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Prevalence of obesity among adolescents

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Abstract
Background: Obesity is a growing global health concern, with a rapid increase being observed in morbid obesity. Obesity is strongly associated with hypertension and cardiovascular disease. The present study attempted to assesses the prevalence of obesity among adolescents in Saraswathi Nagar, Nellore.
Aim: To assesses the prevalence of obesity among adolescents.
Setting and Design: The study was conducted in Saraswathi Nagar, Nellore by using a descriptive design.
Materials and Methods: A total of 100 samples were included in this study. All these samples belongs to Saraswathi Nagar of Nellore. Samples were selected by using convenience sampling technique.
Statistical Analysis Used: The collected data was organized, tabulated, analysed and interpreted by using descriptive statistics like actual numbers and percentages, mean, standard deviation and inferential statistics like Chi-square test, Karl Pearson correlation coefficient was used appropriately. 'p' value less than 0.05 were considered statistically significant.
Results: Out of 100 samples, with regard to BMI of adolescents 35(35%) are underweight (falls under≤ 5th percentile), 61(61%) belongs to normal BMI (falls under 5th -85th percentile) and 4(4%) are overweight (falls under 85th – 95th percentile). with regard to MUAC levels 35(35%) are malnourished, 61(61%) are normal and 4(4%) are obese. The Pearson correlation coefficient is 1, which shows perfect positive correlation between BMI and MUAC. Mean for BMI among adolescents was 19.13 and standard deviation is 2.96.
Conclusion: The study shown that majority of adolescents are having normal BMI and MUAC levels and even in specific greater number of adolescents are under nourished. This result signifies the importance of carrying out the health educational activities to the adolescents to improve their BMI and MUAC for maintain their optimum health.

Keywords: BMI, obesity, adolescents, correlation, MUAC

Introduction

Background of the study: The adolescent period of human life is one of the vital times when most of the body growth and development occur. Preparation for adulthood takes place in this period in the form of physical, sexual, and psychological growth and development. Nearly 35% of the global burden of disease has its root emergence in adolescence [1]. Overweight and obesity are defined as "abnormal or excessive fat accumulation that presents a risk to health." [2] Energy imbalance between consumed and expended constitutes the primary aetiology behind overweight and obesity. Changing dietary pattern and sedentary lifestyle are said to have led to the increasing prevalence of overweight and obesity. South Asia is found to have the highest prevalence of obesity and it was found to increase every year [3]. Obesity in adolescents is found to have association with the occurrence of various lifestyle diseases such as diabetes, hypertension, dyslipidemia, osteoarthritis. During adulthood it is essential to know the prevalence of overweight and obesity among adolescents. So, that appropriate preventive measures can be taken. The present study aims to measure the prevalence of obesity among adolescents.
The research of Dr. Indira. A *et al.* [4] and other studies [5-7] shows the high prevalence of obesity among adolescents of Nellore. Since studies on BMI and its relation to hypertension are scanty from this region of Nellore (Andhrapradesh, India) so, an attempt made to find out the prevalence of obesity among adolescents.

Research Design: Descriptive design.

Research Setting: The study was conducted in Non Coastal areas of Nellore by using a descriptive design.

Sampling Technique: Convenience sampling technique.

Sample Size: The target population of this study consisted of 100 adolescents. Sample size was calculated to estimate the prevalence of different health outcomes investigated in the survey, considering a confidence level of 95%, prevalence for the unknown outcomes of 50%, sampling error of 3 percentage points, percentage of losses estimated at 10%. Based on these parameters, we obtained a sample size of 100 adolescents. For association tests, considering an estimated prevalence of the outcome of 50%, 80% power and 95% confidence level, this sample size would allow detecting as statistically significant a prevalence ratio of up to 1.4 as a risk factor and up to 0.6 as protective factor for both genders.

Research ethics: We obtained approval from the ethical review board of the Narayana College of Nursing, Written permission was taken from the medical officer, Saraswathinagar. Written approval was taken from all the respondent parents and respondents before data collection. Confidentiality was maintained.

Description of Tool

The tool was developed with the help of related literature from various text book journals, website discussion and guidance from experts. The tool was adopted from WHO to assess the prevalence of obesity among adolescents in Saraswathinagar, Nellore.

It consists of two parts:

Part 1: It deals with the demographic variable which consists of age, gender, religion, year of studying, diet, habit of junk food, no. of meals per day, socio economic status.

Part 2: Deals with the standardized tool which is used to assess the prevalence of obesity among adolescents.

Score Interpretation

Table A: Who Classification of BMI

BMI	Adolescents
Under weight (≤ 18.5 kg/m^2)	≤ 5th percentile
Normal (18.5-25 kg/m^2)	5th -85th percentile
Over weight (25-30kg/m^2)	>85th – 95th percentile
Obese (≥30 kg/m^2)	≥ 95th percentile

Table B: Muac Levels for Adolescent Boys and Girls

Age	Boys (in cms)	Girls (in cms)
12 years	20.3-21.2	20.6-21.4
13 years	21.7-21.7	21.3-22
14 years	21.6-22.4	22.4-23
15 years	22.4-23.1	22.2-22.8
16 years	22.7-23.5	22.5-23.1
17 years	23-23.9	22.5-23.3
18 -19 years	>24	>23.5

Data collection procedure: The data collection procedure was done for a period of one week from 20/3/19 to 20/3/19 after obtaining formal permission from the principal Narayana college of nursing. 100 samples of adolescent's in Saraswathi Nagar were selected by using non probability convenience sampling technique. The researcher obtained written consent from samples by assuring anonymity and explained the purpose of the study. The data was collected with minimum of 20 samples per day from 9am to 12pm. The WHO standardized tool was administered to adolescents who fulfilled the inclusion criteria and data collection have taken 10 minutes for each sample. BMI and MUAC levels for each sample were calculated. Correlation between BMI and MUAC were calculated. The data was analyzed and tabulated by using descriptive and inferential statistics according to the objectives of the study.

Statistical Analysis Used: The collected data was organized, tabulated, analysed and interpreted by using descriptive statistics like actual numbers and percentages, mean, standard deviation and inferential statistics like Chi-square test, Karl Pearson correlation coefficient were used appropriately. 'p' value less than 0.05 were considered statistically significant.

Results and Discussion

A Total of 100 participants were evaluated, (44%) are males and 56(56%) are females.

Table 1: Frequency and Percentage distribution of adolescents based on BMI

(n=100)

BMI category	Frequency (f)	Percentage (%)
Under weight (≤ 5th percentile)	35	35
Normal (5th -85th percentile)	61	61
Over weight (85th – 95th percentile)	4	4
Total	100	100

Table No. 1 shows that with regard to BMI of adolescents 35(35%) are underweight (falls under ≤ 5th percentile), 61(61%) belongs to normal BMI (falls under 5th -85th percentile) and 4(4%) are overweight (falls under 85th – 95th percentile).

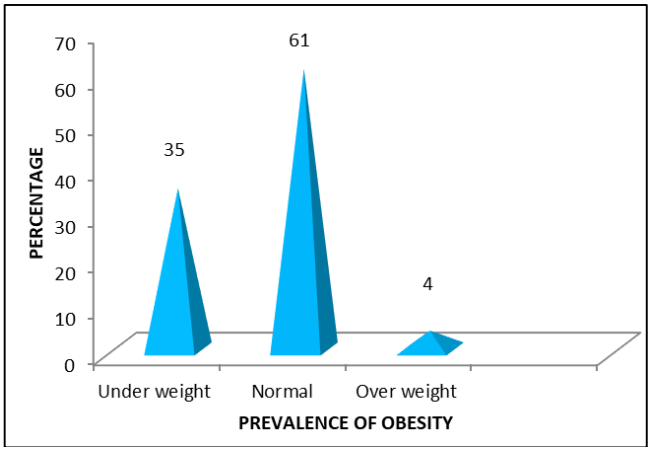

Fig 1: Percentage distribution of adolescents based on BMI.

Table 2: Frequency and Percentage distribution of adolescents based on MUAC

(n=100)

MUAC category	Frequency (f)	Percentage (%)
Malnourished	35	35
Normal	61	61
Obesity	4	4
Total	100	100

Table No. 2 shows with regard to MUAC levels 35(35%) are malnourished, 61(61%) are normal and 4(4%) are obese.

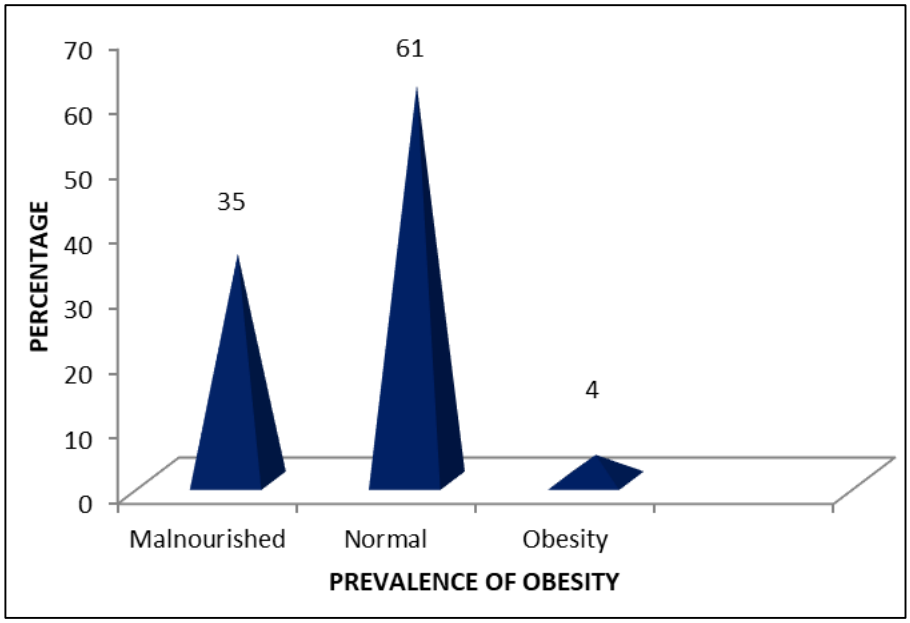

Fig 2: Percentage distribution of adolescents based on MUAC levels.

Table 3: Correlation between BMI and MUAC levels.

BMI	Frequency(f)	Percentage (%)	MUAC Levels	Frequency(f)	Percentage (%)	Correlation
Under weight (≤ 18.5 kg/m^2)	35	35	Under Nourished	35	35	1
Normal (18.5-25 kg/m^2)	61	61	Normal	61	61	
Over weight (25-30kg/m^2)	4	4	Obese	4	4	
Total	100	100		100	100	

Table No. 3 shows that the correlation between BMI and MUAC. The Pearson correlation coefficient is 1, which shows perfect positive correlation between BMI and MUAC.

As we know the complications of obesity and hypertension dietary modifications like inclusion of spirulina [8], good physical activity, reducing the stress and play helps to reduce the complications.

Discussion

The main findings of this study were that there was a positive correlation of BMI with blood pressure category. Based on the previous studies, It clearly informs us that the adults who are having good physical activity will have normal or optimal blood pressure and the adults with good vegetable intake will also have control over the blood pressure [12, 13].

Conclusion

The study shown that majority of adolescents are having normal BMI and MUAC levels and even in specific greater number of adolescents are under nourished. This result signifies the importance of carrying out the health educational activities to the adolescents to improve their BMI and MUAC for maintain their optimum health.

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