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ORIGINAL RESEARCH

Lifestyle patterns and prevalence of overweight and obesity among rural school children of age 6 to 14 years of district Kathua, JKUT

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ABSTRACT

Introduction:Overweight and obesity rates in children in India are rapidly expanding from urban to rural areas as a result of changing lifestyles and economic shifts. In adulthood, the chance of developing chronic diseases such as diabetes, hypertension, etc., will be reduced by effective preventative measures. The present study was conducted among rural school children of age group 6 to 14 years to study the prevalence of childhood overweight and obesity.

Material and methods: The cross-sectional study was conducted among 100 healthy rural school children of age 6 to 14 years during the study period of six months. The research instrument included questions regarding demographics, screen time, physical activity type, height, and weight. The scales were calibrated, and IAP-growth charts were used to calculate BMI. The statistical software statistical package for social sciences (SPSS) 25 version was used to do the statistical analysis.

Results:Out of 100 children 2% were underweight, 76% were normal, 14% were overweight and 8% were obese. Under overweight category 5 (35.7%) were male and 9 (64.3%) were female and under obese category 5 (62.5%) were male and 3 (37.5%) female and results were significant with p value <0.05. in overweight children 2 (14.2%) consume junk 1-2times/week, 7(50%) consume 3-4 times/week and 5 (35.8%) consume 7 times/week and results were statistically significant. Among obese category 1 (12.5%) consume 1-2 times/week, 4 (50%) consume 3-4 times/week and 3 (37.5%) consume 7 times/week. Children who engaged in television viewing or computer gaming for more than two hours daily and less than 3 hours physical activity exhibited a greater propensity for becoming overweight or obesity ($p<0.05$).

Conclusion:Overweight is more common than obesity and has a statistically significant link with a number of factors, indicating the need for public education and the implementation of preventative measures to stop the development of obesity and its associated consequences.

Keywords:Body Mass Index. Children, Obese, Overweight, Rural

INTRODUCTION

A significant alteration in contemporary industrial society is the near absence of physical activity, especially among the middle and upper classes.[1] The prevalence of overweight and obesity has been proliferating globally due to globalization and industrialization.India is experiencing swift economic growth and a nutritional revolution associated with alterations in dietary patterns and physical activity, particularly among children.[2-5] A significant number of youngsters today reside in an obesogenic environment. Recent globalization and urbanization have compelled children from all socioeconomic backgrounds to rely extensively on ultra-processed, calorie-dense, inexpensive, and conveniently accessible foods that are deficient in nutrients.[6]

A meta-analysis of 21 research conducted between 2003 and 2023, involving 186,901 children in India, revealed significant findings about childhood obesity. The aggregated prevalence of childhood obesity was assessed at 8.4%, whilst the prevalence of childhood overweight was estimated at 12.4%.[7]The emergence of online food applications, heightened academic pressures with diminished time for outside activities, increased screen time, augmented disposable income, and the demanding job schedules of parents contribute significantly to the issue.[3,4]

The etiopathogenesis of childhood obesity is multifactorial, and its rising prevalence is linked to

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potential medical complications in adolescence and particularly in adulthood, including hypertension, coronary artery disease, cerebrovascular accidents, type 2 diabetes mellitus, dyslipidemia, gallstones, premature joint degeneration, among others.[8]

Numerous research conducted across India indicate that childhood obesity is of significant concern. The majority of research conducted to date have focused on metropolitan affluent schools, while the trends in rural areas have not been thoroughly examined. Consequently, a study was conducted to examine the prevalence of childhood overweight and obesity, among rural school-aged children in Kathua district, JKUT.

The assessment of the magnitude of this emerging problem is crucial for implementing effective preventive strategies to ensure a healthy transition of children into adults. Hence the present study was conducted among rural school children of age group 6 to 14 years to study the prevalence of childhood overweight and obesity.

MATERIAL AND METHODS

The present cross-sectional study was conducted among rural school children of age 6 to 14 years during the study period of six months. Ethical clearance was taken and consent for performing the study was taken from respected schools.

Through convenient sampling a total of 4 schools from each zone (north, south, east, west) were selected and 100 children of particular age group were selected on the basis of selection criteria. All healthy school-aged children between the ages of 6 and 14 years were included. Any children with chronic illnesses or endocrine disorders, physical and mental defects were excluded from the study.

The students received a pre-designed structured questionnaire containing questions for their responses. The questionnaire was elucidated to the pupils in advance. The assessment encompassed demographic information, annual income, family medical history, dietary practices, exercise levels, screen time, and measurements of weight and height for BMI computation. The socioeconomic status was evaluated using the modified B. G. Prasad classification. Height was measured barefoot in Frankfurt to the closest 0.1 cm using a standard calibrated bar. Weight was assessed without footwear and with little clothes (school uniforms) to the nearest 0.1 kg using a standard portable weighing device, with the scale calibrated to zero before to each session. The body mass index was computed using the formula

BMI = weight (kg) / height (m^2)

and represented on the IAP percentile charts of 2015. A child was classified as obese if their BMI was at or above the 27th percentile of the adult corresponding cut-off, overweight if their BMI was at or above the 23rd percentile, normal if their BMI was between the 5th and 85th percentiles, and underweight if their BMI was below the 5th percentile, with cut-off points particular to the child's age and sex.

Data entry was conducted in a Microsoft Excel spreadsheet. Statistical analysis was conducted utilizing the Statistical Package for the Social Sciences (SPSS) version 22 software. The two-tailed independent Student's t-test was employed to assess the significance of research parameters on a continuous scale comparing two groups (inter-group analysis) regarding metric parameters. The Chi-square/Fisher exact test was employed to assess the importance of research parameters on a categorical scale across two or more groups, utilizing a non-parametric approach for qualitative data analysis. The Fisher exact test is employed when cell samples are exceedingly small. $P<0.05$ was considered as statistically significant.

RESULTS

Out of 100 children 2% were underweight, 76% were normal, 14% were overweight and 8% were obese as shown in figure 1.

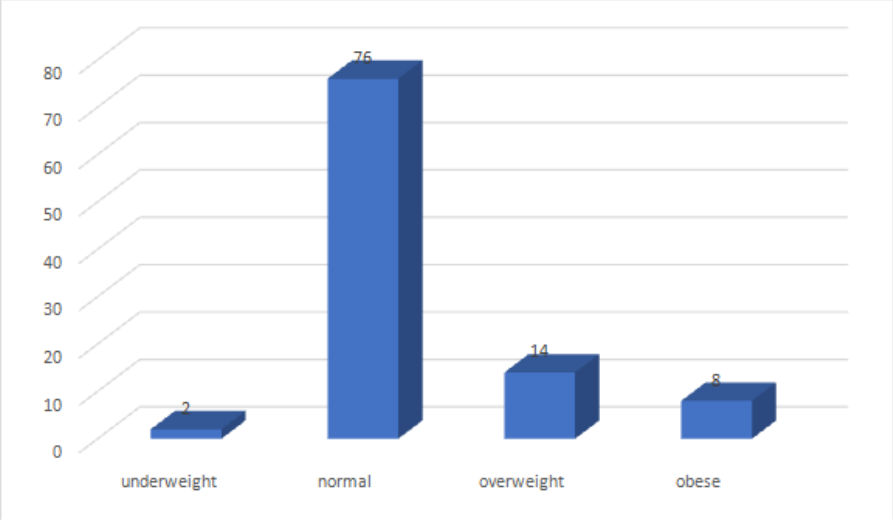

Figure: 1 Prevalence of different BMI among children

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Number of female children was 12 and that of male was 10. Under overweight category 5 (35.7%) were male and 9 (64.3%) were female and under obese category 5 (62.5%) were male and 3 (37.5%) female and results were significant with p value <0.05 as shown in table 1.

Table: 1 Prevalence of Overweight and obese children in relation to gender

Category	Male	Female	P value
Overweight	5 (35.7)	9 (64.3)	0.01
Obese	5 (62.5)	3 (37.5)	0.02
Total	10	12	

When children were divided on the basis of frequency of junk food taken it was found that in overweight children 2 (14.2%) consume junk 1-2times/week, 7(50%) consume 3-4 times/week and 5 (35.8%) consume 7 times/week and results were statistically significant. Among obese category 1 (12.5%) consume 1-2 times/week, 4 (50%) consume 3-4 times/week and 3 (37.5%) consume 7 times/week as shown in table 2.

Table: 2 Association of overweight and obese children in relation to frequency of junk food

Category	1-2 times/week	3-4 times/week	7 times/week	P value
Overweight	2 (14.2)	7 (50)	5 (35.8)	0.001
Obese	1 (12.5)	4 (50)	3 (37.5)	0.001
Total	3	11	8	

Children who engaged in television viewing or computer gaming for more than two hours daily exhibited a greater propensity for becoming overweight or obesity compared to those who participated in these activities for less than two hours daily, with strong statistical significance indicated by p<0.001, as demonstrated in Table 3.

Table: 3 Association of overweight and obese children in relation to screen time

Category	More than 2 hours/day	Less than 2 hours/day	P value
Overweight	9 (64.2)	5 (35.8)	0.001
Obese	7 (87.5)	1 (12.5)	0.001
Total	16	6	

Children who engaged in physical activities for less than three hours daily exhibited a greater propensity for becoming overweight or obesity compared to those who participated in these activities for more than three hours daily, with strong statistical significance indicated by p<0.05, as demonstrated in Table 3.

Table: 4 Association of overweight and obese children in relation to duration of physical activity

Category	Less than 3 hours/day	More than 3 hours/day	P value
Overweight	8 (57.1)	6 (42.9)	0.03
Obese	6 (75)	2 (25)	0.02
Total	14	8	

DISCUSSION

Childhood overweight and obesity has become a significant public health threat, attaining epidemic levels in numerous Asian nations, including India. It is linked to a significant risk of morbidity and mortality due to cardiovascular illnesses and Type 2 diabetes mellitus. Therefore, it is essential to evaluate the incidence of obesity and overweight in children to ascertain the extent of the issue and to devise suitable intervention measures to prevent its continuation into adulthood.[6]

The application of dual X-ray absorptiometry and alternative imaging modalities for mass screening and the identification of children predisposed to obesity-related issues is unfeasible.

Anthropometric indices were highly effective, economical, and efficient instruments for assessing a child's nutritional condition. In our study we divided children on the basis of different BMI categories and it was found that prevalence of overweight was 14% and obese was 8%. This was similar to research conducted in the rural schools of Neelambur village, Coimbatore, by Shanmugam et al, which reported an overall prevalence of overweight and obesity at 8.32% and 4.72%, respectively. [9] The research by Kumar et al in Devanahalli, Bengaluru, indicated that the overall prevalence of overweight and obesity was 3.19% and 2.04%, respectively, demonstrating a higher prevalence of overweight compared to obesity. [10]

In present study under overweight category 5 (35.7%) were male and 9 (64.3%) were female and under obese category 5 (62.5%) were male and 3 (37.5%) female and results were significant with p value <0.05. In a previous study done by Sakamoto et al, the prevalence of overweight and obesity is nearly similar

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between girls and boys, although it is higher among girls in comparison to data from other developing countries. This disparity may be attributed to youngsters being in the preadolescent phase, a period characterised by rapid linear growth and fat accumulation. Boys often accumulate a greater proportion of fat-free mass compared to fat mass, whereas girls generally accumulate more fat mass than fat-free mass.

Among overweight children, 2 (14.2%) consume junk food 1-2 times per week, 7 (50%) consume it 3-4 times per week, and 5 (35.8%) consume it 7 times per week, with results being statistically significant. Among the obese group 1, 12.5% consume 1-2 times per week, 50% consume 3-4 times per week, and 37.5% consume 7 times per week, as illustrated. In a study done by Singh P et al, Children in rural areas now a days have a strong affinity for junk food, which is extensively marketed and readily accessible today. Lifestyle patterns such as the frequency of fast-food consumptiondemonstrated a correlation with the prevalence of overweight individuals.[11]

Children who spent over two hours daily on television viewing or computer gaming demonstrated a higher likelihood of becoming overweight or obese than those who engaged in these activities for less than two hours daily, with significant statistical relevance. A comparable study conducted by Fang et al., utilising a meta-analysis of around 16 papers, demonstrated a favourable association.[12] A study conducted by Anderson et al. involving children aged 16 to 18 years in the USA demonstrated a positive association.[13]

Children who participated in physical activities for fewer than three hours daily demonstrated a higher likelihood of becoming overweight or obese compared to those who engaged in such activities for more than three hours daily, with robust statistical significance. A research review by Stavidrou et al. indicated that alterations in children's eating patterns, characterised by higher intake of fried foods, snacking, and sedentary behaviour due to enforced home confinement, had led to a heightened prevalence of obesity in this population.[14] A comparable study conducted in Peshawar, Pakistan, revealed a significant prevalence of obesity and overweight among students at private schools, emphasising its correlation with reduced physical activity and additional factors such as television viewing, media influence, and insufficient dietary regulation by parents.[15]

Limitation to this study is that a comparison between rural and urban populations would have provided a more appropriate interpretation of the increased prevalence; nevertheless, the current study was limited to the rural population only.

CONCLUSION

A greater incidence of overweight was noted among the children. The study highlighted food patterns, increased screen time, and reduced physical activity as the primary factors influencing the obesity and overweight status of school children. Given the concerning rise in childhood obesity, all primary health care practitioners should implement preventive strategies to address this issue promptly. Schools should adopt early detection of issues through BMI screening and assessment of sedentary behaviour and dietary practices among students. Parents and educators must be informed about obesity prevention measures and suitable lifestyle modifications to facilitate a healthy transition for children into adulthood.

REFERENCES

1. Choudhary S, Dua S, Dhall M, Kapoor S. Lifestyle Patterns and Prevalence of Overweight and Obesity among Rural School Children of Age 6 to 9 Years of District Una, Himachal Pradesh. Online J Health Allied Scs. 2016;15(4):1.
2. Gupta N, Goel K, Shah P, Misra A. Childhood obesity in developing countries: Epidemiology, determinants, and prevention. Endocr Rev.2012;33:48-70.
3. Bhardwaj S, Misra A, Khurana L, Gulati S, Shah P, Vikram NK. Childhood obesity in Asian Indians: A burgeoning cause of insulin resistance, diabetes and sub-clinical inflammation. Asia Pac J Clin Nutr 2008;17(S1):172-5.
4. Bhargava Vyasa. Obesity in India -The Omnipresent Influence Research. J PharmacolPharmacodyn 2013;5: 220-6.
5. Jain Taran S, Ojha S, Kosta S, Kumar R. Prevalence of obesity in school children and its association with parental obesity in central India. Int J Child Adolesc Health 2016;9:377-85
6. Thomas UM, Narayanappa D, Sujatha MS. Prevalence of overweight and obesity among school children in Mysuru, Karnataka. J Family Med Prim Care 2021;10:2788-92.
7. Singh S, Awasthi S, Kapoor V, Mishra P. Childhood obesity in India: A two-decade meta-analysis of prevalence and socioeconomic correlates. Clinical Epidemiology and Global Health. 2023 Aug 29:101390.
8. Madanika SV, Kotyal MB, Kumar GM, Anuradha S. Prevalence of overweight and obesity among rural school children aged between 6 years to 16 years. Int J ContempPediatr2022;9:608-13.
9. Shanmugam K, Ravishankar SL, Kannappan S, Chacko TV. Prevalence of overweight and obesity among children aged 5–15 years in a rural school in Coimbatore. Int J Med Sci Public Health. 2016;5:2186-89.
10. Kumar DR, Rohith M, Philip G. A study on prevalence of overweight and obesity amongst school children of Bangalore. Int J Community Med Public Health. 2019;6:159-63.
11. Singh P, Singh SK, Singh Verma N, Bhattacharya S, Mahdi AA, Anjum B, Mishra S, Manar MK, Khare R. Effects of Lifestyle habits on the prevalence of obesity among school going adolescents residing in urban Lucknow. International Journal of Medical Science and Public Health. 2014;3(10):1293-6.
12. Fang K, Mu M, Liu K, He Y. Screen time and childhood overweight/obesity: A systematic review Madanika SV et al. Int J ContempPediatr. 2022 Jun;9(6):608-613

DOI: 10.69605/ijlbpr_14.2.2025.165

13. Andersen RE. Relationship of Physical activity & Television watching with body weight and level of fitness among children. JAMA. 1998;12:2179-291.
14. Stavridou A, Kapsali E, Panagouli E, Thirios A, Polychronis K, Bacopoulou F, et al. Obesity in children and adolescents during COVID-19 pandemic. Children 2021;8:135.
15. Saleem A. Sedentary lifestyle and dietary factors leading to childhood obesity among children 5-19 years. Northwest Journal of Medical Sciences. 2016;1(1):12.