with 350 rpm and 5Ncm of torque).13,14)

In two the instrumentation procedure. All root canal were instrumented, cleaned in single visit. Utilizing typical saline as irrigants and 17% EDTA as a Glide all through the method, root was performed utilizing plastic syringe and irrigant needle measure 27mm' side vented, that addition into the root canal, apportioning of an irrigants into a root canal through needle with little checks, inactively and with disturbance by moving the needle up and dawn the canal space without restricting it on the canal wall. The irrigants stored while keeping the hand on movement to avert lock up the cannula. (15). All teeth were in this way dried with disinfected paper cones. Endoseptone was utilized as intracanal medicament for all cases (carefully adhered to maker's directions). At that point situation of cotton pellet, at that point the access opening were fixed by Riva self-fix, tar fortified glass ionomer to dispense with any probability of microleakage between the appointments.

Assessment of Post-Endodontic Pain:

After treatment, the treating dental specialist educated the patients that Post endodontic pain may

Table (3) Descriptive of group's female by times

	At first day				At third day				At 7 day			
	Protaper next	%	Wave one	%	Protaper next	%	Wave one	%	Protaper next	%	Wave one	%
No pain	21	70	12	40	29	96.7	25	83.3	30	100	29	96.7
Mild pain	9	30	6	20	1	3.33	2	6.67	0	0	1	3.33
Moderate pain	0	0	9	30	0	0	2	6.67	0	0	0	0
Sever pain	0	0	3	10	0	0	1	3.33	0	0	0	0
Total	30	100	30	100	30	100	30	100	30	100	30	100

Discussion

Root canal instrumentation systems are difficult to perform, because of anatomical complexities and impediments of the endodontic instruments, which regularly bring about a high danger of intracanal disappointment and other iatrogenic mistake. Much of the time dentine chips, pulp tissue fragment, necrotic tissue, microorganisms and intracanalirrigants might be expelled from the apical foramen during the root canal instrumentation. This is of worry since material expelled from the apical foramen might be identified with irritation of periapical tissue, postoperative pain and additionally flare up (8).

An acute inflammation reaction creates in the periradicular tissue because of extra affronts from the root canal system, which can be of mechanical, chemical, or microbial origin. Microbial damage to the periradicular tissues is most likely the commonest reason for flare-ups. Although microbial affront can be combined with iatrogenic components, it can some of the time happen notwithstanding when the root canal techniques have been sensible and cautious. Apical extrusion of debris to the periradicular tissues is one of the chief reasons for postoperative pain(20). A careful control of the working length may diminish this hazard, however by and by any extrusion of debris may possibly cause postoperative difficulties, for example, flare-ups in light of the fact

that when debris is pushed out of apical foramina, it will bring about an Ag-Ab response. This response will produce an acute inflammation in the periapical tissues, and cause harm to the cell layer bringing about prostaglandins discharge, bone resorption, amplification of the kinin system and eventually pain for patient (21). Most instrumentation procedures advocate early coronal flaring. Instrumentation methods that prepare canal in a cervical to apical direction are prescribed to limit the rate of apical extrusion(22). The fundamental target of this examination is to indicate sexual orientation impact on the accident and the severity of post-operative pain following root canal instrumentation utilizing two different techniques.

120 patients (60 female and 60 male) were haphazardly allotted into two gatherings agreeing instrumentation procedure , each gathering patients (30 male and 30 female), required endodontic treatment on their permanent molar teeth with asymptomatic irreversible pulpitis preoperatively, to access opening and instrumentation preformed at a similar visit. Asymptomatic irreversible pulpitis with no periapical changes cases were chosen for this examination because of the way that reviews have demonstrated the nearness of preoperative pain altogether builds the likelihood of postoperative pain. (23), this discovering associates with different examinations (24). Additionally Higher

rate of postoperative pain in teeth without periradicular inflammation may be ascribed to an absence of room for weight discharge when periradicular bone resorption is missing ⁽²⁵⁾. Likewise roots curvature of teeth incorporated into this investigation extended from slight to moderate that severe curve canal extrude more debris, while studies demonstrated no significant difference between slight to moderate curve canal ⁽²⁶⁾

A single clinician assessed all patients; a similar clinician (the specialist) was relegated for treatment everything being equal. This technique was performed to wipe out interpersonal variability in the treatment between clinicians ⁽⁸⁾. In the wake of securing direct access to the channel hole, the working length was built up. The working length for root canal was viewed as at the apical construction, the assurance of an exact working length is one of the most basic strides of endodontic treatment. The perfect working length was resolved utilizing an electronic apex locator and periapical radiographs ⁽²⁷⁾ Subsequent to utilizing Apex locator; cases into which the file situated at 0.5 to 1mm from radiographic summit were incorporated into this investigation. File to the foramen brought about more debris contrasted with 1 mm shorter than the foramen this is in concurrence with ^(32,33,34) The Irrigation needle utilized was side vented type since standard needle or top vented needle extrude greater amount of irrigants and side-vented irrigation system needles appeared to lowering affect irrigants expulsion, this result concurrence with ⁽²⁸⁾

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

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Low Socioeconomic Households are Vulnerable to Stunting: Structural Equation Model Analysis

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Abstract

Background: stunting is still a problem at the global level. It is estimated 22.2% or 150.8 million of children under five suffering from stunting in 2017. Indonesia is the fourth country with the highest prevalence of stunting in the world (30,8% in 2019). This study is intended to see the structural equation model of determinant stunting of children under two years in Indonesia in 2010 by using data from Indonesia's Basic Health Research 2010. **Method:** we used Structural Equation Model as analysis technique. Stunting determinants that have direct path to the stunting are indicators of care (breastfeeding), food intake (maternal iron tablets, vitamin A in mother and child) and the socio-economic indicators (location of residence, family size, expenditure per capita, maternal education and healthy house). **Results:** the result showed that socioeconomic variable was statistically significant related to stunting with mother's education level and household expenditure per capita as strong indicators to predict household socioeconomic. The regression equation of stunting is -0.18 socioeconomic. **Conclusion:** socioeconomic has negative effect toward stunting. Stunting was more likely occurred in low socioeconomic household.

Keywords: Stunting, SEM analysis, socioeconomic.

Introduction

Stunting is still a problem at global level. It is estimated 22.2 per cent or 150,8 million children under five globally affected by stunting. Indonesia is the biggest fifth country of stunting prevalence in the world ¹. Even though the prevalence of stunting in Indonesia in 2018 decreased, but Indonesia is still struggling with stunting (30.8%)².

Stunting is related with lots of factors. It was found that 20 – 40 per cent stunting in children under two years related with low birth weight³. On the other side, under nutrition might occur because of low birth weight affected by underweight pregnant mothers ⁴. Most underweight and stunting occur in a short period from birth until two years of life⁵.

The direct cause of stunting in developing countries was related to the poor nutrition status of mother from the early stages of conception and undernutrition during their pregnancy; inadequate breastmilk, delay of providing additional food, insufficient quality and the amount of additional food and also the combination all of these risk factors ⁶.

Children suffering from stunting may never grow to their full height and their brains may never develop to their full cognitive potential ⁷. Stunted children will grow shorter than their peers and look younger, usually 2 -3 years younger ⁸. Mendez dan Adair found that the more severe children suffering stunting, the lower level of their intelligence⁹.

Seeing the fact that the prevalence of stunting in Indonesia is still high and realizing how it will impact the quality of Indonesia's young generation, we initiated to analyze nutrition problem in Indonesia particularly stunting in children under two using data from

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Indonesia's Basic Health Research 2010⁵.

The study was intended to find the risk factors of stunting and its structural equation model of determinant stunting of children under two years in Indonesia in 2010 using data from "Indonesia's Basic Health Research.

Material and Method

Indonesia's Basic Health Research is a cross sectional survey to describe the health problem of population in all areas of Indonesia¹⁰. Indonesia's Basic Health Research population represents 33 provinces in Indonesia. Samples (household) were selected using two stages sampling method. It represents 33 provinces that spread across 441 districts/ cities out of 497 districts/ cities in Indonesia. In this research, population and sample were total households with children under two years. Total sample included in this study was 7972 samples.

Conceptual framework of UNICEF 1990¹¹ was used as theoretical basis of this research. Therefore, the hypothesis structural model was developed accordingly. Variables that were measured in this study consist of parenting which consist of variables giving colostrum, early breastfeeding initiation (infant starts breastfeeding within 1 hour after birth), and exclusive breastfeeding (children aged 0-6 months who were only given breastmilk in 24 hours before interview); macro and micronutrient intake variables consist of fat intake (fat content consumed by children under two in the last 24 hours), Vitamin A for children (children get high doses of vitamin A (100,000 IU for ages 6 -11 months and 200,000 IU for children > 11 months)), Vitamin A for mother (mothers get high dose vitamin A (200.000 IU)), carbohydrate intake (carbohydrate content consumed by children under two in the last 24 hours), Fe tablet (mothers who get Fe pills at least 90 tablets during pregnancy) and protein intake (protein content consumed by children under two in the last 24 hours); and socio economic variables which consists of number of family member, location (urban/ village), mother's education (the highest formal education completed by mother), expenditure per capita (total amount of money spent

on food and non-food divided by the number of family members) and healthy house (if it meets seven criteria, namely a ceiling roof, a permanent wall (wall / board), the type of floor is not soil, has windows, adequate ventilation, sufficient natural lighting, and not densely populated, according to Indonesia Health Department standard¹².

Data was analyzed using Lisrel 8.70 and WHO Antro V 3.2 2009 for anthropometric data. Data weighted was processed using SPSS 13 with Complex Method Sample. Flag data in anthropometric was excluded from data analysis since it indicated incorrect measurement¹³. All missing data was excluded.

We used Structural Equation Model (SEM) method for multivariate analysis particularly to create a statistical model that illustrated the relationship between latent variable, exogenous and endogenous variables. Validity and reliability were done simultaneously when creating the statistical model. Multicollinearity was checked using SPSS by identify VIF value and correlation between independents variable.

Findings

Since 410 data were missing and 650 data were flag due to anthropometric measurement, we excluded it from analysis (total 1060 data or 13% out of total sample). There were 76 missing samples due to protein intake, carbohydrates and fat for children variables and those were removed from analysis. Thus, the total sample analyzed was 6836 sample of children under two years.

There was multicollinearity between fat and carbohydrates ($r= 0.99$) and confirmed by VIF value which is greater than 10. In order to handle the multicollinearity, we created one composite variable instead of exclude these variables¹⁴. In term of model identification, we found that the measured model is over identified (number of parameters = 33; number of data point= 105, Df = 72). Parameter estimation result (Table 1.) showed us that variables protein, Fat/Carbohydrate and family member had loading factor <0.30 so these

variables will be excluded from analysis.

Table 1. Estimation of Maximum Likelihood Determinants of Stunting Parameters

Parameter	Unstandardized				Standardized
	Loading Factor	SE	t-value	Error variance	Factor Loading
Stunting	1.00	-	-	-	
Fe	0.19	0.0075	25.45	0.11	0.55
Vit A Children	0.30	0.015	20.71	0.70	0.37
Vit A Mother	0.22	0.0089	24.42	0.19	0.48
Exclusive Breastfeeding	0.16	0.0090	18.39	0.13	0.41
Early Initiate Breastfeeding	0.18	0.0099	18.42	0.16	0.41
Colostrum	0.47	0.025	18.87	0.90	0.44
Mother's education	-0.88	0.018	-49.38	0.99	-0.67
Healthy house	-0.89	0.020	-43.58	1.54	-0.58
Location	0.23	0.0068	34.73	0.20	0.47
Family member	0.38	0.026	14.99	3.18	0.21
Expense	-0.94	0.018	-51.66	0.97	-0.68
Protein	0.0099	0.0040	2.50	0.066	0.04
Fat/ Carbohydrate	-0.032	0.012	-2.72	0.58	0.05

We found that all of goodness of absolute fit index and parsimony fit index indicated that goodness of fit of model was satisfy except incremental fit (RFI) (Table 2.).

Table 2. Goodness of Fit Index of Stunting Determinant

Goodness of Fit Index	Target of goodness Fit index	Estimation result	Goodness Fit index
Absolute fit index			
GFI	≥ 0.90	0.98	Good
RMR	≤ 0.050	0.039	Good
RMSEA	≤ 0.08	0.045	Good
P (close fit)	≥ 0.05	1	Good

Cont... Table 2. Goodness of Fit Index of Stunting Determinant

ECVI	Small value and close to ECVI saturated	M*0.17 S*0.031 I*1.41	Good
Incremental fit index			
AGFI	≥ 0.90	0.97	Good
RFI	≥ 0.90	0.86	Not too good
IFI	≥ 0.90	0.90	Good
CFI	≥ 0.90	0.90	Good
Parsimony fit index			
PGFI	Closer to 1 is better	0.67	Good

In term of validity and reliability, we found that the loading factor value for protein and fat/ carbohydrate intake were 0.0099 and 0.032 respectively (Table 1.). We excluded them due to validity. In term of reliability, the value of error variance is 0.066 which is mean that this variable was not reliable and excluded from the analysis as well.

We found that there were indicators that have standardized loading factors <0.30 and were not valid and reliable for measuring latent variables that are protein, fat/ carbohydrate and family member; consequently, we did model re-specification. Re-specification result shown that there was no negative error variance, no t- value <

1.96 and no standardized factor loading <0.30; thus, there were no more variables excluded from the model. Estimation result for the model after re-specification were satisfy.

All of goodness of fit indexes confirm that the model was compatible with the data. The proposed model (re-specification) was parsimony (PGFI = 0.59); all of goodness of absolute fit index indicate that the overall model was good (GFI = 0.99; RMR = 0,022; RMSEA = 0.026). The incremental fit index was also better than before (RFI=0.96; AGFI= 0.99; IFI= 0.98; CFI= 0.98). We found that all indicator items were valid as well as its reliability (Table 3.).

Table 3. Estimation of Maximum Likelihood Determinants of Stunting Parameters after Re-specification

Parameter	Unstandardized				Standardized
	Factor loading	SE	t-value	Error variance	Factor loading
Stunting	1.00	-	-	-	
Fe	0.19	0.0076	25.38	0.10	0.55
Vit. A Children	0.30	0.015	20.25	0.70	0.36
Vit. A Mother	0.22	0.0089	24.39	0.19	0.48
Exclusive Breastfeeding	0.16	0.0090	18.39	0.13	0.41

Cont... Table 2. Goodness of Fit Index of Stunting Determinant

Early Initiate Breastfeeding	0.18	0.0099	18.41	0.16	0.41
Colostrum	0.47	0.025	18.87	0.90	0.44
Mother's Education	-0.91	0.018	-51.54	0.92	-0.69
Healthy House	-0.89	0.020	-43.53	1.54	-0.58
Location	0.24	0.0068	34.95	0.19	0.48
Expense	-0.90	0.018	-49.49	1.06	-0.66

Analysis of Structural Model after Re-specification

The structural model obtained in this analysis is in regression equation as follow:

- a. Nutrient intake = 0.22 (parenting) – 0.41 (social economy) with t-value 6.90 and -16.40 respectively.
- b. Parenting = -0.010 (social economy)
- c. Stunting = -0.080 (intake) – 0.061 (parenting) – 0.18 (social economy) with t-value -1.69, -1.22 and 4.35 respectively.

Parenting has a positive effect on nutrient intake and it is statistically significant; while social economy has negative effect on intake (statistically significant). We found in this study that the lower the socioeconomic level, parenting and food intake were becoming lower. In addition, food intake, parenting and social economy has a negative effect toward stunting but only socioeconomic has a significant association with stunting.

Discussion

Socio economic was statistically having a significant relationship toward stunting. It indicates that socio-economic variables were the main factors as determinants of stunting in children under two years in Indonesia.

Mother's education (loading factor = 0.91) and expenditure household per capita (loading factor = 0.90) are the most powerful indicator to predict household socio-economic status. Study in North Maluku (Indonesia) in 2009¹⁷ found that mother's education has a statistically significant relationship to the incidence of stunting as well as study in Cebu¹⁸. Research using

Indonesian Family Life Survey 1993 – 2007 found that mothers who never attended formal education related with stunting in children 2 – 4.9 years in Indonesia¹⁹. Study in Indonesia and Bangladesh discovered that maternal and paternal education were strong determinant of child stunting in Indonesia and Bangladesh²⁰ as well as in Northwest Ethiopia²¹.

We found that the higher maternal education, the lower the prevalence of stunting in children. In addition, stunting tends to be higher in household with lower quintile of household expenditure and stunting became lower in those with higher quintile.

Some studies showed us consistent results yet some studies were different. Data analysis using Indonesia's Basic Health Research 2013 found that socioeconomic status which was divided into 5 quantiles were related to stunting in children under two years in Indonesia²². When prolonged breastfeeding beyond 12 months interacting with poor economic status of a household potentiated stunting¹⁵. As addition information, analysis from National Family Health Survey in India concluded that there was no consistent association between the risk of undernutrition and state economic growth²³. Interesting finding from data analysis of 121 Demographic and Health Survey from 36 countries from 1990 to 2011 was that the contribution of economic growth to the reduction in early childhood undernutrition in developing countries is very small. It challenges the assumption that economic growth will automatically lead to reduction in child nutrition²⁴.

A path between socio-economic was added directly to stunting to adjust to the objective of study (while in the theory there should not be direct path between socio-economic and stunting). Although socio-economic was statistically significant for stunting, it was not known which intermediary factors that directly affect stunting. Therefore, it is necessary to examine the association of food security, health service factors and environment as well as infections against stunting.

Conclusion

The final model resulted in this study as shown in figure 2. Socio-economic variables are the most important determinant factors of stunting in children under two years where regression equation was stunting = -0.18 socioeconomic. When the socioeconomic is low, the likelihood of experiencing stunting will be higher compared to those who have high socio-economic status.

Ethical of Clearance: The study was based on data available in public domain; therefore, no ethical issue is involved.

Conflict of Interest: There is no conflict of interest in the subject matter or materials discussed in this manuscript.

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Public Awareness for Antimicrobial Resistance from *Escherichia coli* Isolated from Beef Sold on Several Wet Market in Surabaya, Indonesia

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Abstract

Objective: This study aims to phenotypically identify and confirm the presence of multi-drug resistant (MDR) and Extended Spectrum Beta-Lactamase (ESBL) Producing *Escherichia coli* in the swab surface samples of beef using VITEK-2 method.

Materials and Methods: Swab samples were taken from five wet markets: Pucang market, Wonokromo market, Keputran market, Pabean market, and Manukan market; 10 swab samples of beef were collected from each market. Then, isolation and identification in terms of bacteria using selective media and biochemical test were conducted. Resistance testing using disc diffusion method was performed on 6 types of antibiotics: Ampicillin, Cefazolin, Ceftriaxone, Cefotaxime, Ceftazidime, Tetracyclin. Positive isolates resistant to ≥ 2 types of Beta-Lactam antibiotics using disc diffusion method then were tested using VITEK-2 method.

Results: Positive samples containing *Escherichia coli* are found in 29 samples out of 50 swab samples. Of the 29 *Escherichia coli* isolates, 17 isolates are found resistant to the disc diffusion method. After testing those 17 isolates using VITEK-2 method, 5% (1/17) of ESBL-producing *Escherichia coli* are obtained which is resistant to all Beta-Lactam antibiotics. Besides, this study also reveals that 35% (6/17) of the *Escherichia coli* are positive multidrug resistance. Those *E.coli* MDR are found to be resistant towards antibiotic class Beta-Lactams, Aminoglycoside, Quinolone, and Sulfonamide.

Conclusion: This study has encouraged the need for public awareness for the understanding that beef from wet market can be potential as reservoir to spread multi-drug resistant bacteria that can cause health problems in humans.

Key words: MDR, ESBL, *Escherichia coli*, Beef, Vitek-2 System, Public Health

Introduction

Inappropriate use of antibiotics is one of the main factors in the occurrence of antibiotic resistance ⁽¹⁾. Antibiotic resistance is a change in the ability of bacteria

to become resistant to antibiotics. Antibiotic resistance has now become a global public health problem and has been reported by the global agenda as one of the biggest threats to health ⁽²⁾. Antibiotic resistance in bacteria can cause complications, longer treatment periods, treatment failure and death due to infection with resistant bacteria ⁽³⁾. Humans can be infected by bacteria that are resistant to antibiotics through direct contact, consumption of contaminated meat, and the environment ⁽⁴⁾. Extended spectrum Beta-Lactamase (ESBL) is an enzyme produced by gram negative bacteria and is a cause of resistance to almost all Beta-Lactam group antibiotics

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such as Penicillin, Cephalosporin and Monobactam Aztreonam⁽⁵⁾. *Escherichia coli* is a normal flora of the mammalian digestive tract which can also be a cause of diseases such as gastroenteritis, cystitis, pneumonia, septicemia in humans and animals⁽⁶⁾.

Escherichia coli can also act as a reservoir for the spread of antibiotic resistance because it can easily move resistance genes to other bacteria⁽⁷⁾. ESBL producing *Escherichia coli* has been isolated from food from animals, hospital environments, plants, and feces⁽⁸⁾. Some studies also report the high prevalence of ESBL-producing *Escherichia coli* in food-consuming animals⁽⁹⁾, food products⁽¹⁰⁾, and the environment⁽¹¹⁾. *Escherichia coli* is a contaminant bacterium commonly found in meat⁽¹²⁾. The chemical composition and moisture of the meat is ideal for the life process of bacteria, this causes the meat can not last long when stored at room temperature⁽¹³⁾. This study focuses on identifying and confirming the presence of ESBL-producing *Escherichia coli* in beef through its resistance to Beta-lactam type antibiotics using the Vitek-2 method.

Vitek-2 advance expert system (Biomerieux) is an automated system used to show the phenotype of the isolates tested and this method is able to determine the sensitivity or resistance of an isolate to antibiotics. The Vitek-2 test method has proven to be more reliable in detecting bacterial resistance to antibiotics because there is no subjective interpretation of the results⁽¹⁴⁾.

Materials and Methods

Ethical approval

Fresh beef samples were used in this study; hence, ethical approval was not necessary. Fresh beef samples were collected from Surabaya wet market.

Sampling

Sampling uses purposive sampling method. Samples were taken from five wet markets with criteria such as the market environment and the condition of dirty beef stalls. The number of samples is 10 samples of beef swabs from each market. The total samples examined were 50 samples of beef swabs. Swab results are labeled and sample swabs must be carried out aseptically. Using sterile swab sticks (Oxoid, Bangistoke, UK) which are placed in tubes containing media transport. After the

sample is taken, the sample is stored in the cooler box and taken to the laboratory.

Isolation and Identification of *Escherichia coli* Bacteria

Each sample produced by beef swabs was planted on Brilliant Green Bile Broth (BGBB) media (E. Merck, Darmstadt, Germany) then incubated at 37°C for 24 hours. Positive results are indicated by the presence of gas bubbles in the Durham tube and the change in color of the media to cloudy green. After being positive, it was then planted in Eosin Methylene Blue Agar (EMBA) media (E. Merck, Darmstadt, Germany) by streaking and incubated at 37°C for 18-24 hours. Typical colonies of *Escherichia coli* on metallic EMBA media.

Typical colonies of *Escherichia coli* grown in EMBA are planted again in the Triple Sugar Iron Agar (TSIA) media (E. Merck, Darmstadt, Germany) and Pepton Water Buffers and then incubated at 37°C for 24 hours. The Pepton Water 1 buffer, which has been incubated, is then dropped with a Kovach reagent of two or three drops. A positive test for *Escherichia coli* is characterized by the formation of a red ring on the surface of 1% Pepton Water^(15; 16).

Antibiotic Sensitivity Test

The *Escherichia coli* colonies found on the EMBA media were planted in a test tube containing 8 ml of physiological NaCl, homogenized using vortex until the same turbidity was obtained with standard McFarland 0.5. Then 0.2 ml was taken and gently rubbed on the entire surface of Mueller Hinton Agar (MHA) media (E. Merck, Darmstadt, Germany) using sterile cotton swabs.

Sensitivity tests using the disc diffusion method were performed on 6 types of antibiotic disks namely Ampicillin 10 µg (Oxoid CT0003, UK), cefotaxime 30 µg (Oxoid CT0166, UK), ceftazidime 30 µg (Oxoid CT0412, UK), ceftriaxone 30 µg (Oxoid CT0417, UK), tetracycline 30 µg (Oxoid CT0054, UK), cefazolin 30 µg (Oxoid CT0011, UK) (CLSI, 2016). Culture of bacteria was incubated at 37°C for 24 hours. The results of the tests are interpreted based on the provisions of the Standard Laboratory Clinical Institute (CLSI, 2016). Positive isolates resistant to ≥ 2 types of Beta-Lactam antibiotics using disc diffusion method then were tested

using VITEK-2 method ⁽¹⁴⁾.

ESBL confirmation with Vitek-2 system

All isolates tested with the disk diffusion test were then identified and confirmed phenotypically using the Vitek-2 system (BioMerieux, Marcy L'Etoile, France) at the Microbiology Laboratory at Hospital of Airlangga University, Surabaya. Tests with Vitek-2 were carried out based on the factory protocol (BioMerieux, Marcy L'Etoile, France) that had been printed on the device.

Findings

The results of isolation and identification of bacteria from a total of 50 beef swab samples taken from 5 wet markets found 29 (58%) samples that were positive for *Escherichia coli* (Fig. 1). The high level of *Escherichia coli* contamination in beef found in this study is in accordance with the study conducted by Chuku et al (17) which reported that *Escherichia coli* contamination levels in beef sold in traditional markets in Nigeria reached 90%.

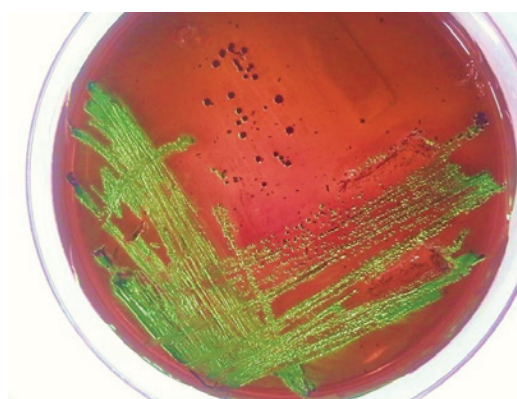


Figure 1. E coli seen metallic green on EMBA media

Factors that cause high levels of *Escherichia coli* contamination in beef sold on the wet market are table surfaces that are in contact with meat, cleanliness of stalls is not maintained ⁽¹⁸⁾. The sensitivity test (Fig. 2.) results using the disk diffusion test method of a total of 29 positive *Escherichia coli* samples showed 17 (58%) *Escherichia coli* isolates suspected of producing ESBL due to en 2 types of Beta-Lactam antibiotics with a resistance pattern shown in table 1.

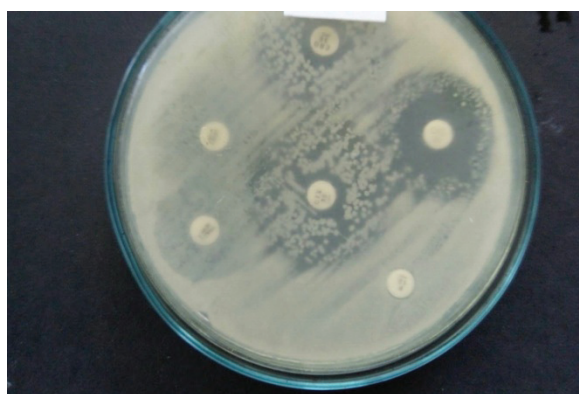


Figure 2. Antibiotic sensitivity test results using the method for the disk diffusion test.

Table 1. Pattern of *Escherichia coli* Resistance to Antibiotics using Disk Diffusion Test

Antibiotics	Isolate number	Pattern of Antibiotic Resistance		
		S % (n)	I % (n)	R % (n)
Ampicillin	29	0	0	100 (29)
Cefazolin	29	10 (3)	31 (9)	58 (17)
Ceftriaxone	29	89 (26)	6 (2)	3 (1)
Cefotaxime	29	86 (25)	10 (3)	3 (1)
Ceftazidime	29	93 (27)	0 (0)	6 (2)
Tetracyclin	29	6 (2)	3 (1)	89 (26)

Description: R=Resistant, I= Intermediate, S= Susceptible.

A total of 17 isolates were then confirmed by phenotype using the Vitek-2 system. Confirmation test results using the Vitek-2 system showed that from 17 *Escherichia coli* isolates suspected of producing ESBL in the disc diffusion test, only 1 (5%) ESBL-producing positive *Escherichia coli* isolates were found in the

pattern of resistance shown in Table 3. Although in the last three years there has been a dynamic increase in research on antibiotic resistance caused by ESBL (19; 20), there have been relatively few publications that report the presence of ESBL-producing Gram Negative Bacteria (21).

Table 2. Identification of ESBL producing *E. coli* using Vitek-2 System

No	Isolate	Location	Antibiotics Resistance
1	A4	Pabean Market	AMX, AMP, SAM, CZ, CAZ, CRO, CTX, FEP, ATM, GM, CIP, SXT

The available data mostly discusses the existence of these microorganisms in livestock animals (22; 23), only a few data about ESBL-producing *Escherichia coli* contamination in meat and processed meat products (9). Research on meat is mostly done on chicken meat compared to meat from other animal species such as cattle (24). From the results found in this study, it can be confirmed phenotypically the presence of ESBL producing *Escherichia coli* in beef sold in wet markets using the Vitek-2 method shown in table 2.

Table 3. Identification of MDR *E. coli* using Vitek-2 System

No	Isolate	Location	Antibiotics Resistance
1	C4	Pucang Market	AMX, AMP, GM, CIP, SXT
2	C5	Pucang Market	AMX, AMP, CIP, SXT
3	C7	Pucang Market	AMX, AMP, CIP, SXT
4	C9	Pucang Market	AMX, AMP, CIP, SXT, SAM
5	C10	Pucang Market	AMX, AMP, CIP, SXT
6	E3	Keputran Market	AMX, AMP, CIP, SXT

Description: AMX = Amoxicillin, AMP = Ampicillin, SAM = Ampicillin-sulbactam, CZ = Cefazolin, CAZ = Ceftazidime, CRO = Ceftriaxone, CTX= Cefotaxime, FEP = Cefepime, ATM =Aztreonam, GM = Gentamycin, CIP = Ciprofloxacin, SXT = Trimethoprim-Sulfamethoxazole.

This study also succeeded in obtaining 6 (35%) positive multidrug resistance *E. coli* isolates, MDR *E. coli* isolates were found to be resistant to Amoxycillin antibiotics by 35% (6/17), Gentamycin

5% (1/17), Ciprofloxacin 35% (6/17), Trimetoprim-Sulfamethoxazole 35% (6 /17), and Ampicillin-sulbactam 5% (1/17) shown in Table 3. These results are consistent with the study by Adinepekun et al (25)

which states that resistance to a number of antibiotics such as aminoglycoside, Beta-Lactam, cephalosporin, fluoroquinolones, sulfonamide, tetracyclin, and trimethoprim have been found in *Escherichia coli* isolated from food from animal origin. Multidrug Resistance (MDR) is a condition where bacteria are resistant to ≥ 3 types of antibiotics. MDR has recently spread widely, especially in gram negative bacteria such as *Escherichia coli* ⁽⁷⁾.

Food contamination by antibiotic-resistant bacteria can be a serious threat to public health, the presence of resistant genes in plasmids, transposons and integrons facilitates the rapid spread of resistance genes between bacteria. Many resistant genes in *Escherichia coli* MDR are located on plasmids, which increase the likelihood of spreading these genes in the community ⁽²⁶⁾.

Conclusion

In this study testing using the Vitek-2 method has succeeded in confirming the presence of ESBL-producing *Escherichia coli* with the discovery of one isolate (5%) positive ESBL-producing *Escherichia coli* that is resistant to all Beta-Lactam group antibiotics, Penicillin, Cephalosporin and Aztreonam. This study also succeeded in confirming the presence of *Escherichia coli* as MDR bacterial isolated from fresh beef swab samples which amounted to 35% of 17 samples examined using the Vitek-2 method. This results can be concluded that the need for public awareness for the understanding that beef from wet market can be potential as reservoir to spread multi-drug resistant bacteria that can cause health problems in humans.

Conflicts of Interest : The authors declare no conflict of interest.

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Cutaneous Manifestations in Breasts among Patients with Breast Tumors Attending Al-Yarmook Teaching Hospital

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Abstract

Breast cancer is the most common cancer in women both in the developed and less developed world. It is the top cancer in women worldwide and is increasing particularly in developing countries where the majority of cases are diagnosed in late stages.

Study Duration: Eight months period, from the first of January to the end of August 2018. Source Population: Patients with skin manifestations in breast who attended study settings during the study period. Sampling Method: A non-random sampling of the attendants at the selected consultation clinics.

Three hundred and ten patients with cutaneous manifestations in their breasts were studied. All patients were female with a mean age of 51.25 ± 11.5 , the lesions were more common among age group of 50 years and above, most of them were married and were nulliparous, those with 1st degree +ve family history of cancer represent the highest percentage, Most of patients presented with inflammatory skin changes followed by infections. Out of 310 patients only 182 (58.7%) FNA were taken. Patients with +ve result were 86 cases (27.7 %) whereas 96 patients (31.0%) had -ve result. Surprisingly no one of 62 patients with itching had an ultrasound or mammographic indications to do FNA. Out of 86 +ve FNA result, only 24 patients (27.9%) presented with cancer that precede the dermatological manifestations while 62 patients (72.1%) were presented with cutaneous manifestations as first sign of breast cancer. A significant association was seen between having cutaneous manifestations preceding a positive FNA findings and inflammatory manifestations (inflammation and eczema).

Cutaneous manifestations can be the first clinical indicator of breast cancer. The development of such manifestations if not taken seriously may delay the diagnosis of breast cancer which lead to a poor prognosis. Lesions appearing within the breast may appear harmless to patients, however a dermatologist can be the first person to raise a suspicion of breast cancer or its recurrence.

Keywords: Cutaneous manifestations, Breast tumor, FNA, Cancer

Introduction

Breast cancer is the most common cancer in women both in the developed and less developed world. It is the top cancer in women worldwide and is increasing particularly in developing countries where the majority of cases are diagnosed in late stages⁽³⁾, it is the second cause of cancer death after lung cancer in Asia, although its incidence is more in some developed countries, death is higher in countries with low level of development, therefore, better plans for screening and early detection programs in these countries are suggested^(3,4).

Breast cancer typically produces no symptoms when the tumor is small and most easily treated, which is why screening is important for early detection. The most common physical sign is a painless lump, Any persistent change in the breast should be evaluated by a physician as soon as possible, however patients may also seek medical attention because of cutaneous lesions^(4,5).

The most frequent cutaneous manifestations include inverted nipple, skin infiltrate, ulceration, satellite nodules or eczema-like changes on the skin, a serous fact is that, breast cancer cells show predilection for pilosebaceous units, causing their complete destruction⁽⁶⁾.

Sometimes breast cancer spreads to under arm lymph nodes and causes a lump or swelling, even before the original breast tumor is large enough to be felt, less common signs and symptoms include breast pain or heaviness, persistent changes such as swelling, thickening, or redness of the skin, and nipple abnormalities such as spontaneous discharge (especially if bloody), erosion, or retraction should rise an attentions (5,6).

Macroscopically, the skin of the breast may have an orange peel appearance (peau d'orange) due to the presence of cancer cells blocking the lymphatic vessels in the skin (7).

A specific form of breast cancer is the so-called inflammatory cancer which is a separate clinico-pathological entity characterized by a very rapid development (the period from the onset of symptoms until diagnosis must be shorter than 6 months) and presents as diffuse erythema and oedema involving at least one-third of the breast skin surface (8).

The initial presentation of cutaneous manifestations is frequently subtle and may be overlooked without proper index of suspicion, appearing as multiple or single nodules, plaques, and ulcers, in decreasing order of frequency (9). Commonly, a painless, mobile, erythematous papule is initially noted, which may enlarge to an inflammatory nodule over time, Such lesions may be misdiagnosed as cysts, lipomas, fibromas, or appendageal tumors (10).

Materials and Methods

Study Setting: The two consultation clinics in AI-Yarmook teaching hospital, dermatological and breast examination clinic.

Study Design: a cross-sectional study has been attempted.

Study Duration: Eight months period, from the first of January to the end of August 2018.

Source Population: Patients with skin manifestations in breast who attended study settings during the study period .

Sampling Method: A non-random sampling of the attendants at the selected consultation clinics.

Sample size: This study trust the following equation to precise the required sample size (1):

$$n = [\{Z_{(1-\alpha)}^2 p q / d^2 \}] + 10\%$$

Where: n is the estimated sample size

$$Z=1.96$$

p= is the proportion of the population possessing the characteristics of interest (23.9%) (2)

q= is (1-p)

d= is the desired level of precision= 0.05

2= is the design effect

5%= is contingency error

$$[(1.96)^2 \times 0.23 \times 0.77 / (0.05)^2] + 10\%$$

$$= [3.84 \times 0.16 / 0.0025] + 10 \%$$

$$= [0.6427 \backslash 0.0025] + 10\%$$

$$=272 + 10\%$$

$$=299 \approx 300$$

Data collection: Verbal consent took from the study participants after explanation of the aim and benefit of the study.

Results

Three hundred and ten patients with cutaneous manifestations in their breasts (the inclusion criteria) were studied.

As shown in table (1), all patients were female with a mean age of 51.25 ±11.5, the lesions were more common among age group of 50 years and above (180 patient 58.1%), most of them were married (225patient 72.6%) and were nulliparous (158 patients 51.0%), those with 1st degree +ve family history of cancer represent the highest percentage (116 patients 37.4%).

Table 1: Data of patients under study

		No. of patients	Percent
Age	below 40 yr	55	17.7%
	40- 49yr	75	24.2%
	50yr and above	180	58.15%
MARITAL STATUS	Single	14	4.5%
	Married	225	72.6%
	Others	71	22.9%
PARITY	Nulliparous	158	51.0%
	one para	32	10.3%
	Multipara	120	38.7%
FAMILY HISTORY	negative fhx	92	29.7%
	first degree	116	37.4%
	2nd and more degree	102	32.9%
Total		310	100%

Table 2: illustrate that most of patients presented with inflammatory skin changes (105 patients 33.9%) followed by infections (67 patient 21.3 %) which is somewhat similar to that of itching (62 patient 20.0%), while retracted nipples and ulcerations being the least one (7 patient 2.3%) and (10 patient 3.2%) respectively.

Table 2: Patients’ skin manifestation

Skin sign		N0. of patients	Percent
	Itching	62	20.0%
	discharge from nipple	44	14.2%
	Inflamations	105	33.9%
	Ulcer	10	3.2%
	Infections	67	21.6%
	Eczema	15	4.8%
	retracted nipple	7	2.3%
	Total	310	100.0

Figure (1) illustrates that out of 310 patients only 182 (58.7%) Fine needle aspiration (FNA) were taken (had ultrasonic or mammographic indications), the other 128 patients (41.3%) FNA not done (had no indications). Patients with +ve result were 86 cases (27.7 %) whereas 96 patients (31.0%) had –ve result.

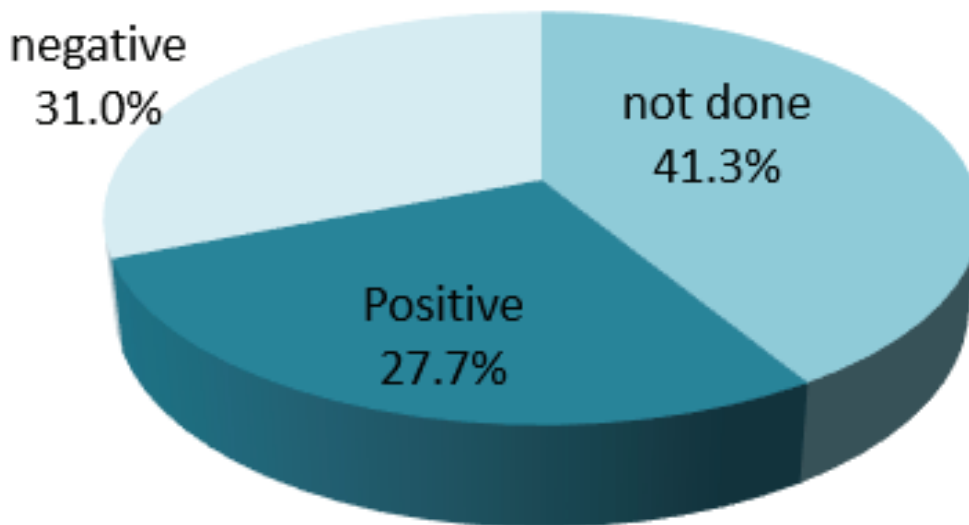


Figure 1: FNA of patients under study

Note: mean age of FNA +ve patients was 50.22±10.5 years.

Table (3) illustrate that most of those 86 patients with +ve FNA results were 55 years age and above (64.0%), had +ve first degree family history of cancer 32 patients (37.7%), were married 49 patients (56.9%) and they were nulliparous 158 patients(51.0%).

Table 3: FNA +ve patients’ data

FNA		+ve	Percentage
Age	below 40 yr	12	14.0%
	40- 49yr	19	22.0%
	50yr and above	55	64.0%
Family history	negative fhx	29	33.7%
	first degree	32	37.2%
	2nd and more degree	25	29.1%
Marital status	Single	7	8.1%
	Married	49	56.9%
	Others	30	35%
parity	Nulliparous	158	51%
	One para	32	10.3%
	Multipara	120	38.7%
Total		86	100%

Table (4) illustrate that out of 310 patients, 105 patients had inflammatory manifestations from which 42 (48.5%) patients had +ve FNA results and out of 10 patients with ulcer, 9 of them had +ve FNA results, 7patients with retracted nipple all had indications to do FNA from which 3 had +ve FNA results while those 67 patients with infections only 9 had +ve results, surprisingly, no one of 62 patients with itching had an ultrasound or mammographic indications to do FNA.

Table 4: FNA for patients under study

not done					
		+ve	-ve	Total	
FEATURES	Itching	62	0	0	62
	discharge from nipple	0	15 (17.5%)	29 (30.2%)	44
	Inflamations	22(20.9%)	42(48.5%)	41(42.5%)	105
	Ulcer	0	9(10.5%)	1(1.4%)	10
	Infections	39(58.2%)	9(10.5%)	19(19.7%)	67
	Eczema	5(33.3%)	8(9.5%)	2(2.1%)	15
	retracted nipple	0	3(3.5%)	4(4.1%)	7
Total		128	86	96	310

Discussion

In the present work, across sectional study design was performed which has the advantages of easy conduction, less time needed and measure the prevalence of an event which highlight the extent of a problem in the community ⁽¹¹⁾. Furthermore, it can determine the relationship between skin manifestations and breast cancer, thus a hypothesis can be created about their association which suggest a further research work to test this hypothesis.

This study showed that the mean age of study sample was (51.25 ±11.5) years, while those with FNA+ve result had mean age of (50.22±10.5) years, this is close to that reported by Molah Karim SA et.al. study (49.42±11.66) years that conducted at North of Iraq in Hewa Hematology and Oncology Hospital during 2011-2013 ⁽¹²⁾, this is expected as Iraqi patients has a premenopausal stage at this age and this is agreed by a preliminary analysis of the relevant database findings

belonging to 855 patients diagnosed and treated for breast cancer in a study conducted by Nada A.S. Alwan were it found that 46% of the patients were in their premenopausal age ⁽¹³⁾. Several factors may accounted for this phenomenon of highest level at premenopausal period (in contrast to the pattern described in west societies), such as early menarche and late menopause which makes the female to be exposed to sex hormones for prolonged period, circulating estrogens and androgens are positively associated with the risk for breast cancer in premenopausal women ⁽¹⁴⁾.

In our study, patients with FNA +ve result, 56.9% of them were married, 35% either divorced or widow and 8.1% were singles. Interestingly, the total number (married, divorced and widow) represent 91.9% which comes with the result of Nada A.S. Alwan ⁽¹³⁾, where 86.3% of her patients were married (she not took in her account whether patients were divorced or widowed), it is also close to the result of Basim Hussain Bahir et.al,

who conduct his study at Baghdad, Medical City and Al-khadumia Teaching Hospitals during the period between Jan 2009 and Jan 2010, where he found that 68.3% of his cases were married, 22% either divorced or widow and 9.7% were singles⁽¹⁵⁾. Married females constituted the highest proportion of the sample, which can indicate that married women are more oriented toward breast cancer, one can also expect high risk among married patients due to exposure to stress, life style, obesity, physical inactivity⁽¹⁶⁾, The use of hormonal therapy and long term use of oral contraceptives are other possible explanations for the increased risk⁽¹⁷⁾.

Nulliparous patients and had FNA +ve result represent 51.0% of this study, those had one para were 10.3% while multiparas were 38.7%. Different figures reported by Nada A.S. Alwan study⁽¹³⁾, where only 8.5% of her patients were nulliparous, this differences may be due to the fact that 20% of her patients received hormones and 7% had their first child birth after the age of 35 years, so the risk factors were discussed from different point of view, however the result of our study was come with the result of Usama M. Al-Fadhli et al, that was conducted in Baghdad city during a three months period from January to March 2016 at Al-Amal National Hospital for Cancer Management were 41.6% of his patients were nulliparous⁽¹⁸⁾.

In the present study patients with FNA +ve result and had a first degree family history of cancer represent 37.2%, those with second degree family history represent 29.1%, while negative family history represent 33.7%, this is higher than the result of Molah Karim SA et al.⁽¹²⁾ where he found that only 13.49% of cases had a family history, this low fraction in his study could be due to the selection bias as he exclude any Arabic patients or Kurdish patients who lives outside Sulaimanyah government. However our result is close to that of Nada A.S. Alwan⁽¹³⁾ where 35% of her patients documented to have a positive family history of malignancy which is similar to the result of Gillian Haber et al (the data source was the National Health Interview Survey), where also 46% of his patients had a positive family history of cancer which support that breast cancer risk perception was associated with the presence of a positive family history of cancer⁽¹⁹⁾.

In this study (27.7%) of sample had cutaneous manifestations with cancer, most common cutaneous

manifestations among FNA +ve patients were inflammatory changes (48.5%) followed by discharge from nipple (17.5%), ulcers and infections had same percentage (10.5%), whereas eczema and retracted nipples (9.5%) and (3.5%) respectively, this result was higher than Nada A.S. Alwan study⁽¹³⁾ (breast cancer among Iraqi women: preliminary findings from a regional comparative breast cancer research project), where cutaneous changes represent only (9.8%) and bloody nipple discharge (4.7%) however our result agree with De Giorgi V. et. al., (work done at department of dermatology, university of Florence, Firenze, Italy) were (23.9%) of his patients had cutaneous manifestations of breast cancer⁽²⁰⁾.

Conclusions

Cutaneous manifestations can be the first clinical indicator of breast cancer. The development of such manifestations if not taken seriously may delay the diagnosis of breast cancer which lead to a poor prognosis. Lesions appearing within the breast may appear harmless to patients, however a dermatologist can be the first person to raise a suspicion of breast cancer or its recurrence.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

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Teamsports and Mental Well-Being: Analysis of Demographic Factors

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Abstract

Concern regarding university students' experiencing mental health problems has grown widely. Based on the positive effects of teamsports participation in dealing with mental health problems, this study aims to investigate the relatedness of teamsports and mental well-being among university students. A total of 217 respondents have participated in this study. The current study adopted a quantitative approach using the survey for collecting data. The data was analyzed using SPSS 25. Analyses involved frequency, percentage, score level, t-test and ANOVA. The reliability test results of Mental Wellbeing Scale ($\alpha = 0.90$) considered as good. The level of mental wellbeing found to be high among the majority participants (83.9%). There were significant differences of well-being based on gender and factor that influenced the students to involve in teamsports. However, there were no significant differences of well-being based on the ethnic of the students and the frequency of the use of the sports center ($F(6,210) = 1.882, p > 0.05$). In conclusion, this study further adds to the knowledge of mental well-being and teamsports among students.

Keywords: *teamsports, mental well-being, student, demographic*

Introduction

Many studies associating sports participation and mental health have been conducted particularly among students. Results from the studies showed that teamsports involvement can lower depression and suicidality, reduce stress and depression's risk; and eventually improve mental and social well-being^{9,13}. It is suggested that social nature participation through team-based sport can improve health compared to individual activities; notwithstanding increasing of personal development and self-awareness⁹. Besides, teamsports participation also contributed to psychosocial health, self-esteem development, sense of belonging³, life happiness¹⁵ and emotional well-being¹⁶.

Comparing gender participation in sport, studies have shown that girls were less likely to involve in sport than boys. A study from western population suggested that Black ethnicity participated in sport more than White and Asian¹⁴. It was also believed that teamsports can influence girls to participate due to gender-based factor^{2,14}. Nevertheless, studies in Asia particularly in Malaysia regarding the involvement of the gender-based factor is still lacking. Therefore, this study attempts to investigate the relatedness of teamsports and mental well-being focusing on the demographic factors among university students.

Method

Participants

The participants in this study were university students at the University Utara Malaysia (UUM). In order to be eligible to participate in this study, the individual must have used at least one teamsports facilities provided at the sport center in the university.

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Materials

There are three sections of this questionnaire. The first section required the participants to complete several questions about their personal information, such as gender, age and race. The second section of this questionnaire asked the participants about the usage of teamsports facilities at the sport center. There are two main focuses in this section; the frequency to involve in teamsports activities and the main factor they were involved in teamsports activities. The last section contained questions about the participants’ well-being, which was measured by the Warwick-Edinburgh Mental Well-being Scale (WEMWBS)¹⁷. The WEMWBS consisted of 14 items covering the well-being issues such as subjective and psychological well-being as well as satisfaction with life. This scale has been widely used and validated in many countries such as Japanese, Brazil and Chinese. In the present study, the Malay version of the WEMWBS¹⁰ was used as the Cronbach alpha for this version was high at .90. For each item, the participants are required to indicate their agreement on the statements that best describe their experiences in the last two weeks on a five-point scale ranging from none of the time (1) to all of the time (5). The range score of the WEMWBS is from 14 to 70, with higher scores indicated higher levels of mental well-being¹⁷.

Procedure

Data for the present study were collected between September to November 2019. The researcher distributed

the questionnaire packs around the teamsports facilities in sport center, UUM. The participants were asked to complete the questionnaire on the spot before handing it over to the researcher when it was ready. Overall, 300 sets of questionnaires were distributed to the participants.

Data Analysis

Statistical Package for Social Sciences version 25 was used to conduct all the analyses. The descriptive analyses were performed to evaluate the socio-demographic variables such as age, gender, race; and the frequency of teamsports involvement and factors of involvement in teamsports activities. Moreover, the effects of social-demography variables, frequency and factors of involvement in teamsports activities on well-being were also tested using t-test and analysis of variance (ANOVA).

Results

Reliability

Reliability test of the Mental Wellbeing Scale found high and considered as good ($\alpha = 0.90$).

The Level of Well-Being

In terms of the level of well-being among respondents, the majority of respondents with the total of 182 (83.9%) were in high level and only 35 respondents (16.2%) showed a moderate level of well-being.

Table 1: Demographic data

Demographic information		Frequency (f)	Percentage (%)
Gender	Male	123	56.7
	Female	94	43.3
Age	17-20 years old	13	6.0
	21-25 years old	200	92.2
	26-30 years old	3	1.4
	31-35 years old	1	0.5

Cont... Table 1: Demographic data

Ethnicity	Malay	171	78.8	
	Chinese	30	13.8	
	Indian	6	2.8	
	Bumiputra	7	3.2	
Frequency use of Sport center	International	3	1.4	
	Everyday	43	19.8	
	Twice a week	28	12.9	
	3-4 times a week	68	31.3	
	Once a week	16	7.4	
	Once every two weeks	9	4.1	
	Once a month	26	12.0	
	Once a semester	27	12.5	
	Factors influence to use the sport center	Passion	117	53.9
		Talent	20	9.2
Social		25	11.5	
Friend influence		25	11.5	
Release stress		27	12.4	
Others		27	12.4	
		3	1.4	

The total of 217 students have participated in this study. Majority respondents with a total of 123 students were males (56.7%) and 94 students were female (43.3%). Majority respondents age ranged between 21 to 25 years old (200 respondents) and only 13 respondents that age around 17 to 20 years old. Respondents in this study also divided into four ethnic groups which are 172 Malay (78.8 %), 30 Chinese (13.8%), 6 Indian (2.8%) and 10 respondents (4.6%) from Bumiputra and international students.

The majority of the respondents with the total of 68 students (31.3%) use the sports center 3-4 times a week. There are also 43 respondents (19.8%) use the sports center every day and 28 respondents use the sports center twice a week. Only nine respondents (4.1%) use the sports center once every two week and the rest of the respondents come to the sports center once a month or once a semester.

In this study, the majority of the respondents with a total of 117 students (53.9%) use the sports center because of their passion in sport. There are also 27 respondents (12.4%) who use the sports center to release their stress. There are also 25 respondents (11.5%) who use the sports center as a platform to socialize and be influenced by their friends. Only three (1.4%) respondents have the other reason while using the sport center.

Table 2: The differences of well-being level based on the Gender

Element	Types of Gender	N	mean	df	t-test	Sig.
Well-being	Male	123	52.58	214	-2.695	0.008
	Female	94	55.19			

Results from the t-test analysis concluded that there is a significant difference in the level of well-being among respondents based on the gender $t(217) = -2.695, p < 0.05$. The mean values indicated that female respondents have a high level of well-being compared to male respondents.

Table 3: The Differences of well-being level based on the Ethnicity

Well-being	df	Sum of Square	Mean Square	F	Sig
Between Groups	5	179.919	44.980	0.872	0.481
Within Group	212	10931.851	51.565		
Total	217	11111.770			

Results indicated that there are no significant differences of well-being based on the ethnic group ($F(4,212) = 0.872, p > 0.05$).

Table 4: The Differences of well-being level based on the factor influence to use sport center

Well-being	df	Sum of Square	Mean Square	F	Sig
Between Groups	6	791.803	158.361	3.238	0.008
Within Group	211	10319.967	48.910		
Total	217	11111.770			

Results indicated that there are significant differences of well-being based on the factor influence the use of sport center ($F(5,211) = 3.238, p < 0.05$).

Table 5: The differences of well-being level based on the frequency the use of sport center

Well-being	df	Sum of Square	Mean Square	F	Sig
Between Groups	7	555.928	92.665	1.882	0.085
Within Group	210	10288.031	49.225		
Total	217	10843.958			

Results indicated that there are no significant differences of well-being based on the frequency of the use of the sports center ($F(6,210) = 1.882, p > 0.05$).

Discussion

The findings of this study showed that certain demographic factors (e.g., gender and factor influence) are strongly influencing psychological well-being. It has been proved that the more students come and play at the sport center, the better psychological well-being of the university students. As we could see in the result section, the majority of the university students who came to use the sports center at the university were male than female. It showed male students were a large group that used the university sports center throughout the year of 2019. It was not surprising since male tend to play sports which involve outdoor sports games. Most team sports are outdoor games such football, baseball, cricket, hockey, volleyball, softball and so forth. On the other hand, the female group prefers indoor sports games such as badminton, netball, squash, and bowling, and swimming⁸. In one study, females were more likely to watch the games with family and friends and they are not fully participating with the sports. Otherwise, male always actively participating in the sports while becoming a big fan of one particular team which may be the national team or international team⁷. For this finding, it may provide information to the top management and the sport center to facilitate activities which are more on indoor sport games at their own facility to encourage and promote more female students to participate in the sport events. Interestingly, although female students appeared to be in a small percentage, the result shows that they are having a good well-being level (See Table 5). Overall, the majority of participants reported a good level of psychological well-being, which made the use of the sports center facility exceptionally meaningful for university students to be in the state of healthy and feeling well, psychologically and physically (emotion, cognitive and psychomotor).

According to age results, most adolescent groups prefer to do sports at university sport centers. It makes more sense since the majority of the students at the university are in the early adolescent phase. However, there were a small percentage of students in the range between 26-35 years old. Additionally, the researcher believes that there was a small group of post-graduate students who were interested to participate in teamsports at the university sport center. At this point, the university has to pay attention to promote teamsports among postgraduate students because they have a tendency to distress due to advanced levels of study and difficulty to complete the research/ thesis which may take many

years¹¹. Teamsports participation may offer them a decent coping strategy in daily life. Also, the university and sport center may engage and collaborate with graduate schools to nurture a healthy lifestyle among the postgraduate students.

According to ethnicity, Malay students are among the large group who engage in the team sport's activity. The result is totally expected as Malay race is a majority number in this country. It may not be surprising as in Malay community, there are many of the traditional game as a recreational that introduced the element of team sports which will promote the unity, social integration, and teamwork spirits¹. This may influence the choice of the Malay students to play in the teamsports more than other races; compared to Chinese community in Malaysia who preferred indoor sports games like badminton, ping pong and basketball as their popular sports, especially for teenagers⁶.

Students reported in this study spending 3 to 4 times per week at the university sport center. According to a health study, individuals need to exercise at least 2 or 3 times per week in 30 minutes to shape our cognitive flexibility¹². As we know, the students may experience anxiety and stress out due to a unique pressure in academic attainment. Usually, they are expected to get a good grade each semester and get a better job after the graduation⁴. At this stage, this innate pressure can cause intensity and anxiety for university students. Promoting the students to come and spend their time in teamsports at university sport centers could reduce the pressure and sustain the health levels for the students. On top of that, there are also several top reasons for university students to come and play the teamsports; (a) passion, (b) talent, (c) social and (d) friends influence. Undoubtedly, university life is a most cheerful moment in life where the students are actively learning on how to communicate with others, developing circle of friends, growing interest and value, and establishing a quality leadership for future responsibility⁵.

Conclusion

In conclusion, overall results provided us with vast information regarding the use of university sports centers and psychological well-being which affect the demographic factors of university's students. From the results, it is obvious that the teamsports activity does affect the psychological wellbeing of the students. In addition, the results will help the university policy in

many ways in terms of encouraging the students to spend more time in teamsports activities at the center which may bring many benefits for all university's students. The university sport center also plays a role to develop a healthy lifestyle for all students in terms of hosting more sport events, activities and recreational activities.

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