Prevalence and Awareness of Obesity Among Adolescents in Punjab: A Cross-Sectional Study

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Abstract: *Background: Childhood obesity has emerged as a major global public health concern, affecting both developed and developing countries. Rapid urbanization, sedentary lifestyles, unhealthy dietary habits, and increased consumption of calorie-dense foods have significantly contributed to the rising prevalence of overweight and obesity among children and adolescents. Objectives: a) To assess the prevalence of obesity among high school students b) To assess the level of knowledge regarding the ill-effects of obesity and its prevention c) To determine the association between obesity and selected socio-demographic variables d) To determine the association between knowledge regarding obesity and selected socio-demographic variables e) To provide guidelines on prevention of obesity and its ill-effects. Methods: A descriptive, non-experimental research design was adopted. The study was conducted among 620 high school students (9th and 10th standard, aged 12–17 years) from selected government and private schools of district Hoshiarpur, Punjab. Random sampling technique was used. Data were collected using a standardized Body Mass Index (BMI) tool and a self-structured questionnaire to assess knowledge regarding obesity, its ill-effects, and prevention. Reliability of the knowledge questionnaire was established using split-half technique (r = 0.8). Data were analyzed using descriptive and inferential statistics. Results: Out of 620 students, 68.5% had normal BMI, 18.7% were underweight, 10.8% were overweight, and 1.9% were obese. Regarding knowledge, 49.4% of students had good knowledge, 41.1% had average knowledge, and 9.5% had poor knowledge about obesity. Significant associations (p < 0.05) were found between obesity and age, father's occupation, father's education, monthly family income, mode of transportation, and type of school. Knowledge regarding obesity was significantly associated with parental occupation, parental education, family income, type of games, mode of transportation, and type of school. Conclusion: Although the prevalence of obesity was comparatively low, a considerable proportion of students were overweight. Despite nearly half of the students demonstrating good knowledge regarding obesity, lifestyle and socio-demographic factors continue to influence obesity prevalence. Early preventive strategies focusing on lifestyle modification, physical activity promotion, and school-based health education are essential.*

Keywords: Childhood obesity, BMI, Awareness, Adolescents, High school students, Punjab

1. Introduction

Obesity has become a global nutritional concern and is recognized by the World Health Organization (WHO) as a global epidemic. Global childhood obesity prevalence has risen sharply over recent decades from around 3% in 2000 to about 9.4% by 2022 among school-aged children and teens. India ranks among the top countries with the highest number of obese individuals, reflecting the impact of rapid nutrition and lifestyle transitions.

Obesity is defined by WHO as a condition characterized by excessive fat accumulation that presents a risk to health. Childhood and adolescent obesity are particularly concerning, as they predispose individuals to chronic diseases such as diabetes, hypertension, cardiovascular diseases, and psychological problems later in life. Evidence suggests that obese children are more likely to become obese adults.

India, despite facing undernutrition in large segments of the population, is experiencing a parallel rise in childhood overweight and obesity due to increased intake of junk food, reduced physical activity, and sedentary lifestyles. This dual burden highlights the urgent need for early identification and prevention strategies targeting school-aged children.

Need for the Study
The increasing prevalence of childhood obesity in both urban and rural areas of India necessitates region-specific data to guide interventions. Limited studies have assessed obesity prevalence and awareness among high school students in district Hoshiarpur, Punjab. Understanding students' knowledge regarding obesity and its prevention, along with associated socio-demographic factors, is vital for designing effective school-based preventive programs.

Objectives
- To assess the prevalence of obesity among high school students
- To assess knowledge regarding the ill-effects of obesity and its prevention
- To determine the association between obesity and selected socio-demographic variables
- To determine the association between knowledge and selected socio-demographic variables
- To provide guidelines on prevention of obesity and its ill-effects

2. Materials and Methods

Research Design
A descriptive, non-experimental research design was used.

Setting
The study was conducted in selected government and private schools of district Hoshiarpur, Punjab.

Population and Sample

The population comprised high school students (9th and 10th class) aged 12–17 years. A total sample of 620 students were selected using systematic random sampling technique.

Tools for Data Collection
- **Standardized BMI tool** to assess obesity
- **Self-structured questionnaire** to assess knowledge regarding obesity, its ill-effects, and prevention

Validity and Reliability
Content validity was established through expert review. Reliability of the questionnaire was determined using split-half technique (r = 0.8).

Ethical Considerations
Permission was obtained from school authorities. Verbal consent was taken from participants, confidentiality was maintained, and participation was voluntary.

Data Collection Procedure
Height and weight were measured using standardized procedures. BMI was calculated as weight (kg)/height (m²). Knowledge questionnaires were administered, followed by health education and guidelines on obesity prevention.

3. Results

Table 1: Frequency and percentage distribution of sample characteristics, N=620

Variables	Frequency (n)	Percentage (%)
Age		
12-14	294	47.4
15-17	326	52.6
Sex		
Male	277	44.7
Female	343	55.3
Eating Habits		
Vegetarian	514	82.9
Non-Vegetarian	106	17.1
Father's occupation		
Private job	78	12.6
Government job	89	14.2
Farmer	123	19.8
laborer	330	53.2
Mother's occupation		
Private job	23	3.7
Government job	28	4.5
House wife	496	80
laborer	73	11.8
Father's Education		
Illiterate	87	14
>10th	190	30.6
10th	243	39.2
10th -12th	82	13.2
Graduation	16	2.6
Post graduation	2	0.3

Mother's Education		
Illiterate	116	18.7
>10th	230	37.1
10th	206	33.2
10th -12th	57	9.2
Graduation	11	1.8
Monthly income		
>Rs 5000	282	45.5
5001-10000	223	36
10001-15000	62	10
< 150001	53	8.5
Place of living		
Rural	519	83.7
Urban	101	16.3
Type of game		
Indoor	111	17.9
Outdoor	161	26
Both	348	56.1
Mode of transportation		
Walking	282	45.5
Cycle	164	26.5
School bus/van	153	24.7
Any other	121	3.4
Type of school		
Government	368	59.4
Private	252	40.6

Table 2: Distribution of Body Mass Index (BMI) status among high school students (N = 620)

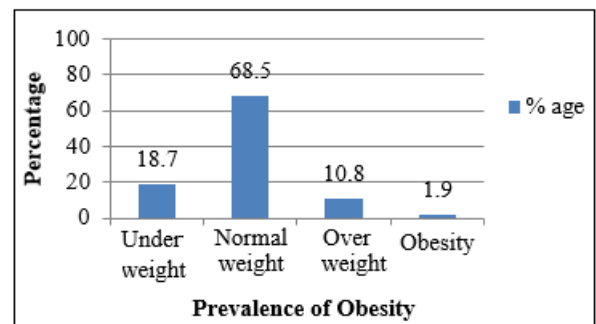| BMI Status	f	(%age)
Underweight	116	18.7
Normal weight	425	68.5
Overweight	67	10.8
Obesity	12	1.9

Figure 1: Percentage distribution regarding prevalence of obesity among high school students

Table 3 -Level of knowledge of study participants regarding obesity, N=620

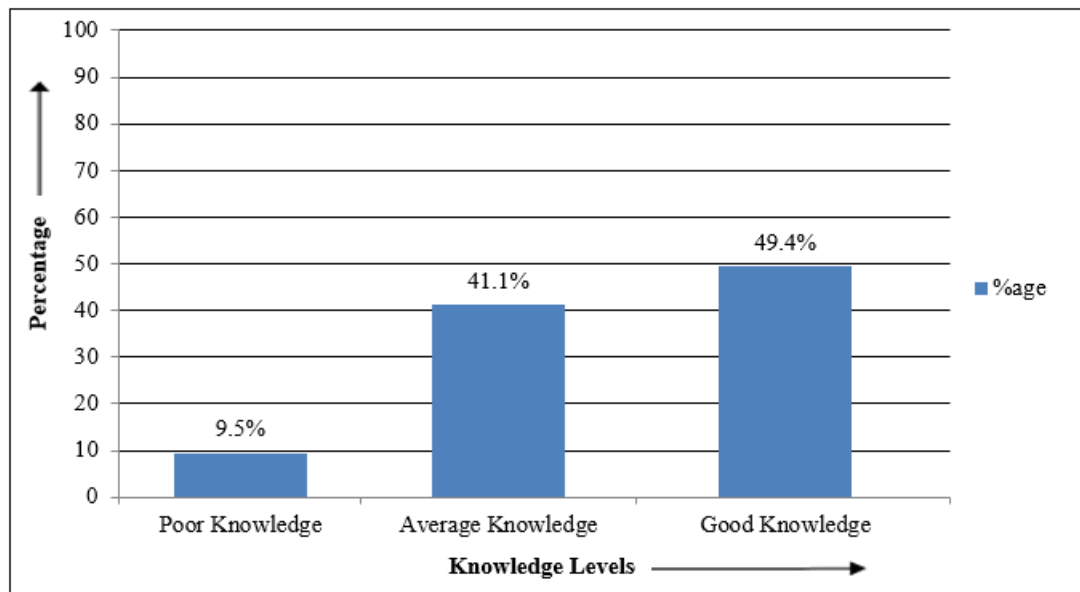| Score	f	(%age)
Poor knowledge	59	9.5
Average knowledge	255	41.1
Good knowledge	306	49.4

Figure 2: Percentage distribution of knowledge regarding prevention of obesity among high school students
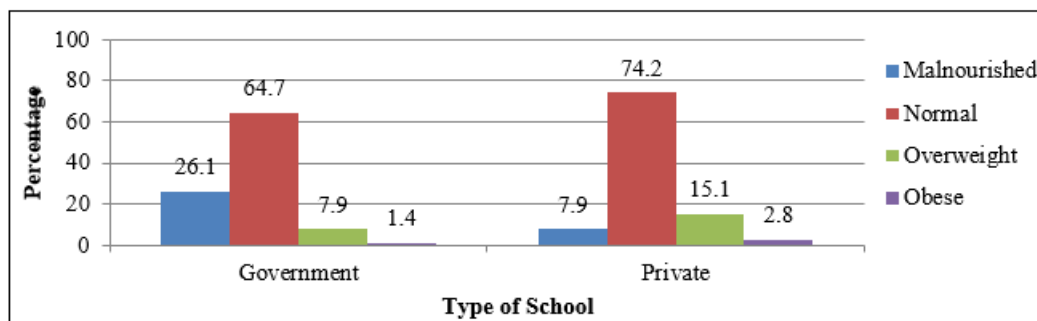

Figure 3: Percentage distribution of obesity among high school students according to type of school

Table 4 : Association Between Obesity and Selected Socio-Demographic Variables

Variable	χ² value	Association
Age	18.85	Significant
Father's occupation	24.81	Significant
Father's education	31.27	Significant
Monthly family income	26.23	Significant
Mode of transportation	52.55	Significant
Type of school	37.04	Significant

Significant at p<0.05

Table 5 : Association Between Knowledge Regarding Obesity and Socio-Demographic Variables

Variable	χ² value	df	Association
Father's occupation	6.79	2	Significant
Mother's occupation	22.66	6	Significant
Father's education	27.29	10	Significant
Mother's education	29.33	8	Significant
Monthly family income	21.64	6	Significant
Type of games	19.79	4	Significant
Mode of transportation	76.33	6	Significant
Type of school	104.69	2	Significant

Significant at p<0.05

4. Discussion

The present study revealed that although the prevalence of obesity (1.9%) was relatively low, 10.8% of students were overweight, indicating a rising trend. These findings are consistent with several Indian studies reporting increasing overweight prevalence among adolescents. Unlike some studies showing higher obesity among boys, the present study observed a greater proportion of females.

Nearly half of the students demonstrated good knowledge regarding obesity, yet lifestyle factors such as physical inactivity and transportation methods were significantly associated with obesity, suggesting that knowledge alone may not translate into healthy practices.

5. Summary

The present study assessed the prevalence of obesity and the level of awareness regarding its ill-effects and prevention among high school students in district Hoshiarpur, Punjab.

Out of 620 students, the majority (52.6%) belonged to the age group of 15–17 years and were females (55.3%). Most students preferred a vegetarian diet (82.9%). Fathers of the majority of students were labourers (53.2%) and educated up to matriculation (39.2%), whereas most mothers were housewives (80.0%) with education below matriculation level (37.1%). Nearly half of the students (45.5%) belonged to families with a monthly income below ₹5000, and most resided in rural areas (83.7%). More than half of the students (56.1%) participated in both indoor and outdoor games, and walking was the most common mode of transportation to school (45.5%). A higher proportion of students were enrolled

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in government schools (59.4%) compared to private schools (40.6%).

Regarding nutritional status, 68.5% of students had normal BMI, while 10.8% were overweight and 1.9% were obese. In terms of knowledge, 49.4% of students demonstrated good knowledge regarding the ill-effects of obesity and its prevention.

Statistically significant associations ($p < 0.05$) were observed between obesity status and age, father's occupation, father's education, monthly family income, mode of transportation, and type of school. Knowledge regarding obesity was significantly associated with father's occupation, mother's occupation, parental education, monthly family income, type of games, mode of transportation, and type of school.

6. Limitations

- The study was limited to students aged 12–17 years studying in 9th and 10th standards.
- Findings may not be generalized to younger children or adults.
- The study relied on self-reported data for dietary habits and lifestyle variables.

7. Implications

Implications for Nursing Education
The findings emphasize the need to strengthen obesity-related content in nursing curricula. Nursing education programs should focus on early assessment, prevention strategies, and health promotion activities related to obesity and lifestyle-related disorders.

Implications for Nursing Practice
- Nurses can play a vital role in preventing obesity by educating adolescents about healthy dietary practices, physical activity, and lifestyle modification.
- At the primary level, nurses can screen children for obesity and initiate preventive interventions.
- At the secondary level, nurses can implement interventions such as exercise regimens, dietary counselling, sleep hygiene, and stress management.
- At the tertiary level, nurses can provide rehabilitative care and referrals for adolescents with obesity-related complications.

Implications for Nursing Administration
- Nurse administrators should organize in-service education and training programs for healthcare personnel dealing with obese children and adolescents.
- Awareness campaigns and school-based health promotion programs should be planned and implemented to prevent childhood obesity.

Implications for Nursing Research
Nurses should be encouraged to conduct large-scale studies to assess obesity prevalence and awareness among adolescents. The present findings provide a basis for further experimental and interventional research.

8. Recommendations

- Similar studies may be conducted with a larger sample size for better generalization.
- Experimental studies can be undertaken to evaluate the effectiveness of obesity prevention programs.
- Comparative studies may be conducted among urban and rural students.
- Studies can be extended to preschool children and adults.

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