PREVALENCE OF OBESITY AND OVERWEIGHT AMONG PRIMARY SCHOOL CHILDREN

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ABSTRACT

Background: In developing countries, widespread trends of accelerating child obesity and overweight have been reported, necessitating effective interventions. Obesity and overweight are becoming a global threat to public health. The purpose of this study is to determine the prevalence of obesity and overweight in primary school children. **Method:** The study design was descriptive descriptive-cross sectional, institutional based study-sectional. 323 primary school students took part in the study. Direct interviews were used to collect data, which was then analyzed using SPSS with parental permission. **Results:** Males were 4.4% and 6.1% overweight, respectively, while females were 6.0% and 7.2% overweight, respectively. Females were found to be more overweight and obese than males. The study found a strong positive association between obesity, overweight, and gender (P. Value = 0.008). **Conclusion:** The study concluded that girls were more likely than boys to be overweight or obese. There was a strong positive relationship between economic status, parental educational level, and a family history of obesity and overweight. It is critical that schoolchildren receive nutritional and dietary education.

KEYWORDS: Obesity; Overweight; Grade School; Children.

INTRODUCTION

In developing countries, widespread trends of increasing child obesity and overweight have been reported. Obesity may be a health issue that requires effective treatment. The prevalence is becoming a global threat to public health, affecting both developed and developing countries. Obesity and overweight pose a rapidly increasing risk to individuals' health in an increasing number of countries, including many developing countries.[1] Obesity prevalence continues to increase, as does the prevalence of overweight. Children aged 6 to 18 years old have more than quadrupled since 1965, rising from 4% to over 18% in 2012.[2] Obesity in children and quadrupeds has more than doubled.

Obesity among children aged 6 to 11 years in the United States has quadrupled in the last 30 years, rising from 7% in 1980 to nearly 18% in 2012.[3] Between 1980 and 2013, the global prevalence of childhood obesity increased by 47.1%. Currently, it is estimated that 68% of Americans are obese, and approximately 30 million Indian children are obese, resulting in an estimated 300,000 deaths per year and a minimum of $147 billion in health costs. It is expected to more than double in the next five years.[4]

Obesity and overweight, which were previously thought to be problems primarily affecting the wealthy, are now markedly on the rise in low- and middle-income countries. In developing countries such as India, particularly among urban populations, childhood obesity is emerging as a serious health problem.[5]

Obesity is being blamed on globalization, improving economic conditions, and changing dietary habits in developing countries. This rise can be attributed to a lack of supportive policies in areas such as health, agriculture, transportation, urban planning, the environment, food processing, distribution, marketing, and education.[6]

METHODOLOGY

This is a descriptive cross-sectional study with a school-based design conducted on primary school children. Ethnic groups and foreigners, various tribes, cultural, traditional, and religious beliefs, and socioeconomic levels. Learn at Primary School, which is open to both boys and girls. The study includes children aged 6 to 16 years old, males and females in grades 1 to 8, and residents. Children aged 17 and up, as well as those attending private schools, were excluded from the study, leaving a total of 1693 students (716 boys and 977 girls) from a single public school. The sample size is

calculated using the formula n= N/1+N (d) 2, where n is the sample size and N is the study population (children in Primary school for boys and girls). As a result, the sample size is equal to 1693/1+1693(0.05*0.05) = 323. In this case, with a sample size of 323 students, a multistage sampling technique was used to obtain the desired sample size.

All sample schools were visited from Monday to Thursday of each week, and relevant data for the study were collected using a structured questionnaire during school hours. In addition to the personal data, determinant factors, and body mass index chart for age, the measuring tape and electronic weighing scale were checked, and documents were written in a sheet with a pen and pencil. The informed child's body height was measured using a measuring tape while standing on a flat floor against a wall, with the heel, buttocks, shoulders, and occipital touching the wall.

The child's weight was measured to the nearest 0.1 kilogram using an electronic scale while wearing light clothing and no shoes. After calculating BMI (weight in kilograms divided by height in meters squared (kg/m2)), measurements for boys and girls were plotted on the Centers for Disease Control and Prevention (CDC) 2000 BMI charts. The BMI varies with age and gender. The CDC defines childhood obesity as a BMI greater than the 95th percentile and underweight as a BMI less than the 5th percentile.

The Statistical Package for Social Science (SPSS) version 20.0 was used to analyze the data: measures included percentage and mean, and a binary outcome variable was created. Bar graphs and pie graphs are examples of graphical presentations. A p-value equal to or less than 0.05 was chosen as the level of significance for this study (0.05). The Al-Neelain University Ethical Committee approved the study proposal, and a written agreement was obtained from the Ministry of Primary Education of the locality administration of Education and the principals of the selected schools.

The Director of Education Office provided a list of primary schools in the locality that was used for sampling.

Children were interviewed by school principals. Before taking part in the study, each respondent provided written consent. All participants and their parents were aware of their right to refuse any question and to have their weight and height measured.

RESULTS

Table 1: Demographic variables of the study sample (n = 283).

Variable	Frequency	Percentage %
Age		
6 - 8 years	46	16.60
9 - 11 years	115	40.30
12 - 15 years	120	42.70
More than 15 years	2	0.70
Total	283	100
Gender		
Male	115	40.6
Female	168	59.4
Total	283	100
BMI category		
Underweight	19	6.7
Normal	230	81.3
Overweight	17	6.0
Obese	17	6.0
Total	283	100

Table 2: Relationship between obesity/weight and age.

Age	Obese	Overweight	Total
6 - 8 years	1 (2.1%)	0 (0%)	48
9 - 11 years	6 (5.4%)	9 (8%)	112
12 - 15 years	10 (8.3%)	8 (6.6%)	121
More than 15 years	0 (0%)	0 (0%)	2
Total			283

P. value 0.006.

Table 3: Relationship between obesity/overweight and educational level of mother.

BMI categories	Level of mother education					Total
	Illiterate	**Primary education**	**Secondary education**	**University**	**Above university**	
Obesity	1 (6.3%)	7 (5%)	5 (6.6%)	4 (10.9%)	0 (0%)	
Overweight	1 (6.3%)	9 (6.3%)	4 (5.3%)	3 (8.1%)	0 (0%)	
Total	16	142	76	37	12	283

p. value 0.003.

Table 4: Association between BMI categories and some dependent variables.

	Eating chocolates and sweets		Total	P-value
	Yes	**No**		
BMI categories Obese	17 (6.0%)	0 (0%)		
Overweight	6 (6.0%)	0 (0%)		
	278	5	283	0.001

	Drinking carbonated beverage			
	Yes	**No**	**Total**	
BMI categories Obese	16 (6.0%)	1 (5.5%)		
Overweight	16 (6.0%)	1 (5.5%)		
	265	18	283	0.018

	Participate in sport			
	Yes	**No**	**Total**	
BMI categories Obese	11 (5.3%)	6 (7.7%)		
Overweight	15 (7.3%)	2 (2.6%)		
	206	77	283	0.005

	Sitting in screen devices		Total	
	Yes	**No**		
BMI categories Obese	17 (6.6%)	0 (0%)		
Overweight	16 (6.2%)	1 (4.4)		
	259	23	283	0.007

	Means of transport		Total		
	On foot	**By public transport**	**By private car**		
BMI categories Overweight	13 (5.9%)	3 (6.7%)	1 (12.5%)		
Obese	12 (5.4%)	4 (7.5%)	1 (12.5%)		
	222	53	8	283	0.019

	Consume fast meals outside the home			
	Yes	**No**	**Total**	**p-value**
BMI categories Overweight	12 (7.1%)	5 (4.4%)	283	
Obese	9 (5.2%)	(87.1%)	0.014	
	170	113		

DISCUSSION

In terms of obesity, overweight, and age groups, the rate of obesity was highest at the age of 12 - 15 years, 8.3%, compared to those at the ages of 9 - 11 and 6 - 8, and increased with age to be highest at the age of 15 years.

of 9 - 11 and 12 - 15, while the rate of overweight was 8% at the age group 9 - 11 years and decreased with age. The findings revealed a significant link between obesity, overweight, and age (P. value 0.006). Previous Egyptian studies found a prevalence of overweight and obesity of 11% and 3.8%, respectively, among children attending governmental schools.[14] Other studies using WHO criteria reported 3.6% obesity and 11.4% overweight among Sudanese children aged 13 to 15 years.[7] The prevalence of normal or healthy weight, underweight, overweight, and obesity was 71.3%, 15.9%, 6.2%, and 6.7%, respectively.

Another study was carried out in India.[8] I disagree with the current study; our findings show that the prevalence of obesity and overweight is higher in our study than in the Indian study.

In terms of gender distribution among the study population, 40.6% were males, while more than half (59.4%) were females, indicating that the majority of study participants were females.

The prevalence of obesity and overweight in males was 4.4% overweight and 6.1% obese in the current study, while the prevalence of obesity and overweight in females was 7.2% and 6.0%, respectively. Females were

found to be more overweight and obese than males, according to the findings. The study found a strong positive relationship between obesity/overweight and gender (P=0.008). According to previous research conducted in seven African countries, females had a higher prevalence of overweight in five of them.[9]

In terms of the prevalence of obesity and overweight among various school classes. Obesity rates were highest in classes eight (16.6%) and third (10.3%) when compared to children in class seven, while overweight rates were highest in classes five, six, and seven. The findings revealed a link between obesity and overweight and school classes. A similar study was conducted in Omdurman, Sudan, at the same classes, allowing us to compare.[10]

In terms of the relationship between obesity/overweight and mother's level of education, the prevalence of obesity and overweight in illiterate mothers was 3.6% and 3.6%, respectively. Obesity and overweight were prevalent at the primary level at 5%, 6.3%, and 6.6%, respectively, with 6.6% obese. 5.3% of secondary school students were overweight, while 10.9% of university students were overweight, 8.1% were obese, and 0% of obese and overweight children had a mother with a postgraduate degree.

University students had the highest prevalence of obesity and overweight. There were significant differences in data on mother's education level with obesity and overweight (P-value = 0.003). The current study findings are supported by research from India[8] and Ethiopia.[11]

In terms of children's dietary habits, more than half (62.3%) had consumed breakfast outside the home, 9.2% once per week, 10.2% twice per week, the majority of children consumed breakfast outside the home more than twice per week 43.0%, and 39.8% did not consume breakfast outside the home. Sugars are consumed by half of all children, followed by pies (32.4%) and pizza (17.6%).

In terms of the relationship between obesity/overweight and fast food, the frequency of obesity and overweight was higher among children who consumed fast food outside the home (5.2% and 7.1%, respectively). Concerning fast food types, the prevalence of obesity and overweight was highest among children who consumed chickens (10% and 13.3%, respectively). This study was agreed upon with a study conducted in Saudi Arabia.[12]

In terms of the relationship between obesity/overweight and the consumption of chocolates and sweets, children who consumed chocolates and sweets were 16% more obese and overweight than children who did not consume chocolates and sweets 0%. The findings revealed a significant relationship between BMI category and consumption of chocolates and sweets (P. value 0.001). In terms of frequency, the prevalence of obesity

and overweight was highest among schoolchildren who consumed chocolates and sweets once per week. Obesity and overweight were prevalent among children who consumed chocolates and sweets more than twice per week. Mimicry in findings could be explained by similarities in Ethiopian[11] societies' cultures, and the results revealed that children who preferred Those who preferred sweetened foods were nearly twice as likely to be overweight or obese as those who did not prefer sweetened foods. Another study conducted in Tanzania[13] was similar to the current study. The magnitude of overweight and obesity in the current study was lower than in a Tanzanian study.

Concerning the relationship between obesity and overweight and drinking carbonated beverages, the prevalence of obesity and overweight was slightly higher among children who drink carbonated beverages (6.6%, 6.6%) than among children who do not drink carbonated beverages (5.5%). The study found a strong relationship between carbonated beverages and obesity and overweight (P. value 0.018). The study conducted in India was similar to the current study.

Other dietary factors include fresh juices, which are consumed by the majority of schoolchildren (73%), while 27% do not.

The relationship between sport activities and obesity and overweight, the frequency of obesity was highest among children who did not participate in sport (7.7%), and the frequency of overweight was highest among children who did participate in sport (7.7%). The findings revealed a significant association between obesity and overweight and sport participation (P = 0.005). Our current study contradicts a previous study found in Egypt.[14]

More than half of schoolchildren, 51.2%, sat in front of a screen for more than two hours per day; 29.2% sat in front of a screen for less than an hour per day; and 10.9% sat in front of a screen for one to two hours per day.

The findings revealed a significant link between obesity and overweight and sitting in front of a screen (P. Value = 0.007).

In terms of mode of transportation to school, 82.4% of schoolchildren walk, 14.8% take public transportation, and 2.8% drive a private car.

Obesity and overweight were more prevalent among children who took private care to school compared to those who walked 5.9%, 5.5%, and took public transportation 6.7%, 5.7%. The findings revealed a strong positive relationship between obesity and overweight and mode of transportation (P = 0.019). The current study is similar to those conducted in India and Ethiopia.[8,11]

CONCLUSION

The study concluded that girls were more likely than boys to be overweight or obese. There was a strong positive relationship between economic status, parental educational level, parental case history of obesity and overweight, and mode of transportation to high school and obesity and overweight.

Recommendation

School-age children require nutritional and dietary education, as well as increased student awareness of the dangers of obesity and overweight.

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