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Prevalence and Determinants of Childhood Overweight Among Schoolchildren Aged 9–15 Years in Yavatmal District, Maharashtra

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Abstract: *The global surge in childhood overweight and obesity poses a critical public health challenge, affecting both developed and developing nations. In India, rapid urbanization and lifestyle transitions have contributed to increased consumption of processed foods and decreased physical activity among children. This shift has led to rising rates of overweight and obesity, associated with hypertension, diabetes, and psychological issues, and persisting into adulthood. While extensive research exists in major Indian cities, limited data are available from smaller districts. This study addresses this gap by assessing the prevalence and factors contributing to childhood overweight in Yavatmal district, Maharashtra, which includes diverse socio-economic contexts.*

Keywords: Childhood overweight, Obesity, Yavatmal district.

I. INTRODUCTION

The global increase in childhood overweight and obesity has emerged as a critical public health issue, with rates among children aged 5–19 rising from 4% in 1975 to over 18% in 2016 (WHO, 2020). This trend affects not only developed countries but also low- and middle-income nations like India, where undernutrition and overnutrition coexist. India's rapid urbanization, economic growth, and cultural shifts have led to widespread consumption of processed, calorie-dense foods and reduced physical activity among children (Ranjani et al., 2016). Sedentary behaviors, such as prolonged screen time and decreased outdoor play, have further contributed to the problem (Gupta et al., 2012).Childhood overweight is linked to numerous health risks, including hypertension, insulin resistance, type 2 diabetes, and psychological challenges like low self-esteem and depression. Since overweight children are more likely to remain overweight into adulthood, early detection and preventive measures are essential (Kumar et al., 2017).While previous studies have primarily focused on major urban centers in India, there is limited research examining this issue in smaller districts, rural, and semi-urban areas. Yavatmal district, located in Maharashtra's Vidarbha region, includes a blend of urban and rural communities with diverse socio-economic and cultural factors that could influence children's health behaviors. Despite growing concerns, data from this region remain scarce.This study aims to fill this gap by assessing the prevalence of overweight among schoolchildren aged 9–15 years in Yavatmal. It will explore how dietary habits, physical activity, screen time, and socio-demographic factors contribute to overweight in this population. The research findings will provide essential, context-specific evidence that can guide local authorities, schools, and healthcare professionals in developing targeted public health strategies and school-based interventions. Additionally, the results can inform future research and policy to promote healthier lifestyles among children in similar communities.

II. MATERIAL AND METHODS

A cross-sectional descriptive study was conducted among 270 schoolchildren aged 9–15 years in Yavatmal district, Maharashtra. Multistage sampling included random selection of schools, stratified sampling by age and gender, and simple random sampling of students. Data were collected via structured questionnaires on demographics, diet, physical activity, sedentary behavior, and parental factors. Anthropometric measurements were recorded to calculate BMI, classifying overweight per WHO percentiles. Data were analyzed using SPSS with descriptive statistics, chi-square

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tests, and logistic regression. Ethical approval, institutional permissions, informed consent, and assent were obtained, ensuring confidentiality and adherence to ethical standards throughout the research process.

III. OBSERVATIONS & RESULTS

The data collected during the study. The findings are structured around the study objectives and include information on the socio-demographic characteristics of participants, the prevalence of overweight and obesity, and the associations between overweight and contributing factors such as diet, physical activity, sedentary behavior, and socio-economic background.

3.1 Socio-Demographic Characteristics of Participants

A total of **270 students** aged between 9–15 years participated in the study. Table 3.1 shows the distribution of participants by age and gender.

Table 3.1: Age and Gender Distribution of Participants

Age (Years)	Male (n)	Female (n)	Total (n)	Percentage (%)
9	20	18	38	14.1
10	22	21	43	15.9
11	25	23	48	17.8
12	24	26	50	18.5
13	21	20	41	15.2
14	18	19	37	13.7
15	7	6	13	4.8
Total	**137**	**133**	**270**	**100.0**

3.2 Prevalence of Overweight and Obesity

Based on WHO BMI-for-age growth standards:

Normal weight: 65.2% (n = 176)
Overweight: 22.6% (n = 61)
Obese: 7.4% (n = 20)
Underweight: 4.8% (n = 13)

3.3 Dietary Habits and Overweight Status

Table 3.2: Frequency of Junk Food Consumption and Overweight Prevalence

Junk Food Consumption	Total Students (n)	Overweight/Obese (n)	Prevalence (%)
≥3 times/week	90	45	50.0
1–2 times/week	120	25	20.8
Rarely/Never	60	11	18.3

Chi-square test result: $p < 0.01$ → Statistically significant association between junk food intake and overweight.

3.4 Physical Activity and Screen Time

Table 3.3: Physical Activity vs Overweight

Daily Physical Activity	Students (n)	Overweight/Obese (n)	Prevalence (%)
<30 minutes/day	100	42	42.0
30–60 minutes/day	110	24	21.8
>60 minutes/day	60	15	25.0

Table 3.4: Screen Time and Overweight

Screen Time (Daily)	Students (n)	Overweight/Obese (n)	Prevalence (%)
>3 hours	75	35	46.7

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1–3 hours	130	28	21.5
<1 hour	65	7	10.8

Screen time shows a **strong correlation** with overweight status ($p < 0.01$).

3.5 Socio-Economic and Parental Factors

Children from higher-income families showed **greater prevalence of overweight** (30.4%) compared to those from lower-income groups (18.2%).

Parental education level (particularly mother's education) was significantly associated with child's overweight status ($p < 0.05$).

3.6 Summary of Key Findings

The overall **prevalence of overweight** was 22.6%, and obesity was 7.4%.

Overweight was more common among students with:

High junk food intake.

Low physical activity.

High screen time.

Higher socio-economic background.

Statistically significant associations were observed between overweight and dietary habits, screen time, physical activity, and parental education.

IV. DISCUSSION

This study found that 22.6% of children were overweight and 7.4% obese, indicating nearly one-third of participants exceeded normal BMI, consistent with findings from Gupta et al. (2012) and Ranjani et al. (2016). Frequent consumption of junk food was strongly linked to excess weight, supporting Singh et al. (2019), who reported similar dietary influences among Indian adolescents. Low physical activity and prolonged screen time emerged as major contributors, aligning with research by Misra et al. (2011) and Subba et al. (2014).

Socio-demographic factors also influenced outcomes: higher-income families and higher maternal education were associated with greater overweight prevalence, possibly due to increased access to processed foods and reduced time for home-prepared meals, echoing Patil et al. (2020). These results are comparable to trends observed in semi-urban Maharashtra (Meshram et al., 2018), highlighting that rural and semi-urban areas are equally affected by lifestyle shifts.

The study underscores the need for early interventions including nutrition education, regulation of unhealthy foods in schools, and promotion of daily physical activity. Limitations include the cross-sectional design, reliance on self-reported behavior, and limited generalizability. Future research should include clinical markers and longitudinal data to strengthen causal inferences and guide targeted public health strategies.

V. CONCLUSION

The study highlights a growing prevalence of overweight among school-aged children in Yavatmal and identifies key modifiable risk factors. The findings support existing literature and reinforce the need for community-based strategies to combat childhood overweight at an early stage.

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