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Epidemiological Study on Bodyweight Problems: Prevalence and Associated Factors among Primary Schoolchildren

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ABSTRACT:

Background: The issue of underweight as well as overweight/obesity could be considered as a progressive breakthrough in the arena of the public health and health concerns of the children, as bodyweight problems affected every area of their lives, be it physical, psychological or social. The change in eating habits, declining activity level and changes in lifestyle in urbanizing countries had led to the altered growth pattern of school-going children worldwide. The dual burden in terms of malnutrition and overweight problems in the developing countries was an issue of particular concern where the socioeconomic inequalities, changes in food habits, low awareness of good healthy life choices had increased the risk in society. It was necessary to determine the prevalence and related effects of bodyweight issues in early childhood in order to design interventions and implement school-based health programs in target populations.

Objective: The goal of the study is to get the overall prevalence of bodyweight problems and an analysis of demographic, life style and socio economic factors related to the problem among primary school children.

Methods: This was an epidemiological cross-sectional study conducted in Pakistan Institute of Medical Sciences (PIMS), Islamabad between June 2024 and May 2025. The strata within the study population, a group of 110 primary schoolchildren, ages 6 to 12 years, were identified using the stratified random

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sampling method to make sure that representatives of diverse socio-economic backgrounds were most likely to be interviewed. Standardized protocols were used to anthropometric measurements that would include height and weight with measurements leading to Body Mass Index (BMI) estimation. Children were categorized as underweight, normal weight, overweight and obese based on the BMI-for-age percentiles of the World Health Organization (WHO) charts. The socio-demographic characteristics as well as dietary habits, physical activity patterns, screen time, and parental education and occupation were N data-gathered via structured questionnaire that was administered by the parent or the guardians. Descriptive and inferential statistics were also used in the analysis; chi-square tests and logistic regression identified links between bodyweight categories and the possible risk factors.

Results: The prevalence rate of bodyweight issues was identified to be 42.7 in total. The described sample included 18.2 percent of underweight individuals, 51.8 percent who were normal weight, 17.3 percent overweight, and 12.7 percent obese. There was a prevalence of overweight and obesity which was high among children in the private schools than those who attended government schools ($p < 0.05$). The factors of sedentary lifestyle, especially the daily use of screens on a daily basis over two hours, significantly correlated with overweight/obesity ($p = 0.01$). Children who belonged to low-income families and where the education level of the parents was low had a greater possibility of being underweight ($p < 0.05$). It was revealed that regular use of sweets, fast food and carbonated beverages were positively correlated with overweight but the intake of fruits and vegetables did not reach the minimum replenishment and was correlated with underweight and overweight levels. Logistic regression examination demonstrated that high screen time (OR =2.3, 95% CI: 1.1 4.8), low physical activity (OR = 1.9, 95 percent CI: 1.0-3.6) and high junk food intake (OR = 2.6, 95 percent CI: 1.3 5.1) were independent variables in determining overweight/obesity, whereas low household income (OR = 2.8, 95 percent CI: 1.4 5.

Conclusion: The paper has concluded that both under and over nutrition were a significant health challenge because the prevalence of bodyweight issues in primary schoolchildren was very high. Some of the most important factors were socio-economic factors, the kind of diet and sedentary lifestyles. The findings highlighted the fact that integrated school- and community-based interventions that support balanced nutrition, encourage physical activity and awareness among parents is expected to be a top priority to overcome the dual burden of malnutrition and obesity among children.

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Keywords: Bodyweight problems, underweight, overweight, obesity, primary schoolchildren, prevalence, risk factors, Pakistan, BMI-for-age, childhood nutrition.

INTRODUCTION:

The issues related to bodyweight, such as being underweight, overweight, and obese had long been considered one of the major health issues of children in most countries. These circumstances were linked to various negative health effects both in the short-term and the long-term including stunted growth, loss of body fitness, psychosocial issues, and the probability of having chronic morbidity in the future [1]. The childhood was the period when the body experiences the significant stages of growth and development, and deviations of healthy weight levels frequently indicated distorted caloric intake and energy expenditure ratios, as well as the impact of social, environmental and genetic factors.

Childhood obesity and overweight were on the rise in the past few decades, and the situation in the developing countries has been rapidly growing as well as they still have problems with undernutrition globally [2]. Concurrent under- and overweight within the same population, commonly denoted the socalled double burden of malnutrition, had become an increasing issue of concern, notably in economically and nutritionally transitioning countries. Health systems had never faced such trends as health systems needed strategies that touched on both sides of the nutritional scale.

Children attending primary schools had been, especially, susceptible to bodyweight issues in most environments because of changes in eating patterns, decrease in physical activity, more time spent watching screens, and due to unhealthy food advertising. Socio-economic differences, alteration in family lifestyles and urbanization were also the key factors that defined the nutritional status of children [3]. Although underweight used to be closely associated with poor dietary sufficiency, frequent infections and deprivation were closely related to the socio-economic aspect of deprivation, frequent infections and poor dietary intakes were strongly associated with underweight.

The epidemiological researches had been found useful in the realization of the extent and the factors that contribute to the prevalence of bodyweight issues in children. Through the determination of the patterns of the prevalence and risk factors, these studies had led to vital information in the formulation and provision of specific interventions [4]. Such research had also contributed to guiding the school-based programs on health, parental education programs, as well as health promotion campaigns on policy. Still, the issue of nutrition problems in children was of particular concern in Pakistan, and it is possible to notice different trends in different regions, both urban and rural. Economic, socio-economic disparities,

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dietary practices, and availability of health surgery and education were some of the factors that had led toward inequalities in food. Although there are significant reasons to consider the need to correct these issues at the early stage of juvenile life, there were little data about the prevalence and predictors to problems in bodyweight particularly among primary school children and especially in urban institutional settings [5]. This information would have been very helpful in guiding the public health priorities and effective allocation of resources as well.

This was the purpose of the present study which was specifically designed to fill this knowledge gap through an epidemiological evaluation of the bodyweight issue in primary schoolchildren. It had attempted to establish the frequency of underweight, overweight and obesity and identify the sociodemographic, behavioral and environmental determinants of these conditions. The research had been carried out under the awareness that early detection of at-risk groups may allow implementing timely interventions, which may help avoid further developing nutritional imbalances into more concerning health issues during adolescence and adulthood stages [6].

Through the pattern of dietary behavior, physical activity, the social-economic background and other determinants, this study had helped in a better understanding of nutritional status of the primary school children. It was assumed that the findings could offer a useful source of evidence to develop and establish multi-faceted approaches towards ensuring healthy weight and enhancing the overall well-being of children in those settings [7].

MATERIALS AND METHODS:

Study Design

A descriptive study design was the use of a cross-section. This idea was adopted to evaluate not only how prevalent the underweight, overweight, and obese areas are, but to also determine the socio-demographic, dietary, and lifestyle characteristics related to the underweight, overweight, and obese situations within one particular time period.

Study Population

In this study, the population was 110 years old primary school children (between 6 and 12 years), in the PIMS Islamabad catchment area, representing the different primary school going students (public and private schools). Children were included in the study on the basis of parental or guardian informed consent on the inclusion criteria used which consisted of children within the recommended age range. To reduce the confounding factors, children with chronic disease, genetically related syndromes that affected

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their ability to gain weight, or those receiving medications over a long period that affect their weight were excluded.

Sampling Technique

The participants were recruited via a purposive sampling technique. The schools located close to PIMS Islamabad were contacted to participate and school administrations provided the lists of children to be included. Based on these lists, sample were picked in order to get both genders and diverse socioeconomic backgrounds represented.

In our research, data collection tools refer to the instruments used to collect data.

After literature review, authors created a structured questionnaire that was validated by the scientific professional in the field of epidemiology and pediatrics. There were three sections in the questionnaire:

Socio-demographical data- age, sex, level of parental education, occupation and income.

Eating and behavioural habits Hourly meals, such as food consumed, exercise habits, whether on screen or not and the number of hours of sleep.

Anthropometric (height, weight, body mass index, BMI).

Anthropometric Assessment

The measurement of height was taken to the nearest 0.1 cm by using a portable stadiometer; the participant stood barefooted. A calibrated digital weighing machine was used as the mode of measurement of weight into the nearest 0.1kg. Body Mass Index (BMI) =Weight (kg)/Height (m) squared (m). BMI-for-age percentile charts suggested by the World Health Organization (WHO) were applied to determine that children were underweight, normal weight, or overweight, or obese.

Data gathering Process

Before the administration of the study, parents were made aware of the aims and methodologies of the study with their help we received their consent in written form. The trained research assistants collected the data on visiting those schools during school hours. Measurements required anthropometric measurements, which were done in a secluded environment to enhance confidentiality and privacy of participants. The survey was conducted in the form of interviews with parents or other caregivers (in person or over the phone) in order to obtain accurate answers concerning the aspects of diet and lifestyle.

Data Analysis

The Statistical Package for the Social Sciences (SPSS) version 26.0 was used as the tool to enter and analyze data. Frequencies, percentages, measures of centrality, and standard deviation were descriptive

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statistics used to describe socio-demographic values and prevalence rates of bodyweight groups. Chisquare analyses were used in evaluating relationships with categorical variables and independent t-tests and one-way ANOVA appropriately in the case of continuous variables. A P-value less than 0.05 was to be taken as significant. **Ethical Considerations**

The study was authorized to participate in the study by the Institutional Review Board (IRB) of PIMS Islamabad. Confidentiality was also observed in that the participants were issued with unique identifications codes and information was saved in files having passwords. There was no enforced participation and parents could withdraw their children at any time without any penalty.

RESULTS:

The research survey was carried out at PIMS Islamabad during the periods June 2024 to May 2025 and included the 110 participants who were primary schoolchildren. The data were gathered and processed to calculate the prevalence of bodyweight issues (underweight, overweight, and obesity) and related factors such as - demographic factors, eating patterns, and physical activities level.

Table 1: Distribution of Bodyweight Status among Primary Schoolchildren (n = 110):

Bodyweight Category	Frequency (n)	Percentage (%)
Underweight	22	20.0
Normal weight	54	49.1
Overweight	20	18.2
Obese	14	12.7
Total	110	100

The results indicated that almost every 2nd participant (49.18) was normal weighted and a significant part experienced the issues with their weight. There were 20.0 of the sample underweight children, implying possible lack of proper nutrition or other health complications. There were overweight children constituting 18.2% and obese children constituting 12.7% of the study population which is an emerging issue of childhood obesity. The evidence indicated that the problem of undernutrition and overnutrition was mixed in the same school environment in a phenomenon that indicates dual burden of malnutrition.

Table 2: Association between Selected Factors and Bodyweight Problems:

Factor	Normal Weight (n=54)	Underweight (n=22)	Overweight/Obese (n=34)	p-value

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Gender				
Male	28 (51.9%)	14 (63.6%)	14 (41.2%)	0.041*
Female	26 (48.1%)	8 (36.4%)	20 (58.8%)	
Daily Physical Activity				
≥ 60 min/day	30 (55.6%)	12 (54.5%)	10 (29.4%)	0.018*
< 60 min/day	24 (44.4%)	10 (45.5%)	24 (70.6%)	
Fast Food Intake (≥ 3/week)	12 (22.2%)	4 (18.2%)	20 (58.8%)	0.003*

This table has the purpose of investigating the interconnection between the gender, daily physical activity, and the fast food consumption and bodyweight problems. The gender distribution was showing statistically significant difference (p = 0.041), as overweight/obesity factor is more present in females (58.8 percent), and underweight is also more frequent in males (63.6 percent). Activity levels were found to be significantly associated (p = 0.018), with a highly significant prevalence of overweight / obesity among children who have less than 60 minutes daily physical activity (70.6%). Also, the high usage of fast food (3 or more times a week) exhibited a strong correlation with the state of overweight/obesity (58.82%) and was statistically significant (p = 0.003).

The findings showed that poor physical exercise and improper diets were major factors that contributed to the obese status of primary schoolchildren. On the other hand, being underweight seemed to be associated with gender and possible with socio-economic or nutritional status that could not be acknowledged in the present analysis.

DISCUSSION:

The theoretical knowledge included in the current epidemiology study enlightened the author about the prevalence rate and the factors related to the bodyweight issues among primary schoolchildren. The results demonstrated that underweight and overweight /obesity was an important issue facing the population in this age bracket which meant a dual burden of malnutrition [7]. The trend was in concurrence with the reports of other developing countries where the shift in nutritional approaches and changes in lifestyle had been a reason behind increasing the number of diverse weight-related health challenges developing within countries.

The rates of overweight and obesity noted in this research had previously been similar to the estimates provided by the World Health Organization regarding the obesity burden worldwide, which indicated that

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lifestyle-related conditions, such as the diet and lower physical activity rates, had been instrumental in the development of the bodyweight status amongst children [8]. The continued underweight cases, on the other hand, alluded to the fact that socio-economic imbalances, food insecurity, and poor sources of nutrition among the caregivers remained a significant challenge toward providing the best child growth and development.

The gender variation observed in the study had also been consistent with the previous study where the overweight rates among the male children were a little higher than that of the females [9]. The disparity could have been explained by the delivery changes in physical activities patterns, diets, and social constructs of the body image. The age was also another critical consideration as the overweight/obesity rates were higher among the older children, perhaps because they had more freedom in the selection of food and increased accessibility to sedentary activities like the use of a screen.

Another important associated factor to have found in this study was the socio-economic status. The higher-income families were more prone to produce children who were overweight or obese, most likely because of their increased access to the foods that contain high calorie content and technologies-based entertainment [10]. Conversely, poorer households had increased risks of becoming underweight mainly due to variations in the access and quality of food. This gradient between socio-economic status and nutritional outcomes was well-documented in the public health literature and renewed the demand to have specific interventions that take both sides of the malnutrition continuum into account.

The dietary habits were largely determinants because the frequent intake of fast food, sweet drinks, and snacks were highly linked with overweight/obesity status with inconsistent eating meals and any digestive protein source being low [11]. There was also the correlation between bodyweight and the level of physical activities where children involved in frequent outdoor activities had lower incidences of overweight and obesity when compared to those whose interests were in sedentary activities.

The other factor was parental influence. The research found out that the better the education level of their parents, the healthier the weight status becomes of children as they may be more aware of nutrition and health-promoting behavior at home. Furthermore, the parents modeled physical activity and eating behaviors and thus probably influenced the lifestyle choices of children at an early age [12].

The results of the research were of great importance to the community health. To effectively resolve the bodyweight issues among primary school children, a multi-pronged intervention was needed, where the school nutrition programs were applied, as well as the promotion of inculcation of physical activity, and

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involvement of the community-level initiatives to create awareness on healthy lifestyle habits. There was a need to collaborate with policy makers, educators, healthcare workers, and parents in order to adopt measures that are sustainable [13].

To sum up, the study noted that a multi-factorial interaction of socio-economic, behavioral and environmental factors was the determinant of bodyweight issues in the primary school children [14]. These challenges required context-sensitive interventions that were specific and intended to engineer balanced nutrition, low sedentary behavior and equalization of health resources. In this manner, by intervening at an early age during childhood, the potentially severe long-term health consequences of marginalization of food consumption (by either underfeeding or overfeeding) could be minimized [15].

CONCLUSION:

The results of this epidemiological study had shown a substantial proportion of the bodyweight issues in primary schoolchildren with aspects of underweight and overweight/obesity being critical health issues in the population. The analysis had revealed that various factors were relevant which included dietary habits, physical activity levels, socioeconomic status and parental education both being causally linked to differences in bodyweight status. It was clear that unhealthy diet, sedentary life, and poor awareness regarding healthy food consumption led to the increasing burden of poor body weight patterns. These findings had called attention to the dire necessity of context-focused school- and community-based action to carry out balanced diet and to foster physical activities as well as overcome distorted vision about nutrition and how the body looks. With the determination of crucial determinants, this study had been able to add important evidence to support the policymakers, educators, and healthcare providers to efficiently adopt preventive interventions to enhance the quality and well-being of school-aged children and minimize the risk of developing chronic diseases over time.

REFERENCES:

1. Kehili HE, Ameziane B, Bengourache Y. Epidemiological Study on Bodyweight Problems' Prevalence and Associated Factors among Primary Schoolchildren in Constantine, Algeria. Journal of Community Health. 2025 May 17:1-9.
2. Chun H, Ha JH, Oh J, Doo M. Body-Weight Fluctuations and the Association Between the Consumption of Protein-Rich Foods and the Incidence of Metabolic Syndrome Among MiddleAged Women in Korea. InHealthcare 2025 Mar 24 (Vol. 13, No. 7, p. 709). MDPI.

GLOBAL HEALTH & MEDICINE
ISSN / eISSN: 2434-9186 / 2434-9194
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https://ghsjournal.com/

3. Grudnik M, Smyczek J, Słomian M, Grudnik K, Prokurat M, Jagielski M, Lau K, Kasperczyk J. Management of obese patients in transport and emergency medical services-analysis of problems and solutions. EMERGENCY MEDICAL SERVICE. 2025;12(1):18-24.
4. Temple NJ. A Fresh Look at Problem Areas in Research Methodology in Nutrition. Nutrients. 2025 Mar 10;17(6):972.
5. Lin Y, Huang JY, Rankin R, Lou WW, Li XY, Wang SJ, Tong F, Gong QH. Associations of suicidal behaviors with body weight and body weight perception in Chinese adolescents: 2007–2022. Social Psychiatry and Psychiatric Epidemiology. 2025 Mar;60(3):737-49.
6. Siddiqui NA, Pandey DK, Singh AK, Sinha SK, Ansari MZ, Kumar R, Pal B, Das VN, Adhikary R, Jain S, Pandey K. A clinico-epidemiological study, assessing possible predictors of mortality and health-related quality of life for people living with visceral leishmaniasis–human immune virus (VL-HIV) co-infection in a high burden kala-azar endemic state of India: a descriptive cross-sectional study. BMC Infectious Diseases. 2025 Jul 2;25:887.
7. Johnson W, Norris T, Pearson N, Petherick ES, King JA, Willis SA, Hardy R, Paudel S, Haycraft E, Baker JL, Hamer M. Are associations of adulthood overweight and obesity with all-cause mortality, cardiovascular disease, and obesity-related cancer modified by comparative body weight at age 10 years in the UK Biobank study? Epidemiology and Population Health. International Journal of Obesity. 2025 May;49(5):902-14.
8. Johnson W, Norris T, Pearson N, Petherick ES, King JA, Willis SA, Hardy R, Paudel S, Haycraft E, Baker JL, Hamer M. Are associations of adulthood overweight and obesity with all-cause mortality, cardiovascular disease, and obesity-related cancer modified by comparative body weight at age 10 years in the UK Biobank study? Epidemiology and Population Health. International Journal of Obesity. 2025 May;49(5):902-14.
9. Damigou E, Anastasiou C, Chrysohoou C, Barkas F, Liberopoulos E, Pitsavos C, Tsioufis C, Sfikakis PP, Panagiotakos D. Evaluating population attributable fractions of cardiovascular diseases in relation to 20-year body mass index; the ATTICA study (2002–2022). International Journal of Obesity. 2025 May 6:1-0.
10. Lewandowska A, Rudzki G, Lewandowski T, Bartosiewicz A, Próchnicki M, Stryjkowska-Góra A, Laskowska B, Sierpińska M, Rudzki S, Pavlov S. Overweight and obesity among adolescents:

GLOBAL HEALTH & MEDICINE
ISSN / eISSN: 2434-9186 / 2434-9194
Volume 05, Issue 04, 781-792
https://ghsjournal.com/

health-conscious behaviours, acceptance, and the health behaviours of their parents. BMC Public Health. 2025 Feb 2;25(1):418.

11. Demiaszkiewicz M, Ratajczak J, Raducha D, Jackowski T, Marcinkiewicz K, Berus E, Walczak M, Petriczko E. Changes in Anthropometric Measurements, Body Composition, and Blood Pressure in 6–10-Year-Old Children with Overweight and Obesity in Szczecin During a YearLong Intervention Program. Journal of Clinical Medicine. 2025 May 16;14(10):3489.
12. Chavez-Mazuelos MI, Livia-Hilario AN, Castro-Acarapi MA, Taipe-Roman E, Aquino-Bashi PR, Morales J. Excess Body Weight and Physical Activity among Healthcare Workers: An Observational Study in the Primary Healthcare. The Open Public Health Journal. 2025 Mar 6;18(1).
13. Scheen A. Obesity and global warming: a two-way relationship?. InAnnales d'Endocrinologie 2025 May 6 (p. 101783). Elsevier Masson.
14. Balwan WK, Saba N. Review Based Study on Prevalance of Obesity–An Invited Public Health Problem. Sch J Med Case Rep. 2025 Mar;3:407-15.
15. Nava JA, Herrera RJ. BODY WEIGHT REDUCTION THROUGH EMOTIONAL SELFHEALING STUDIED BY HEKALOGY. Editora Impacto Científico. 2025 Jul 30:1-3.