

PROMOTION OF PHYSICAL ACTIVITY, NUTRITION EDUCATION IN THE PREVALENCE OF OVERWEIGHT AND OBESITY

Sunita Gahlot¹ Dr. Usha Sharma²

- 1. Research Scholar Shri Khushal Das University
- 2. Research Suprivisor Shri Khushal Das University

ABSTRACT

Obesity and overweight are two terms that relate to the same condition: when a person's proportion of body fat is too high and causes them to be at risk for health problems. There is a worldwide pandemic of obesity, which is becoming an increasingly severe public health problem. The expanding usage of multimedia devices and changes in sedentary lives among adolescents in developing countries like ours are contributing to this epidemic. There is a disturbing trend that has been shown by the statistics, which underscores the urgent need for focused actions that are aimed at encouraging healthier lives and avoiding future escalation of this public health problem. It is abundantly clear that comprehensive efforts must be done across a variety of domains, such as education, healthcare, and community participation, in order to tackle the many reasons that contribute to the obesity epidemic among adolescents. The empowerment of teenagers to make good choices for their well-being and the mitigation of the long-term repercussions associated with obesity may be achieved via the implementation of comprehensive policies that emphasize the promotion of physical activity, nutrition education, and access to cheap, nutritious foods.

Keywords: Adolescent, Nutrition, Education, Promotion

INTRODUCTION

India's adolescents constitute around one quarter of the nation's total population and are the largest demographic subgroup in the country. The journey from childhood to adulthood may be broken down into three separate phases: early adolescence, which occurs between the ages of 10 and 13, middle adolescence, which occurs between 14 and 16, and late adolescence, which occurs between 17. When a person reaches this age, their mental and social capabilities, as well as their reproductive ability and physical maturity, begin to grow accordingly.

Obesity and overweight are two terms that relate to the same condition: when a person's proportion of body fat is too high and causes them to be at risk for health problems. There is a worldwide pandemic of obesity, which is becoming an increasingly severe public health problem. The expanding usage of multimedia devices and changes in sedentary lives among adolescents in developing countries like ours are contributing to this epidemic. In accordance with the findings of the International Obesity Task Force (IOTF), ten percent of children and adolescents (those who are between the ages of five and seventeen) are considered to be overweight.



Between the years 1975 and 2016, the prevalence of obesity has grown by a factor of three throughout the globe. The proportion of children and adolescents who are overweight or obese increased from 4% in 1975 to 18% in 2016. This is a significant increase from before. There were 6% of girls and 8% of boys who were obese in the year 2016, whereas the percentages of overweight and obese were the same for both girls and boys between the ages of 5 and 19.

An epidemic of childhood obesity has emerged in India as a direct result of the widespread use of mobile phones, laptops, video games, and computers, which have significantly diminished the opportunity for children to engage in physical activity and form social connections. The incidence of obesity among children and adolescents in India was found to be between 5.6-24%, according to data obtained from schools across the country. A recent study that was carried out in the Indian state of Tamil Nadu discovered that 13.28% of the adolescents who attended school in rural areas were either overweight or obese. It was shown that girls who were already overweight were more likely to be obese as adolescents.

The purpose of this study was to determine the prevalence of overweight and obesity among adolescents (defined as those who are between the ages of 10 and 19).

OBJECTIVES

- 1. To study prevalence of overweight and obesity
- 2. To study among adolescents association with socioeconomic status.

RESEARCH METHODS

Researchers from the Hind Institute of Medical Sciences in Safedabad, Barabanki, India, studied patients in the pediatric and obstetrics and gynaecology departments between the months of January and September in the year 2020. Using the free online tool OpenEpi, we estimated that the sample size should be 384, with a projected frequency of fifty percent, a confidence level of ninety-five percent, and a margin of error of five percent. In spite of the fact that we had anticipated having a sample size of 384, we were able to recruit 415 adolescents for the study.

Inclusion criteria: -

The inclusion of all of the adolescents who visited our outpatient clinic was contingent upon receiving written consent from the adolescent as well as their parent or legal guardian. The inclusion of all of the adolescents who visited our outpatient clinic was contingent upon receiving written consent from the adolescent as well as their parent or legal guardian.

Exclusion Criteria: -

No adolescents who were using steroids or other medications that promote weight gain for more than four weeks were included in the study. This includes adolescents who had endocrine disorders, chronic systemic illnesses, or who were on steroids.



The patient's demographic information, medical history, examination findings, and anthropometric measures (weight and height) were recorded on a pre-formed Performa using the same calibrated balance and stadiometer that we had used before. The Body Mass Index (BMI) was calculated by using the formula BMI=weight (kg)/height2 (m2) in order to classify the degree of obesity that is present in children and adolescents. Through the use of body mass index percentiles, we were able to ascertain the distribution of normal, obese, and overweight adolescents over the three time periods.

According to the percentile ranking provided by the Centers for Disease Control and Prevention (CDC), a weight status was considered to be healthy if it fell between the 5th and 85th percentiles, was considered overweight if it fell between the 85th and 95th percentiles, and was considered obese if it was equal to or greater than the 95th percentile. The new CDC growth charts consisted of twenty charts, which were distributed equally between two sets of 10 charts each. We have two sets of data thanks to the fact that the outside boundaries of the curves in Set 1 are the 5th and 95th percentiles, and the outside bounds of the curves in Set 2 are the 3rd and 97th percentiles. The total number of charts was five, with five belonging to the boys' set and five belonging to the girls' set.

To determine the percentile ranking, the Centers for Disease Control and Prevention (CDC) utilized body mass index-for-age (BMI-for-age) statistics for boys and girls between the ages of 2 and 20.

Statistical analysis:

The statistical tests that were carried out were the paired student t-test, the mean, the standard deviation, the Chi square test, and the p-value. A p-value that was less than 0.05 was judged to be statistically significant.

RESULTS

Following the application of inclusion and exclusion criteria, a total of 415 adolescents, including 206 females and 209 males, were considered for participation in the present study. The teenagers were divided into three groups according to their ages: early (those aged 10–13 years), middle (those aged 14–16 years), and late (those aged 17–19 years). In the early group, there were 155 adolescents (101 females and 54 males), in the middle group, there were 148 adolescents (62 females and 86 men), and in the late group, there were 112 adolescents (43 females and 69 males), respectively. This is Figure 1.

International Journal in Physical and Applied Sciences Volume 11 Issue 06, June 2024 ISSN: 2394-5710 Impact Factor: 8.202 Journal Homepage: http://ijmr.net.in, Email: irjmss@gmail.com Double-Blind Peer Reviewed Refereed Open Access International Journal





Figure 1: Age-Wise Adolescent Distribution (n = 415)

The body mass index (BMI) of the 415 adolescents varied from normal for 353 (85.06%) of them to overweight for 41 (9.88%) of them and obese for 21 (5.06%) of them. Out of a total of 206 girls, about 170 (82.52%) were considered to be normal, 20 (9.71%) were considered to be overweight, and 16 (7.77%) were considered to be obese. There were a total of 183 (87.56%), 21 (10.05%), and 5 (2.39%) boys who were determined to be within the normal weight range. None of the boys were found to be obese. It was found that there was a statistically significant difference between the sexes in terms of the proportion of girls (17.48%) and boys (12.44%) who were obese or overweight among the population. It was shown that there was a statistically significant rise in the prevalence of obesity and overweight among female adolescents (p = 0.044076).

Table 1 Distribution of Overweight, Obese, and Normal Adolescents by BMI Percentiles (n
= 415) *

BMI percentile	Fe	emale	N	Iale	Т	otal
Normal	170	(82.52)	183	(87.56)	353	(85.06)
Overweight	20	(9.71)	21	(10.05)	41	(9.88)
Obese	16	(7.77)	5	(2.39)	21	(5.06)
Total	206	(100)	209	(100)	415	(100)

X2 test= 6.2437, P-value = 0.044076.

Number in parenthesis indicate percentage *statistically significant (p value < 0.05)

In the early adolescent age group, there were 155 individuals; 141 (totaling 90.97%) had a normal body mass index (BMI), whereas 14 (9.03%) had a BMI that was higher than normal; 8 (totaling 5.16%) were overweight, and 6 (totaling 3.87%) were obese. The weight of 94.06 percent of the 101 females was regarded to be normal, 1.98 percent were considered to be



overweight, and 3.96 percent were assessed to be obese. The results of the study showed that out of the 54 boys, 46 (85.19%) were regarded to have a normal weight, 6 (11.11%) were described as being overweight, and 2 (3.70%) were classified as being obese. There was a statistically significant rise in the reported prevalence of obesity and overweight among teenage men in the early adolescent age group (p value = 0.049922). This was the case particularly among those who were young adolescents. This is Table 2

BMI percentile	Female	Male	Total
Normal	95 (94.06)	46(85.19)	141(90.97)
Overweight	2 (1.98)	6 (11.11)	8 (5.16)
Obese	4 (3.96)	2 (3.70)	6 (3.87)
Total	101 (100)	54 (100)	155 (100)

Table 2 Distribution of BMI percentiles for normal, obese, and o	overweight individuals in
the early adolescent age group (n=155) *	•

Number in parenthesis indicate percentage *statistically significant (p-value < 0.05)

Only 126 of the 148 patients who were in the mid-adolescent age group had a normal body mass index (BMI), which is equivalent to 85.14 percent. Among the 22 individuals who had a body mass index (BMI) that was higher than the normal range, 16 (10.81%) were categorized as overweight, and 6 (4.05%) were categorized as obese. Twenty-six of the 62 women who participated in the study were classified as having a normal weight, ten as being overweight (16.13%), and five as being obese (8.06%). In spite of the fact that one child (1.16%), six boys (6.38%), and seventy-eight boys (91.86%) were determined to be of normal weight. There was a statistically significant rise in the reported prevalence of obesity and overweight among teenage girls in the age range of mid-adolescence (p value = 0.017291). This increase was seen among male adolescents. This is Table 3

Table 3 Distribution of BMI percentiles for normal, obese, and overweight people in the
mid-adolescent age group (n=148) *

BMI percentile	Fe	emale		Male		Total
Normal	47	(75.81)	79	(91.86)	126	(85.14)
Overweight	10	(16.13)	6	(6.98)	16	(10.81)



Obese	5	(8.06)	1	(1.16)	6	(4.05)
Total	62	(100)	86	(100)	148	(100)

X2 test= 8.1152, P-value = 0.017291

Number in parenthesis indicate percentage *statistically significant (p-value < 0.05)

There were 112 participants in the late adolescent age group; 86 of them (or 76.79%) had a normal body mass index (BMI), whereas 26 of them (23.21%) had a BMI that was above the normal range; 17 of them (15.18%) were overweight, and 9 of them (8.03%) were obese. There were a total of 43 females, and the percentages of normal, overweight, and obese females were as follows: 28 (65.12%), 8 (18.60%), and 7 (16.28%), respectively. Among the 69 boys, the percentages of boys who were normal, overweight, and obese were, respectively, 84.06%, 13.14%, and 2.90%. In the last stages of puberty, there is a statistically significant increase in the likelihood that adolescent girls will be overweight or obese (p = 0.021495). This is Table 4

Table 4 Distribution of BMI percentiles for normal, obese, and overweight individuals in
the late adolescent age group (n=112) *

BMI percentile	F	Female		Male		Fotal
Normal	28	(65.12)	58	(84.06)	86	(76.79)
Overweight	8	(18.60)	9	(13.04)	17	(15.18)
Obese	7	(16.28)	2	(2.90)	9	(8.03)
Total	43	(100)	69	(100)	112	(100)

X2 test= 7.6799, P-value = 0.021495.

Number in parenthesis indicate percentage *statistically significant (p <0.05)

Body mass index (BMI) was shown to rise with age (p=0.04436) [Table 5]. Early adolescents had a mean body mass index (BMI) of 18.59 (2.91) kg/m2, mid-adolescents of 19.09 (3.09) kg/m2, and late-adolescents of 20.14 (4.12) kg/m2.

Table 5 Distributaion of Early, Mid, And Late Adolescent Age Group* Mean BMI [Standard Deviation (SD)]

	Mean BMI	(Standard	Total Mean
Group	Deviation) (Kg/m2)	BMI (SD)
	Female	Male	(Kg/m2)

International Journal in Physical and Applied Sciences
Volume 11 Issue 06, June 2024 ISSN: 2394-5710 Impact Factor: 8.202
Journal Homepage: http://ijmr.net.in, Email: irjmss@gmail.com
Double-Blind Peer Reviewed Refereed Open Access International Journal



	cent group	19.35 (2.93)	17.19 (2.30)	18.59 (2.91)
Mid Adolese	cent group	20.11 (3.64)	18.35 (2.39)	19.09 (3.09)
Late Adolese	cent group	21.26 (5.32)	19.44 (2.98)	20.14 (4.12)

DISCUSSION

A total of 62 individuals, or 14.94 percent, in our research had a body mass index (BMI) that was higher than the usual range. A total of 41 (9.88%) of these individuals were overweight, while 21 (5.06%) were obese. According to the findings of a study conducted by Chandrakala P and colleagues, the prevalence of overweight and obesity among teenagers aged 12–18 was found to be 7% and 4.2%, respectively. These findings are consistent with the findings of previous research. In a study that was connected to this one, Kapil U and colleagues discovered that the prevalence of overweight was 24.7% among children aged 10 to 16, and the prevalence of obesity was 7.4%.

The results indicated that there was a statistically significant difference between the sexes in terms of obesity and overweightness. The percentage of teenage girls who reported having these conditions was 17.48%, whereas the percentage of teenage boys who reported having them was 12.44% (p value = 0.044076). The findings that we obtained are consistent with those that were discovered by Marwaha RK et al., who discovered that the prevalence of overweight among schoolgirls was significantly higher (19.01%) than among schoolboys from higher socioeconomic classes (16.75%). A research that was carried out in Chennai by Subramanyam and colleagues found that the prevalence of overweight and obesity among schoolgirls aged 10-15 years was 9.67% and 6.23%, respectively. Subramanyam and colleagues performed the study. In a similar vein, it was shown that 7.77% of teenage females were being overweight or obese.

Adolescent boys were significantly reported to be more overweight and obese statistically in the early adolescent age group in the present study (p value = 0.049922). This finding was comparable to the findings of a study conducted by Chhatwal J et al., which found that the prevalence of overweight and obesity in school-aged children aged 9-15 years was higher in boys as compared to girls. Statistically, it was found that adolescent girls were significantly more obese and overweight in the mid-adolescent age group (p value = 0.017291) and the late-adolescent age group (p value = 0.021495). This finding was comparable to the findings of a 20-year cohort study conducted in South Africa by Lundeen EA et al., who found that the periods of 11-12 years to 13-15 years and 13-15 years to 16-18 years had the highest obesity incidence density rates among adolescent girls.



CONCLUSION

The outcomes of this research, in conclusion, highlight the worrisome incidence of overweight and obesity among teenagers throughout the world. There is a disturbing trend that has been shown by the statistics, which underscores the urgent need for focused actions that are aimed at encouraging healthier lives and avoiding future escalation of this public health problem. It is abundantly clear that comprehensive efforts must be done across a variety of domains, such as education, healthcare, and community participation, in order to tackle the many reasons that contribute to the obesity epidemic among adolescents. The empowerment of teenagers to make good choices for their well-being and the mitigation of the long-term repercussions associated with obesity may be achieved via the implementation of comprehensive policies that emphasize the promotion of physical activity, nutrition education, and access to cheap, nutritious foods. In addition, there is a need for further research to be conducted in order to get a better understanding of the underlying reasons and possible treatments that can be customized to certain demographic groups, which will eventually lead to a healthier future for our young people.

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