

A Study to assess the prevalence of obesity and sedentary life style behaviour among adolescents in selected schools at Bangalore

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Abstract

Background and Objectives: Adolescent obesity is an emerging public health concern, particularly in urban areas where lifestyle changes, increased screen time, and reduced physical activity contribute to sedentary behaviour. Such behaviours increase the risk of overweight and obesity during adolescence. This study aimed to assess the prevalence of obesity and sedentary lifestyle behaviour among adolescents aged 13–19 years in selected urban schools in Bangalore and to examine their association with selected socio-demographic factors.

Methods: A descriptive cross-sectional study was conducted among 100 adolescents from selected urban schools in Bangalore using an appropriate sampling technique. Data were collected using a socio-demographic questionnaire, a sedentary lifestyle behaviour scale, and anthropometric measurements to calculate Body Mass Index (BMI). Descriptive statistics

and inferential tests, including chi-square and Student’s *t*-test, were used for data analysis.

Results: Among the adolescents, 14% were underweight, 54% had normal BMI, 18% were overweight, and 14% were obese. Most respondents (64%) showed moderate sedentary behaviour, while 36% had high sedentary behaviour. Screen-based activities contributed the highest sedentary scores. Boys and older adolescents reported significantly higher sedentary behaviour ($p < 0.05$). Sedentary behaviour was significantly associated with class, type of school, mode of transport, family type, and father’s occupation.

Conclusions: A considerable proportion of adolescents demonstrate sedentary lifestyles and are at risk of overweight and obesity. School-based strategies promoting physical activity are important to reduce sedentary behaviour and improve adolescent health.

Keywords: Obesity, Sedentary Life Style Behaviour, BMI, Adolescent.

Introduction

Adolescent obesity has become an important public health concern worldwide, especially in urban areas where lifestyle patterns are changing rapidly. Increased use of digital devices, reduced physical activity, and longer periods of sitting have contributed to more sedentary behaviours among adolescents. These lifestyle changes can increase the risk of overweight and obesity and may lead to serious health problems later in life, including cardiovascular and metabolic diseases.

Adolescence is a crucial stage for developing long-term health habits. During this period, behaviours related to physical activity, screen time, and daily routines are established and often continue into adulthood. Urban environments, with easy access to technology and motorized transportation, may further encourage sedentary lifestyles among school-going adolescents.

In India, several studies have reported a rising trend of obesity among adolescents; however, evidence on the relationship between sedentary lifestyle behaviours and obesity in urban school settings remains limited. Understanding these patterns is important for planning effective health promotion strategies.

Therefore, the present study was conducted to assess the prevalence of obesity and sedentary lifestyle behaviour among adolescents aged 13–19 years in selected urban schools in Bangalore and to examine their association with selected socio-demographic variables.

Materials and Methods

Study Design: This study used a descriptive cross-sectional design to determine the prevalence of obesity and sedentary lifestyle behaviour among adolescents and to examine their relationship with selected socio-demographic factors.

Study Setting and Population: The study was carried out in selected urban schools in Bangalore, Karnataka.

The participants included adolescents aged between 13 and 19 years who were studying in these schools during the period of data collection.

Sample Size and Sampling Technique: A total of 100 adolescents participated in the study. The participants were selected from the chosen schools using an appropriate sampling method. Students who were present at the time of data collection and agreed to participate were included.

Inclusion and Exclusion Criteria

Adolescents aged 13–19 years studying in the selected schools and willing to participate were included in the study. Students who were absent during data collection or those with known medical conditions that could affect body weight were excluded.

Data Collection Tools

Data were gathered using three instruments. A structured socio-demographic questionnaire was used to collect information related to age, gender, class, school type, family type, and parents' education and occupation. A sedentary lifestyle behaviour scale was used to measure behaviours such as screen use, prolonged sitting, avoidance of physical activity, and transportation-related inactivity. Anthropometric measurements including height and weight were recorded using standard procedures to calculate Body Mass Index (BMI), which was used to classify participants into underweight, normal, overweight, or obese categories.

Data Collection Procedure

Prior permission was obtained from the school authorities before conducting the study. The purpose of the study was explained to the students, and consent was obtained. Questionnaires were administered in the classroom, and height and weight were measured using standard equipment.

Data Analysis

The collected data were organised and analysed using descriptive statistics such as frequency, percentage, mean, and standard deviation. Inferential statistical tests, including the chi-square test and Student's *t*-test, were used to determine associations between variables. A *p* value of less than 0.05 was considered statistically significant.

Ethical Considerations

Permission was obtained from the concerned authorities before the study was conducted. Participation was voluntary, and confidentiality of the participants' information was ensured throughout the study.

Results And Discussion

Section: I Socio-Demographic and Family Characteristics of Respondents

The study involved 100 adolescents from selected urban schools in Bangalore. Most participants (60%) were aged 13–15 years, while the remaining 40% were between 16 and 19 years. Boys and girls were equally represented in the sample. In terms of education level, 60% of the adolescents were studying in classes 7th–10th and 40% were in classes 11th–12th. Participants were drawn from different types of schools, including private (46%), government (30%), and aided institutions (24%). With regard to transportation to school, 30% of the students reported walking, another 30% used bicycles, 28% travelled by public transport, and 12% used private transport. Family background showed that nearly half of the adolescents (46%) belonged to nuclear families, while 30% were from joint families and 24% from extended families. Parental education levels indicated that about one-third of fathers (34%) and mothers (34%) had completed secondary education, and a notable proportion of fathers (32%) and mothers (26%) were graduates. Concerning occupation, 38% of fathers were

employed in private sector jobs, 26% worked in government services, 20% were daily wage workers, and 16% were self-employed, whereas the majority of mothers (96%) were homemakers.

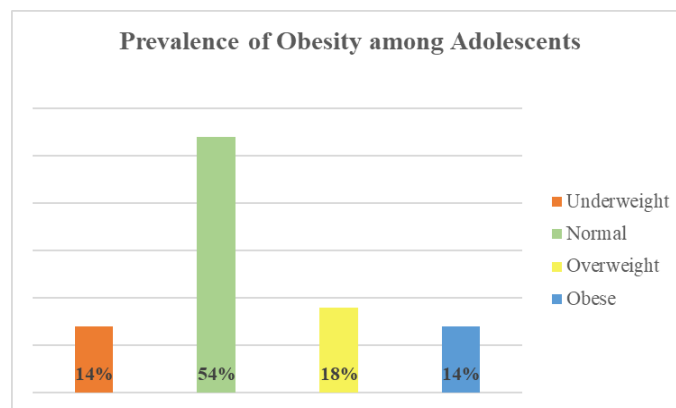
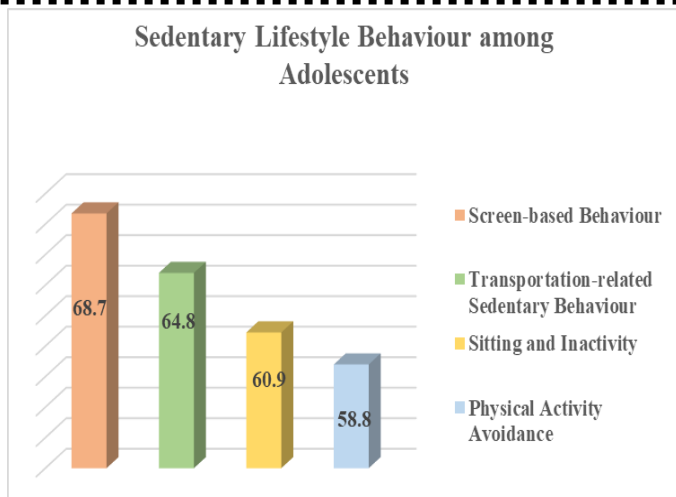


Figure 1: Prevalence of Obesity among Adolescents

The figure 1 depicts that, the body Mass Index (BMI) classification revealed that 14% of adolescents were underweight, 54% had normal BMI, 18% were overweight, and 14% were obese. When BMI was compared by gender, overweight and obesity were slightly higher among boys compared to girls, and the association between gender and BMI was found to be statistically significant ($\chi^2 = 12.62, p < 0.05$). Similarly, BMI distribution differed across age groups, with younger adolescents showing higher proportions of overweight and obesity compared to older adolescents. The association between age group and BMI was also statistically significant ($\chi^2 = 8.60, p < 0.05$). These findings highlight that a considerable proportion of adolescents are already experiencing unhealthy weight conditions during their school years.



respondents had low sedentary behaviour. The majority of adolescents (64%) showed moderate sedentary behaviour, while 36% demonstrated high sedentary behaviour. Aspect-wise analysis revealed that screen-based behaviour had the highest mean score (68.7%), indicating that adolescents spend a considerable amount of time using electronic devices such as mobile phones, computers, and television. Transportation-related sedentary behaviour (64.8%), sitting and inactivity (60.9%), and physical activity avoidance (58.8%) also contributed to overall sedentary behaviour. The overall mean sedentary behaviour score was 63.6 ± 11.0 , suggesting that most adolescents engage in moderate levels of sedentary activities.

Figure 2: Sedentary Lifestyle Behaviour among Adolescents

The figure 2 depicts that, the assessment of sedentary lifestyle behaviour indicated that none of the

Section: B: Table 1: Association between Sedentary Behaviour and Selected Variables

n=100

Demographic Variables	Category	Sample	Moderate		High		χ^2 Value	P Value
			N	%	N	%		
Class	7th–9 th	60	46	76.7	14	23.3	10.44*	0.001
	10th–12 th	40	18	45.0	22	55.0		
School	Government	30	12	40.0	18	60.0	15.50*	0.002
	Private	46	30	65.2	16	34.8		
	Aided	24	22	91.7	2	8.3		
Mode of Transport	Walking	30	16	53.3	14	46.7	10.60*	0.014
	Bicycle	30	26	86.7	4	13.3		
	Public	28	14	50.0	14	50.0		
	Private	12	8	66.7	4	33.3		
Type of Family	Nuclear	46	38	82.6	8	17.4	13.60*	0.001
	Joint	30	16	53.3	14	46.7		
	Extended	24	10	41.7	14	58.3		
Education of Father	Primary	10	10	100.0	0	0.0	6.80 NS	0.078
	Secondary	34	22	64.7	12	35.3		
	Higher	24	14	58.3	10	41.7		
	Graduate	32	18	56.3	14	43.8		
Education of Mother	Primary	10	4	40.0	6	60.0	9.52 NS	0.073

	Secondary	34	26	76.5	8	23.5		
	Higher	30	22	73.3	8	26.7		
	Graduate	26	12	46.2	14	53.8		
Occupation of Father	Government	26	14	53.8	12	46.2	23.30*	0.000
	Private	38	26	68.4	12	31.6		
	Self employed	16	4	25.0	12	75.0		
	Daily wages	20	20	100.0	0	0.0		
Occupation of Mother	Others	4	2	50.0	2	50.0	0.36 NS	0.548
	Home maker	96	62	64.6	34	35.4		

The above table shows that, the significant differences in sedentary behaviour were observed based on gender and age group. Boys reported higher sedentary behaviour scores (66.8 ± 10.1) compared to girls (60.7 ± 11.3), and the difference was statistically significant ($t = 2.01, p < 0.05$). Similarly, older adolescents (16–19 years) had higher sedentary behaviour scores than younger

adolescents (13–15 years), indicating that sedentary habits tend to increase with age. Further analysis showed significant associations between sedentary behaviour and socio-demographic variables such as class, type of school, mode of transport, family type, and father’s occupation.

Table 2- Association between Obesity and Socio-Demographic Variables, n=100

Demographic Variables	Category	Sample	Malnourished		Normal		Obese		χ^2 Value	P Value
			N	%	N	%	N	%		
Class	7th–10th	60	14	23.3	24	40.0	22	36.7	15.80*	P<0.05 (5.99)
	11th–12th	40	0	0.0	30	75.0	10	25.0		
School	Government	30	2	6.7	12	40.0	16	53.3	19.18*	P<0.05 (9.49)
	Private	46	6	13.0	24	52.2	16	34.8		
	Aided	24	6	25.0	18	75.0	0	0.0		
Mode of Transport	Walking	30	4	13.3	14	46.7	12	40.0	14.12*	P>0.05 (12.59)
	Bicycle	30	4	13.3	16	53.4	10	33.3		
	Public	28	6	24.1	12	42.9	10	35.7		
	Private	12	0	0.0	12	100	0	0.0		
Type of Family	Nuclear	46	2	4.4	22	47.8	22	47.8	21.86*	P<0.05 (9.49)
	Joint	30	10	33.3	18	60.0	2	6.7		
	Extended	24	2	8.3	14	58.4	8	33.3		
Education of	Primary	10	0	0.0	8	80.0	2	20.0	14.98	P>0.05

Father	Secondary	34	4	11.8	12	35.3	18	52.9	NS	(12.59)
	Higher	24	6	25.0	14	58.3	4	16.7		
	Graduate	32	4	12.5	20	62.5	8	25.0		
Education of Mother	Primary	10	0	0.0	4	40.0	6	60.0	6.82 NS	P>0.05 (12.59)
	Secondary	34	4	11.8	18	52.9	12	35.3		
	Higher	30	6	20.0	18	60.0	6	20.0		
	Graduate	26	4	15.4	14	53.8	8	30.8		
Occupation of Father	Government	26	4	15.4	18	69.2	4	15.4	9.04 NS	P>0.05 (12.59)
	Private	38	6	15.8	20	52.6	12	31.6		
	Self employed	16	0	0.0	8	50.0	8	50.0		
	Daily wages	20	4	20.0	8	40.0	8	40.0		
Occupation of Mother	Others	4	0	0.0	2	50.0	2	50.0	1.02 NS	P>0.05 (5.99)
	Home maker	96	14	14.6	52	54.2	30	31.3		

The above table depicts that, the relationship between obesity and socio-demographic characteristics. Significant associations were found between obesity and variables such as class, type of school, mode of transport, and family type ($p < 0.05$). However, parental education and occupation did not show statistically significant associations with obesity. These findings suggest that lifestyle-related factors and environmental influences may play a greater role in determining adolescent obesity than parental educational background alone.

Discussion

The findings of the present study indicate that a notable proportion of adolescents demonstrate sedentary lifestyle behaviours and a considerable number are either overweight or obese. Screen-based activities emerged as the most common sedentary behaviour among adolescents, reflecting the growing influence of digital technology on daily routines. Similar trends have been reported in other studies conducted among urban adolescents, where increased screen time and reduced physical activity were identified as key contributors to sedentary lifestyles. The significant association between sedentary behaviour and factors such as age, gender, and

school type highlights the need for targeted interventions within school settings.

Overall, the results emphasize the importance of promoting active lifestyles among adolescents. Encouraging regular physical activity, reducing screen time, and increasing awareness about healthy habits through school-based programmes may help reduce sedentary behaviour and prevent obesity among adolescents.

Conclusions

The findings of this study show that many adolescents studying in urban schools engage in sedentary lifestyle behaviours. A considerable number of students were found to have moderate to high levels of sedentary activity, and a notable proportion were either overweight or obese. Screen-related activities appeared to contribute the most to sedentary behaviour, indicating the growing impact of digital devices on adolescents' daily routines. The study also identified significant relationships between sedentary behaviour and factors such as age, gender, class, type of school, and mode of transport. In addition, obesity showed significant associations with certain socio-demographic characteristics, suggesting that

lifestyle habits and environmental factors together influence adolescents' health status.

These findings highlight the importance of promoting healthier lifestyle habits during adolescence. Schools can play an important role by encouraging regular physical activity, reducing prolonged screen time, and creating greater awareness about healthy behaviours. Strengthening such school-based initiatives may help reduce sedentary habits and support healthier growth and development among adolescents.

Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request. The dataset contains information collected from adolescent participants in selected schools and includes socio-demographic details, sedentary lifestyle behaviour scores, and anthropometric measurements used for BMI classification.

However, the data are not publicly available due to ethical considerations and the need to protect the privacy and confidentiality of the participants. Since the study involved school-going adolescents, sharing identifiable information is restricted in accordance with ethical guidelines and institutional policies. Researchers who wish to access the anonymized data for academic or research purposes may contact the corresponding author with a valid request.

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