A Study to Assess the Effectiveness of Structured Teaching Program On Knowledge Regarding Prevention of Obesity Among General Public in Selected Urban Areas of Bangalore

Dr. Keshava Reddy M[1], Prof. Pramod Kademani[2], Mr. Jino Baby[3], Mr. Vyshnav V S[4], Ms. Merin Eldhose[5], Ms. Preepthi P[6], Ms. Dipanwita Patra[7], Ms. Shenaz Khatun[8]

[1]Principal, AECS Maaruti College of Nursing, Bengaluru
[2]Vice Principal, AECS Maaruti College of Nursing, Bengaluru
[3,4,5,6,7,8]4th BSc Nursing students, AECS Maaruti College of Nursing, Bengaluru

Abstract

Obesity and overweight result from energy imbalance, Obesity is defined as abnormal or excessive fat accumulation that presents a risk to health. If the underlying causes of the obesity epidemic are not addressed, it has the potential to overwhelm health systems throughout the world. The purpose of the study was to assess the effectiveness of Structured Teaching Program on Knowledge regarding prevention of Obesity among general public in selected urban areas of Bangalore. In the present study one group pre-test, post-test design was selected. Convenient sampling technique was used to select 60 sample size. The Structured Knowledge Questionnaire was used for assessing the Knowledge regarding prevention of obesity among general public. Questionnaire consists of 25 knowledge questions on causes and prevention of obesity. The pre-test knowledge score ranged from 2-24 with mean score 12.33. The post-test knowledge score was ranged from 11-24 with mean score18.73, were as the mean percentage of pre-test knowledge score was 49%, the mean percentage of post-test knowledge score was 74%. This indicates that the teaching method was effective in enhancing the knowledge of general public in urban areas of Bangalore regarding obesity. The chi-square computed between pretest knowledge score and selected demographic variable showed that there was no significant association between pre-test knowledge score of subject's and selected demographic characteristics.

Keywords: Obesity, Structured Teaching Program, General Public, Urban area

1. Introduction

Obesity is characterized by an abnormal or excessive accumulation of fat that poses a health risk. Obesity can be described as the "New World Syndrome".[1] Obesity has become one of the most urgent public health issues globally in the 21st century. In 2022, over 1 billion individuals around the world were affected by obesity (defined as a body mass index of 30 or higher) – approximately one in eight adults – and nearly 43% of adults were categorized as overweight or obese. Since 1990, the rate of adult

obesity has more than doubled, while the rates of obesity among children have increased more than four times during the same period.[2]

The contemporary Western way of life, especially characterized by the excessive consumption of highly palatable, calorie-rich foods, insufficient physical activity (PA), and a surge in sedentary habits driven by significant transformations in global food production, economic shifts in employment types, transportation advancements, the growth of suburban areas, and the decline of communal green spaces, plays a significant role in the increasing rates of obesity. As this Western lifestyle has proliferated worldwide, we have observed a global escalation in obesity rates in less economically developed countries, affecting various ethnic groups and all age demographics.[3] The surplus body fat characteristic of obesity, along with the neuro-hormonal imbalances it induces, heightens the likelihood of developing various types of cardiovascular diseases and associated risk factors. Once a person reaches a state of significant overweight or obesity, it becomes exceedingly challenging to reverse the weight gain and achieve a healthy body weight, and more crucially, to restore metabolic health. Consequently, the primary objective of global initiatives aimed at addressing obesity should be to prevent individuals from becoming overweight and/or obese.[3]

It is evident that India is undergoing a swift epidemiological transition. The issues of under nutrition and the resulting underweight population are now being supplanted by an overweight and obese demographic. Given that obesity significantly increases the risk of numerous non-communicable diseases, a vital aspect of public health policy must focus on the prevention and management of this epidemic.[4] Obesity is frequently examined as a contributing factor for type 2 diabetes and cardiovascular diseases. There exists an immediate necessity to measure the extent of the issue i.e to obtain a reliable estimate of the prevalence of obesity in India, so that effective public policy can be developed to address the problem. As stated by the WHO, obesity constitutes a significant risk factor for non-communicable diseases, including heart disease, stroke, type 2 diabetes, and various cancers (such as endometrial, breast, ovarian, prostate, liver, gallbladder, kidney, and colon), as well as osteoarthritis.[3] Obesity is linked to unemployment, social disadvantages, and a decrease in socioeconomic productivity.[4]

Obesity is progressively emerging as a significant public health issue in India, with a notable increase in prevalence over recent decades. A considerable portion of the general population may lack awareness regarding the health risks linked to obesity, as well as the significance of its prevention and management. Factors related to culture and the environment, including dietary preferences, levels of physical activity, and urban development, may play a role in the rise of obesity.

The responsibility for preventing and managing obesity does not rest solely with individuals, their families, health professionals, or health service organizations; rather, it necessitates a commitment from all sectors of society.[5]

STATEMENT OF THE PROBLEM

A study to assess the effectiveness of structured teaching programme on knowledge regarding prevention of obesity among general public in selected urban areas of Bangalore.

OBJECTIVES

- To assess the pre-test knowledge regarding prevention of Obesity among general public
- To assess the pre-test knowledge regarding prevention of Obesity among general public
- To evaluate effectiveness of Structured Teaching Programme on Knowledge regarding prevention of Obesity among the general public
- To find the association between the pre-test knowledge scores on prevention of obesity among general public with selected demographic variables.

HYPOTHESIS

H₁: There is a significant difference between post test and pre test knowledge score of general public regarding prevention of Obesity.

H₂: There is a significant association between pre-test knowledge score of general public regarding prevention of obesity with selected demographic variables.

METHODOLOGY

Research approach: To accomplish the objectives of the study, quantitative approach was adopted.

Research Design: In the present study one group pre-test, post-test design was selected

Research Setting: The present study was conducted in Doddakammanahhalli, Chikkakammanahalli and Begur village of Urban Bangalore.

Variables:
Dependent variables: General public in selected urban areas of Bangalore.
Independent variable: Structured Teaching Programme on prevention of obesity.

Demographic variables: Demographic variables under the study are – Age in years, Sex, Religion, Type of family, Monthly income, Favorite leisure time activity, Education, Type of Diet and previous exposure to information on Obesity and its preventionb.

Population: In this study the target population of study was general public in selected urban areas of Bangalore.

Sample and size: The sample of present study comprised of 60 people who are living in urban areas of Bangalore.

Sampling technique: Convenient sampling technique, a type of non probability sampling technique was adopted for the present study. Through house survey 60 Samples was selected at Doddakammanahhalli, Chikkakammanahalli and Begur village of Urban Bangalore.

Sampling criteria:

Inclusive criteria: Subjects who are available at the time of data collection

Exclusive criteria: Subjects who are not willing to participate in the study

Description of tool: In the present study Structured Knowledge Questionnaire was used. The tool consist section A & B.

Section A: It consist of questions related to demographic data of the subjects such as age, sex, religion, income, education, type of family, type of diet and previous knowledge on obesity.

Section B: It consist of knowledge questionnaire, includes 25 items on knowledge regarding obesity. Each item of schedule had one correct answer, every correct answer was given one marks and the total score was 25.

The respondents were classified based on level of knowledge as, Adequate knowledge >53% (14-25), Moderate knowledge 25-52% (7-13), Inadequate knowledge 25% (0-6)

Content validity of the tool: The prepared tool along with objectives of the study or lesson plan on obesity was submitted to the experts for content validity. Modification was made on the basis of recommendation and suggestion of the experts.

Data collection and Analysis: After obtaining permission from the concerned authority, the subjects will be identified based on inclusion and exclusion criteria. After explaining the purpose of study informed consent was obtained from the samples. Same day Pretest knowledge was assessed through knowledge questionnaire and Structure Teaching program was given. After a week post test was assessed through the same knowledge questionnaire.

The data obtained was analyzed based on the objectives of the study using descriptive and inferential statistics. Frequencies and percentage was used to describe the demographic characteristics. Mean, Median, Mean percentage and standard deviation was used for assessing pre test and post test, knowledge scores. Paired t test was used to describe the significant difference between mean pre test and post test knowledge score. Chi- square test was used to find the association between demographic variables and knowledge score.

RESULT

SECTION A
SECTION A: DESCRIPTION OF DEMOGRAPHIC CHARACTERISTICS OF GENERAL PUBLIC.
Table 1: Demographic characteristics of samples
N=60

Sl no	Demography	Frequency	Percentage
1	**Age in year**		
	30-35	20	33.33%
	36-40	15	25%
	41-45	7	11.67%
	45 above	18	30%
2	**Sex**		
	Male	21	35%
	Female	39	65%

3	**Religion**		
	Hindu	24	40%
	Muslim	5	8.33%
	Christian	26	43.3%
	Any other	5	8.33%
4	**Type of family**		
	Nuclear	43	71.67%
	Joint	13	21.67%
	Extended	4	6.67%
5	**Monthly income**		
	Rs. <10, 000/-	11	18.33%
	Rs. 10,001-20,000/-	16	26.67%
	Rs. 20,001-30,000/-	16	26.67%
	Rs. 30,001 and above	17	28.33%
6	**Favorite leisure time activity**		
	a)watching TV	17	28.33%
	b)playing outdoor games	5	8.33%
	c)reading books	9	15%
	d)household activities	26	43.33%
	e)other	3	5%
7	**Education**		
	a)Illiterate/no formal education	9	15%
	b)primary education	18	30%
	c)secondary education	19	31.67%
	d)graduate	14	23.33%
8	**Type of diet**		
	a)vegetarian	20	33.33%
	b)non vegetarian	40	66.67%
9	**Is there any member in the family having obesity?**		
	a)yes	22	36.67%
	b)no	38	63.33%
10	**If yes what measures taken to reduce obesity?**		
	a) diet	14	23.33%
	b) exercise	17	28.33%
	c)outdoor games	6	10%

	d)none	23	38.33%
11	**Where did you get information about obesity?**		
	a)ASHA worker	15	25%
	b)health worker	29	48.33%
	c)electronic media	9	15%
	d)printed media	7	11.67%

From the above table-1, it was found majority 33.33% samples were aged between 30-35 years, 25% were aged between 36-40 years, 11.67% were aged between 41-45 years and 30% were aged above 45 years. Majority of sample 65% were females and 35% were males. Majority of samples 43.33% belonged to Christian, 40% were belonged to Hindu and rest 8.33% belonged to Muslims and other categories respectively. The majority of sample 71.67% belongs to nuclear family, 21.67% belongs to joint family and 6.67% belongs to extended family. Majority 28.33% of samples had a monthly income above Rs. 30000/-, followed by 26.67% an income between Rs.10,001- 20,000/- and 20,001-30,000/- respectively and only 18.33% samples had an income below Rs. 10000/-. Majority 43.33% samples were spending their leisure time on household activities, followed by 28.33% watching TV, 15% on reading books, 8.33% on playing outdoor games, and only 5% on other activities. Education status found majority 31.67% samples had studied secondary education, 30% had studied primary education, 23.33% were graduates and 15% were illiterate/no formal education. Majority samples 33.33% were vegetarian and 66.67% were non-vegetarian. Family history found 36.67% of samples had family history of obesity and 63.33% of samples did not found any family history of obesity. Regarding preventive measures majority 38.33% of samples were not taking any measures to reduce obesity, 28.33% were doing exercise, 23.33% were on dieting and rest 10% were doing outdoor games. Majority of sample 48.33% got the information about obesity from health workers, 25% from ASHA worker, 15% from electronic media like mobile phone, internet and 11.67% from printed media like newspaper, journals etc.

SECTION B: PRE-TEST KNOWLEDGE SCORES OF GENERAL PUBLIC
Table No2: Range, Mean, Median, standard deviation and mean percentage of pre-test knowledge.

N=60

Aspect	Range	Mean	Median	Standard deviation	Mean %
Knowledge regarding prevention of obesity among general public	2-24	12.33	11	8.30	49%

The data present in table 2 shows that the pre-test knowledge score ranged from 2-24 with Mean 12.33, the mean percentage of pre-test knowledge Score was 49% with Standard deviation 8.30. It indicates that the subjects were having inadequate knowledge about prevention of obesity.

SECTION C: POST TEST KNOWLEDGE SCORES OF GENERAL PUBLIC
Table No:3 Range, Mean, Median, SD & mean percentage of post-test knowledge score

N=60

Aspect	Range	Mean	Median	Standard deviation	Mean %
Knowledge regarding prevention of obesity among general public	11-24	18.73	19	4.84	74%

The data presented in table 3 shows that the mean knowledge score of study samples was 18.73 with SD 4.84 and Mean Percentage 74%. It indicates that the samples had adequate knowledge on prevention of obesity after implementing Structured Teaching Programme.

SECTION D: COMPARISON OF OVERALL PRE-TEST AND POST TEST KNOWLEDGE SCORES
Table No: 4 Range, Mean, Median, SD and Mean percentage of pre-test and post test knowledge Score.

Aspect	Range	Mean	Median	Standard deviation	Mean %
Pre test	2-24	12.33	11	8.30	49%
Post test	11-24	18.73	19	4.84	74%

Data from table 4 shows comparison of overall pre-test and post test knowledge Score of samples. The pre test Knowledge score ranged from 2-24 with mean12.33. The post test knowledge Score ranged from 11-24 with mean 18.73. The pre test knowledge Score mean percentage was 49%, where as the post test mean percentage score was 74%. This indicated that the Structured Teaching was effective in increasing the knowledge of general public on prevention of Obesity.

Table 5 Frequency, percentage of pre-test and post test knowledge score

Grade	Pre-test		Post-test	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Adequate	21	35%	53	88.33%
Moderate	32	53.33%	7	11.67%
Inadequate	7	11.67%	-	-

Data from table-5 shows in post test most of subjects 88.33% had adequate knowledge, 11.67% of samples had moderate knowledge and none of the samples had inadequate knowledge, whereas in pretest only 35% of samples adequate knowledge, 53.33% of samples moderate knowledge and 11.67% of samples had inadequate knowledge. This indicates that the Structured Teaching Program was effective in increasing knowledge of subjects regarding prevention of obesity.

Table 6: Effectiveness of Structured Teaching Programme by paired t- test
Mean, Median, mean difference and t value of pre-test and post test knowledge Score of subjects.

Mean knowledge		Mean difference	Median		t value
Pre-test	**Post-test**	6.40	**Pre-test**	**Post-test**	13.88
12.33	18.73		11	19	

t59 = 2.01

It is evident from the data presented in Table 6 that calculated 't' value 13.88 was greater than the table value t59=2.01 at 0.5 level of significantly. The mean difference between pre-test and Post test knowledge score was a true difference. This indicates Structured Teaching Program was significantly effective in increasing the knowledge of general public regarding Prevention of Obesity.

Table 7: Chi-square test showing association between pretest knowledge score with selected demographic characteristics of samples

N = 60

Variables	Above median	Below median	Degree of freedom	X²	P Value
1) Age 30-35 Years	9	11	3	3.7693 [NS]	0.287
36-40 Years	11	4			
41-45 Years	3	4			
Above 45 Years	8	10			
2) Sex/Gender Male	15	6	1	5.0525* [S]	0.245
Female	16	23			
3) Religion Hindu	15	9	3	3.5912 [NS]	0.309
Muslim	1	4			
Christian	12	14			
Any Other	3	2			
4) Type of family Single family	23	20	2	0.219 [NS]	0.895

Joint family	6	7			
Extended family	2	2			
5) Monthly income of the family < Rs. 10000/-	1	10	3	10.33* [S]	0.159
Rs.10001-20000/-	9	7			
Rs.20001-30000/-	11	5			
Above Rs.30000/-	10	7			
6) How do you spend leisure time Watching TV	8	9	4	3.306 [NS]	0.507
Playing outdoor games	2	3			
Reading books	7	2			
Household Activity	13	13			
Others specify	1	2			
7) Education Illiterate/ No formal education	5	4	3	0.804 [NS]	0.848
Primary education	9	9			
Secondary education	11	8			
Graduate and above	6	8			
8) Type of diet Vegetarian	10	10	1	0.033 [NS]	0.855
Non-Vegetarian	21	19			
9) Is there any member in family having obesity Yes	8	14	1	3.25 [NS]	0.710
No	23	15			
10) If yes, what measures are taken to reduce obesity Diet	6	8	3	1.366 [NS]	0.713
Exercise	8	9			
Outdoor games	3	3			
None	14	9			

11) Where did you get information about obesity					
ASHA Worker	11	4	3		
Health care personal	12	17		4.320 [NS]	0.22
Digital sources-Internet	5	4			
Printed media-Newspaper, books, journals	3	4			

The data presented in the table 7, found selected demographic variable Gender and Income shows association between pre-test knowledge score, where as other demographic variables did not found any association at 0.05 level of significance. Hence hypothesis H_2 is accepted for demographic variable Gender and Income and rejected for other variables.

Discussion

Demographic characteristics of samples in the present study found majority of sample 65% were females and 35% were males. A similar cross-sectional study conducted in Mumbai revealed 56% were male and 81.1% were of Muslim community in their study[6].

In the current study, 28.33% of the samples allocate their leisure time to watching television, 8.33% to playing outdoor games, 15% to reading books, 43.33% to household activities, and 5% to other pursuits. In contrast, a similar study conducted by Baohong Xue revealed that a majority of participants engaged in practices harmful to their health, such as irregular dieting 52.9%, internet surfing, and gaming 58.5% during their free time.[7]

The present study found pre-test level of knowledge, 21 (35%) people had adequate knowledge, 32 (53.33%) had moderate knowledge and 7 (11.67%) had inadequate knowledge. A similar descriptive cross sectional study in Thrissur district Kerala, India revealed that 46.4% of adolescents had low knowledge on obesity, 46.9% have moderate knowledge, and only 6.7% of them had high knowledge on obesity[8]. Another cross sectional study conducted in Tirupati, found the participants had good knowledge and attitude toward obesity but the participants failed to practice controlling and preventing obesity.[9] A similar study found 80 participants (26.7%) had adequate knowledge, 150 participants (50.0%) had partial knowledge, and 70 participants (23.3%) had inadequate knowledge about childhood obesity.[10] Another study was conducted in Majmaah, Saudi Arabia, the results revealed that most of the students had adequate level of obesity knowledge 214 (61.1%). However, these studies recommended more efforts are required to create awareness and educating the general population.[11]

The post-test knowledge, 53 (88.33%) people had adequate knowledge, 7 (11.66%) people had moderate knowledge and no one have inadequate knowledge. The post-test mean score (18.73) was good

when compared to the pre-test mean score (12.33). A similar quasi-experimental study was conducted in selected schools of eastern India and found a significant improvement in knowledge regarding factors related to obesity among the students of intervention school.[12] Another pre experimental one group pre-test, post-test study found after the administration of planned teaching programme, the mean post-test score (24±2.68) was higher than the mean pre test score (15.59±3.16).[13] These studies concluded that Planned Teaching Programme was effective to gain knowledge regarding obesity and its consequences.

The present study socio-demographic variable Gender and Income shows association between pre-test knowledge score, whereas a comparative study was conducted to assess the prevalence of obesity among secondary school students of selected urban and rural areas in Jammu, found significant association with selected demographic variables like sex, family history of obesity religion, duration of watching Television, socio-economic status of the family and previous knowledge regarding obesity.[14] Another descriptive study was conducted to assess the knowledge of adolescents regarding obesity as predisposing factor for cardiovascular diseases. The chi-square test showed a significant ($P < 0.05$) association between knowledge and age, gender, educational status, medium of educational background, history of obesity, area of residence and family income.[15]

The above studies concluded that the knowledge levels of the study samples was moderate, the samples need to undergo an educational and training programme for the improvement of knowledge of regarding obesity as the predisposing factor for cardiovascular diseases.

Conclusion

Obesity is a global epidemic that adversely impacts millions Worldwide. Public health action is based on the principle that promoting and protecting the health of the population requires an integrated approach encompassing environmental, educational, economic, technical measures, together with a health care system oriented towards the early detection and management of disease.

References

1. Mahmood Safaei, Elankovan A. Sundararajan, Maha Driss, Wadii Boulila, Azrulhizam Shapi'i, A systematic literature review on obesity: Understanding the causes & consequences of obesity and reviewing various machine learning approaches used to predict obesity, Computers in Biology and Medicine, Volume 136, 2021, 104754, ISSN 0010-4825, https://doi.org/10.1016/j.compbiomed.2021.104754.(https://www.sciencedirect.com/science/article/pii/S0010482521005485)
2. Sirwan Khalid Ahmed, Ribwar Arsalan Mohammed, Obesity: Prevalence, causes, consequences, management, preventive strategies and future research directions, Metabolism Open, Volume 27, 2025, 100375, ISSN 2589-9368, https://doi.org/10.1016/j.metop.2025.100375.(https://www.sciencedirect.com/science/article/pii/S2589936825000313)

3. Welsh A, Hammad M, Piña IL, Kulinski J. Obesity and cardiovascular health. Eur J Prev Cardiol. 2024 Jun 3;31(8):1026-1035. doi: 10.1093/eurjpc/zwae025. PMID: 38243826; PMCID: PMC11144464.

4. Venkatrao M, Nagarathna R, Majumdar V, Patil SS, Rathi S, Nagendra H. Prevalence of Obesity in India and Its Neurological Implications: A Multifactor Analysis of a Nationwide Cross-Sectional Study. Ann Neurosci. 2020 Jul;27(3-4):153-161. doi: 10.1177/0972753120987465. Epub 2021 May 29. PMID: 34556954; PMCID: PMC8455012.

5. Kundu A, Patnaik L, Sahu T. Effectiveness of Educational Interventions to Improve Knowledge Related To Obesity among School Going Adolescents in Selected Schools of Eastern India. Natl J Community Med [Internet]. 2021 Oct. 31 [cited 2024 Sep. 27];12(10):311-6.

6. Jajulwar MB, Meshram PV, Saji DA. To assess the knowledge, attitude and practices of people regarding overweight and obesity: a cross-sectional study. Int J Community Med Public Health 2017;4:3113-6.

7. Xue B, Zhang X, Li T, Gu Y, Wang R, Chen W, Ren X, Liu X, Chen G, Lin Y, Pan C, Zhao W, Li T, He L, Han C. Knowledge, attitude, and practice of obesity among university students. Ann Palliat Med. 2021 Apr;10(4):4539-4546. doi: 10.21037/apm-21-573. PMID: 33966402.

8. Shaji G, Navya CJ, Mathu A, Joshy V. A study to assess the knowledge and attitude of adolescents towards obesity in a private school in Thrissur district Kerala, India. Int J Community Med Public Health 2019;6:3140-4.

9. Moorthy SBR, Subbaiahgari H, Sibbala P, Kola S, Kareem L. A Knowledge, attitude, and practice towards obesity among the general public in community settings of Tirupati: a cross-sectional study. Int J Adv Med 2022;9(7):783-8.

10. Asmitapatel, Bulbul Jain, Bhoomi patel, ChintuChaudari. Knowledge of childhood obesity and healthy lifestyle: investigating the knowledge and attitude of parents and caregivers regarding childhood obesity, healthy eating habits and importance of physical activity for children. Int J Acad Med pharm 2023:5(4);965-970.

11. Elsadig Yousif Mohamed etal. Obesity Knowledge among Intermediate School Students in Majmaah, Saudi Arabia . J Res Med Dent Sci, 2019, 7(6): 16-20.

12. Kundu A, Patnaik L, Sahu T. Effectiveness of Educational Interventions to Improve Knowledge Related To Obesity among School Going Adolescents in Selected Schools of Eastern India. Natl J Community Med [Internet]. 2021 Oct. 31 [cited 2024 Sep. 27];12(10):311-6.

13. Mangesh Jabade, Sangeetha Moreshwar. A Study to Evaluate the Effectiveness of Planned Teaching Programme on Obesity and its Consequences among Adolescents in Selected Private High Schools. Int. J. Nur. Edu. and Research 2(1): Jan.-March, 2014; Page 43-49.

14. J C Frank. A Comparative Study to assess the Prevalence of Obesity among Secondary School Students of selected Urban and Rural areas in Jammu. Int. J. of Advances in Nur. Management. 2019; 7(2):114-116.

15. Sneha R. Dubey. A Descriptive Study to Assess the Knowledge of Adolescents regarding Obesity as a Predisposing Factor for Cardiovascular Diseases with A View to Develop an Educational Pamphlet in selected Urban Areas of Tumkur. International Journal of Advances in Nursing Management. 2021; 9(3):319-1.