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PREVALENCE OF OBESITY AMONG ADOLESCENTS STUDYING IN RURAL SCHOOLS

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ABSTRACT

Adolescent obesity is one of the most serious public health challenges of the 21st century. It is one of the most significant contributors to ill health. Obesity, not only is a disease by itself, but it also predisposes to many other diseases as hypertension, CAD, and cerebrovascular accidents. The obese experience 20% greater mortality than the non-obese individuals. This study aimed to determine the prevalence of obesity and its associated factors among adolescents. A quantitative research approach and descriptive research design was adapted for this study. A sample of 100 adolescents in the age group of 12-17 years were selected by multistage stratified random sampling technique. This study was conducted in selected Government and Aided Higher Secondary Schools in rural area at Kanyakumari district. Obesity Screening Tool and Demographic proforma was used for data collection. The data analysis was planned according to the formulated objectives of the study using descriptive statistics. Results depicted that the overall prevalence of adolescent obesity was 2.4%. The prevalence of adolescent obesity is higher in girls (2.5%) than boys (2.3%) in rural schools. The associated factors of adolescent obesity observed in rural schools were age, gender, education, religion, type of family, monthly income of the family, dietary pattern, birth order, number of siblings, school management, attainment of puberty, unhealthy habits, BMI, medical illness and family history of obesity.

Key words: Prevalence, Obesity, Adolescents, Rural Schools.

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INTRODUCTION

Obesity in children and adolescent is a rapidly growing epidemic all over the world, more so in the developing countries where it has grown even faster in the last two decades. According to a study published in The New England Journal of Medicine, India has the second highest number of obese children in the world. The concern amongst scientific community regarding this disease arises from multiple reasons- A child does not outgrow obesity, which means that 90% of obese children are likely to become obese adults; obesity in a child limits his academic, social, physical and mental growth ; besides these children feel stigmatized as the diagnosis is written all over the body [1].

Obesity rates in the world's children and adolescents increased from less than 1% (equivalent to 5 million girls and 6 million boys) in 1975 to nearly 6% in girls (50 million) and nearly 8% in boys (74 million) in 2016.

Estimated prevalence of excess body weight in school-age children aged 5-17 years in world regions (2010-2013) showed that approximately 10% were overweight, with around one quarter of these children obese (2 % to 3 % of children globally).

There are an estimated 300 million young people (aged 10-24) - that is, adolescents (aged 10-19) and youth (aged 15-24) - in India today representing almost one-third (31%) of the population. Adolescents between the ages of 10 and 19 years form nearly 25% of the total population.

However, targeted health services to cater their specific needs have received scant attention [2].

Obesity in India has reached epidemic proportions in the 21st century, with morbid obesity affecting 5% of the country's population. India is following a trend of other developing countries that are steadily becoming more obese [3].

Prevalence of obesity in developing countries is believed to be on the rise. Not much data is available from India regarding prevalence of obesity. Two small studies have been carried out recently in urban Delhi to find the prevalence of obesity. In one of them the prevalence was 20% in men and 27.1% in women. In the other, the figures were 9.8% and 18.8% respectively. The prevalence in rural areas is not known [4].

A survey was conducted on 25,000 government and private school children in Chennai a few years ago, revealed that 8 to 10 per cent of children in government schools and 25 to 30 per cent of children in private schools were either overweight or obese. This is definitely an epidemic and will only get worse unless something is done [5].

There are more than 1.2 billion adolescents today, comprising nearly 20% of the total population globally. 1.5 billion of today's population are young people between 10 and 24 years old, 85% living in developing countries. Within the adolescent age group, the proportion of 10-14 year olds is greater than the 15-19 year group. The swiftly changing global conditions are placing the young people under great stress, modifying their behavior and relationships and exacerbating their health problems[6]. Government of India has recognized the importance of influencing the health-seeking behavior of adolescents. The health situation of this age group will be central in determining India's health, mortality, morbidity, and population growth scenario.

Statement of the problem
A descriptive study on prevalence of obesity and its associated factors among adolescents studying in selected rural schools at Kanniyakumari District.

Objectives
1. To estimate the prevalence of obesity among adolescents.
2. To identify the associated factors of obesity among adolescents.

MATERIALS AND METHODS
The research approach used in this study was quantitative and descriptive survey design was adopted. Multistage stratified random sampling technique was used to select the sample subjects. The study was conducted in selected Government and Aided Higher Secondary Schools in Thuckalay Educational District. There were 15 rural higher secondary schools which had classes from VI standard to XII standard. Among these seven schools were

Government schools and eight schools were Aided schools. The schools which were agreed to participate was selected randomly from different zones of the Educational District. Thus, the study was conducted in four rural co-education schools, out of which one was Government school and three were Aided schools.

Tools and techniques
The tool comprised of two parts,

Part I: Obesity Screening Tool to screen all adolescents by In-vivo bio-physiologic technique.

Part II: Demographic Data which included two sections was obtained by interview method.

Section A: Personal Data
It consisted of eleven items in the form of multiple choice questions. The eleven major heads were age, gender, education, religion, type of family, monthly income of the family, dietary pattern, birth order, number of siblings, school management, and attainment of puberty (for girls only), unhealthy habits (for boys only).

Section B: Clinical Data
It comprised of three items in the form of multiple choice questions under following headings: Body Mass Index, medical illness, and family history of obesity.

Data collection procedure
Formal permission was obtained from Headmaster of the selected schools to conduct the study The investigator screened all the adolescents in the age group of 12-17 years. using Obesity Screening Tool by measuring height and weight following the standard procedures. Then Body Mass Index (BMI) was calculated to plot BMI percentile for age and sex on the CDC BMI Growth Charts (2 to 20 years) to pick the obesity cases (BMI of 95th -98th percentile). Then demographic data of the obese adolescents was collected by structured interview schedule.

RESULTS
Section I: Overall prevalence of adolescent obesity
A total of 4168 adolescents were screened. The study findings revealed that overall prevalence of adolescent obesity in rural school is 2.4%. Figure 1 depicts overall prevalence of obesity among adolescents.

Section II: Gender-specific prevalence of adolescent obesity
The prevalence of adolescent obesity among boys studying in rural schools is 2.3% and girls is 2.5%. And prevalence of adolescent obesity is higher in girls (2.5%) than boys (2.3%). The comparison of gender-specific prevalence of adolescent obesity in rural schools is shown in Figure 2 in the form of bar diagram.

Section III: Associated factors of adolescent obesity

The data presented in Table 1 shows the associated factors of obesity in adolescents.

With regard to associated factors of adolescent obesity, a large number of sample subjects (41%) were falling into the age group of 12-13 years, 67% were males, 41% were studying middle school, 45% were Christians, 53% belonged to nuclear family, 46% of their family members were earning 10,000 and below monthly, 84% were non-vegetarians, 45% were first child, 62% had one sibling, 62% were studying in Aided school, 70% of the girls were attained puberty, none of the boys (100%) had unhealthy habits such as smoking, alcoholism and drug addiction, 45% were measured 95 percentile of BMI, 70% did not have any medical illness, 43% had no family history of obesity in rural schools.

Table 1: Distribution of sample subjects according to associated factors of adolescent obesity

S. No.	Demographic Variables	Rural School (n= 100)
		f (%)
A)	**Personal Data**	
1.	**Age (in years)**	
a)	12-13	41
b)	14-15	35
c)	16-17	24
2.	**Gender**	
a)	Male	67
b)	Female	33
3.	**Education**	
a)	Middle School	41
b)	High School	35
c)	Higher Secondary	24
4.	**Religion**	
a)	Hindu	29
b)	Christian	45
c)	Muslim	26
5.	**Type of Family**	
a)	Nuclear family	53
b)	Joint family	41
c)	Extended family	6
6.	**Monthly Income of the Family**	
a)	₹10,000 and below	46
b)	₹10,001 – ₹20,000	36
c)	₹20,001 - ₹30,000	16
d)	₹30,001 and above	2
7.	**Dietary Pattern**	
a)	Vegetarian	16
b)	Non vegetarian	84
8.	**Birth Order**	
a)	First Child	45
b)	Second Child	41
c)	Third Child	10
d)	Fourth and above	4
9.	**Number of Siblings**	
a)	Nil	15
b)	1	62
c)	2	19
d)	3 and above	4
10.	**School Management**	
a)	Government	38
b)	Aided	62
11. i)	**Attainment of Puberty (for GIRLS Only)**	
a)	**Yes**	23

b)	**No**	10
ii)	**Unhealthy Habits (for BOYS only)**	
a)	Nil	67
b)	Smoking	0
c)	Alcoholism	0
d)	Drug Addiction	0
B)	**Clinical Data**	
1.	**Body Mass Index**	
a)	95th Percentile	45
b)	96th Percentile	35
c)	97th Percentile	9
d)	98th percentile	11
2.	**Medical Illness**	
a)	Nil	70
b) (i)	Thyroid problem only	10
(ii)	Thyroid and visual problem	2
(iii)	Thyroid and menstrual problem	4
c) (i)	Visual problem only	7
(ii)	Visual problem and anaemia	0
d) (i)	Menstrual problem only	2
(ii)	Menstrual problem and anaemia	2
e)	Anaemia only	3
3.	**Family History of Obesity**	
a)	Nil	43
b)	Father Only	
(i)	Father and Mother	15
(ii)	Father & Paternal	5
(iii)	Grand parent	1
c)	Mother only	
(i)	Mother and Maternal	27
(ii)	Grand parent	2
d)	Paternal Grandparent	4
e)	Maternal Grandparent	3

Figure 1: Pie diagram showing overall prevalence of adolescent obesity

Figure 1: Pie diagram showing overall prevalence of adolescent obesity

2.40%

97.60%

■ Obese Adolescents

■ Normal Adolescents
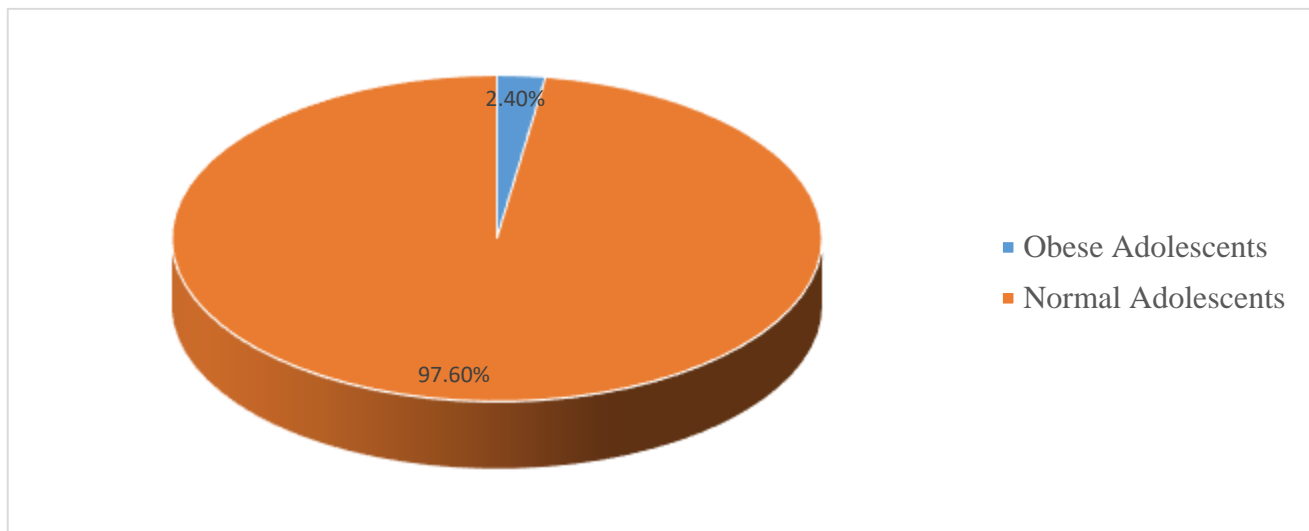
Figure 2: Bar diagram representing gender-specific prevalence of adolescent obesity
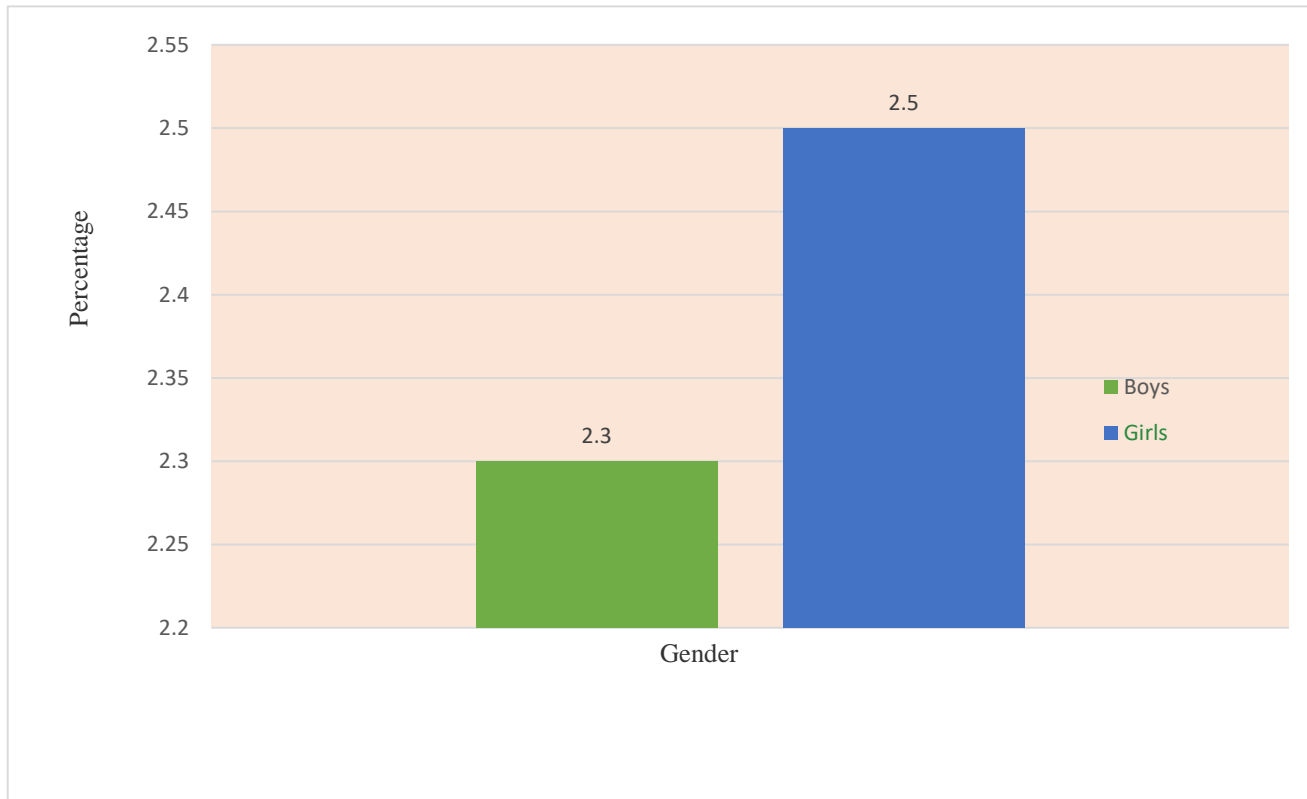
DISCUSSION

The present study identified that prevalence of obesity among adolescents studying in rural school is **C** 2.4%. It is consistent with the cross-sectional study on nutritional status of adolescents in rural Wardha which found that 53.8% of the adolescents were thin, 44% were normal and 2.2% were overweight [7].

The results of the current study found that prevalence of obesity is higher in girls (2.5%) than boys (2.3%). It is well supported by a study which concluded the prevalence rate of overweight/obesity was higher in rural girls (15.88%) compared with boys (12.18%) conducted at Salem [8].

The influence of individual attributes such as family socioeconomic status, gender, and race and health behavior factors (vigorous physical activity, sedentary activity, dietary intake, and sleeping pattern) as well as religion (religious affiliations and religious commitment) was explored on African American and Caucasian adolescents' body weight [9].

CONCLUSIONS

Adolescents with excessive weight gain have an increased incidence of obesity in later life. Schools have a rich opportunity to improve adolescent health and tackle obesity at the ideal point in time-before problems take hold. Nurse administrators should make arrangements for monitoring adolescent's health through adolescent health clinic every week. The community health nurses must take the responsibility of identifying obese adolescents at the earliest by periodic assessment in their community area and help them to develop healthy self-care practices.

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