Original Article

Nutritional Status of Periurban Secondary School Children in Bangladesh

***Islam S[1], Rashid MSA[2], Shimi SH[3], Suchi SE[4],Tamanna T[5]**

Abstract

Background: *School age represents a crucial phase characterized by both physical growth and mental development in children. Extensive research underscores the profound impact of nutritional inadequacies on the health of secondary school-age children, manifesting in widespread issues such as low school enrollment, high absenteeism, premature dropout, and suboptimal classroom performance.* ***Objective:*** *The primary objectives include measuring the nutritional status with associated factors and identifying prevalent nutritional disorders among the target population.* ***Materials & Methods:*** *It was a cross-sectional study carried out in the department of community medicine of ASWMC, Jashore during the month of January 2020 among periurban secondary school students (n=440) in Bangladesh. Data were collected by structured questionnaire and data processing and statistical analysis by SPSS version 25.* ***Results:*** *The study encompassed 440 respondents, with a mean age of 13 years, spanning a range from 10 to 17 years. Of these, 208 (47.30%) were male, and 232 (52.70%) were female. The mean weight was 43.74 kg, ranging from 20 to 81 kg, while the mean height was 152 cm, ranging from 120 to 180 cm. indicating that 54.5% were underweight (BMI < 18.5), 40.7% had a normal weight (BMI 18.5-24.99), and only 4.8% were overweight (BMI > 25).* ***Conclusion:*** *The high prevalence of undernourishment, highlight the need for proactive measures to address nutritional gaps and promote the overall health and well-being of this age group.*

Keywords: Nutritional status, School children, Bangladesh.

Received: 24.08.2024, **Accepted:** 02.09.2024.

Ad-din Sakina Women's Medical College Journal. 2025; 6 (1) : 11-15

Introduction

Nutritional status is an integral component of the overall health of an individual.[1] Worldwide, an estimated 852 million people were undernourished in 2000–2002, with most (815 million) living in developing countries[2] and Worldwide, malnutrition is one of the leading causes of morbidity and mortality in childhood.[3] School age is the active growing phase of childhood.[4] Health problems due to miserable nutritional status in primary school-age children are among the most common causes of low school enrolment, high absenteeism, early dropout and unsatisfactory classroom performance.[5] Nutritional status is the best indicator of the global well-being of children. One of the major global health problems faced by the developing countries, today is malnutrition.[6] Malnutrition is one of the principle public health problems, affects large numbers of children in developing countries. Despite the economic growth observed in developing countries, malnutrition and particularly under nutrition is still highly prevalent. School age is a dynamic period of physical growth as well as of mental development of the child. The school is an opportune setting to provide health and nutrition services to disadvantaged children.[1] Since 1972, the United Nations Educational Scientific and Cultural Organization (UNESCO) consider 12-17 years as secondary school age for statistical purposes[7] and Secondary education in Bangladesh is embedded with three phases: junior secondary (grades VI-VIII), secondary (grades IX and X), and higher secondary (grades XI and XII).[8] Nutritional status was measured with BMI-for-weight for height. BMI is a simple index of weight-for-height that is commonly used to classify underweight, overweight and obesity in adults. It is defined as

1. Dr. Md. Serajul Islam, Associate Professor, Department of Community Medicine, ASWMC, Jashore
2. Dr. Mustafa Sumon Al Rashid, Associate Professor, Department of Forensic Medicine, ASWMC, Jashore.
3. Dr. Shaima Hafiz Shimi, Assistant Professor, Department of Forensic Medicine, ASWMC, Jashore.
4. Dr. Surovi Era Suchi, Associate Professor, Department of Microbiology, ASWMC, Jashore
5. Dr. Tanzina Tamanna, Assistant Professor, Department of Community Medicine, ASWMC, Jashore

***Correspondence:** E-mail: dseraj02@gmail.com

the weight in kilograms divided by the square of the height in meters (kg/m2). Normal (18.5-24.99), Underweight (<18.5), Overweight (>25).[9] Nutritional status during school age is a major determinant of nutritional and health status in adult life. Globally, including Bangladesh, health hazards associated with under-nutrition and micronutrient deficiencies remain major public health problems. Therefore comprehensive health care of this section will fulfils the health need of these vulnerable populations.[10] Nutrition is one of the most important factors influencing the quality of human life. Nutritional status is also an important health indicator to assess a country's health status and morbidity pattern. Studies of nutrition Status are very important in the adolescent of child bearing age because of law to moderate prevalence of possible deficiency.9 Protein energy malnutrition has been a common health problem of the third world.[11] Protein energy is of much serious concern among children of school-going age who are deprived of good and ample nutrition due to their poor socio-economic status ignorance and lack of health promotional facilities.[12]

Materials and Methods

This cross-sectional study, conducted in January 2020 among the students of Pularhat High School in Jashore district in southwest Bangladesh. This school was purposively selected at it mostly represented the urban adolescents in the district with average socio-economic status indicators. All students attending grades 6-10 (n=440) were enrolled through convenient sampling. Data were collected by 3rd year female medical students through face-to-face interviews using semi-structure questionnaire. The interviewers were trained by the investigators on interview skills, research ethics and about the objectives of the study. All interviews were conducted in an empty class room with adequate privacy. Data were analyzed using SPSS statistical program version 25. All participants provided written informed consent before participating in the interview.

Results

The study is centered on government secondary school students in Jashore, with the aim of evaluating their nutritional status and identifying prevalent nutritional diseases, along with other associated factors. A total of 440 students participated in the research, comprising 208 (47.30%) males and 232 (52.70%) females. The mean age of the participants was 13 years, with an age range of 10 to 17 years.

Table I: Age of the students (n=440)

Age of respondents (years)	Frequency	Percent (%)
10	5	1.1
11	53	12.0
12	104	23.6
13	84	19.1
14	83	18.9
15	76	17.3
16	28	6.4
17	7	1.6

Table I provides a comprehensive overview of the age distribution among the surveyed students. The most notable age group is 12-year-olds, comprising 104 students, which accounts for 23.6% of the total sample. Following closely, 13-year-olds represent 84(19.1%), while 14-year-olds and 15-year-olds each make up 83(18.9%) and 76(17.3%) respectively. There is a noticeable decline in the frequency of respondents as age increases, with only 7 students (1.6%) being 17 years old.

Table II presents the distribution of respondents based on their academic classification, revealing insights into the educational progression of the surveyed students. The most prominent academic classification is Class Six, comprising 123 students,

Table II: Academic status of the Respondent (n=440).

Class of studying Respondents	Frequency	Percent (%)
Six	123	27.95
Seven	96	21.82
Eight	93	21.14
Nine	42	9.55
Ten	86	19.54

which represents 27.95% of the total sample. Following closely, Class Seven and Class Eight each account for approximately 96(21.82%) and 93(21.14%) respectively, indicating a relatively balanced distribution among these intermediate grades. Class Ten, on the other hand, represents 86(19.54%) of the respondents, while Class Nine constitutes the smallest proportion at 42(9.55%). This distribution suggests a typical academic hierarchy, with the majority of students situated in the lower to middle grades, gradually decreasing in frequency as they progress through higher classes.

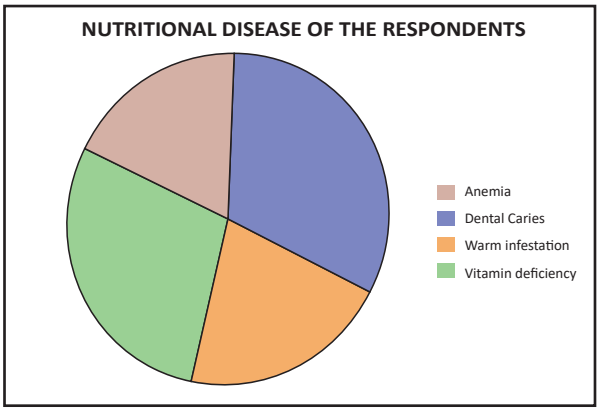
Table III: BMI of the Participants (n=440)

BMI of respondents (kg/m²)	Nutritional Status	Frequency	Percent (%)
< 18.5	Under weight	240	54.5%
18.5-24.99	Normal Weight	179	40.7%
>25	Over weight	21	4.8%

Table III offers an analysis of the representation across different BMI categories among the participants, shedding light on the nutritional status of the surveyed individuals. The data indicate that a significant portion of the participants falls into the "Underweight" category, with 240(54.5%) individuals having a BMI less than 18.5. This suggests a notable prevalence of undernourishment within the studied population. In contrast, a substantial number of participants, 179(40.7%) to be precise, are categorized as having a "Normal Weight" with a BMI falling within the range of 18.5-24.99. This category signifies a relatively healthy weight distribution among a considerable proportion of the respondents. On the other hand, a smaller portion, consisting of 21(4.8%) individuals, is classified as "Overweight," with a BMI exceeding 25. This suggests that a limited number of participants exhibit signs of excess weight, highlighting a potential concern for overweight conditions within the studied group.

Table IV: Deficiency Disease among the Respondents (n=143).

Name of Deficiency Disease	Frequency	Percent (%)
Anemia	26	18.18
Dental Caries	46	32.17
Warm infestation	30	20.98
Vitamin deficiency	41	28.67



Notably, 297(67.5%) of respondents were found to be free from nutritional diseases, while 143(32.1%) exhibited nutritional deficiency diseases. Among those with deficiencies, dental caries 46(32.17%), vitamin deficiencies 41(28.67%), worm infestations 30(20.98%), and anemia 26(18.18%) were prevalent (Table IV).

The study also explored demographic factors, indicating family income levels, parental education, and occupations. Family income falling within the lower income brackets. Parental education and occupation data underscored the challenges faced by families, with a significant portion having education levels up to SSC and engaging in labor-intensive occupations. Furthermore, the majority of mothers were homemakers. The study highlighted that 425(96.6%) of respondents lived with their parents, reinforcing the family as a primary support system.

Discussion

Malnutrition is still common findings in developing countries. Most common is the under nutrition rather than over nutrition. Several factors enable the poor nutritional status of children directly such as low socioeconomical status and poor educational background of their parents as well as low protein diets in the periurban area. The demographic and anthropometric data presented in the study on government secondary school students in Jashore provides valuable insights into the nutritional status of the participants. This information is crucial for understanding the prevalence of malnutrition and its associated factors among the surveyed population. Our study findings align with those of a study conducted in Karimnagar, Telangana, India, by Shaikhn MK et al. (2016)[10], which also indicated a similar gender distribution. In both studies, there is a slight majority of female respondents compared to male respondents in the samples surveyed. The BMI categorization into underweight (54.5%), normal weight (40.7%), and overweight (4.8%) reveals striking insights into the nutritional status of the students. The prevalence of under nutrition among 54.5% of the respondents is a notable concern, indicating a significant proportion of students facing malnutrition-related challenges. This finding emphasizes the urgency of implementing targeted interventions to address undernourishment and prevent associated health complications. Conversely, the 40.7% falling within the normal weight range signals a positive aspect, suggesting that a substantial portion of the student population maintains a balanced nutritional status. The identification of 4.8% of students as overweight highlights the coexistence of over nutrition-related challenges within the same population. While this percentage is relatively low compared to underweight and normal weight categories, it draws attention to the importance of promoting healthy lifestyles and preventing future health risks associated with excess weight. These figures underscore the multifaceted nature of nutritional challenges, ranging from under nutrition to overweight issues. The coexistence of under nutrition and overweight individuals within the same population raises questions about the dietary composition and lifestyle factors influencing these divergent outcomes. Our findings resonate with those reported by Eshita IR (2017)[1] in rural area the majority of the respondents (58.3%) were classified as underweight.

Conclusion

This study contributes valuable insights into the nutritional landscape of adolescents, offering a foundation for informed decision-making in public health and nutrition interventions. The prevalence of under nutrition emphasizes the need for comprehensive nutritional programs, including school-based initiatives, community awareness campaigns, and collaborations with healthcare providers. Additionally, addressing overweight concerns requires strategies that promote healthy dietary choices and physical activity among students.

References

1. Eshita IR. Nutritional Status of Adolescent School Children In Selective Urban And Rural Area, GSJ. May2017;5(5):8-70.

2. Müller O, Krawinkel M. Malnutrition and health in developing countries. CMAJ. 2005 Aug 2;173(3):279-286.

3. Emam S, Mostafa R, Wassef O et al. Assessment of nutritional status of some primary school children & their awareness in slum areas. Alex J Pediatr. 2005 Jan;19(1):113-119.

4. Srivastava A, Mahmood SE, Srivastava PM et al. Nutritional status of school-age children - A scenario of urban slums in India. Arch Public Health. 2012 Apr 17;70(1):8.

5. Preethi SAE, Mohankumar JB. Iron and zinc rich food supplement on the nutrition status and cognition of school going children in Coimbatore. IJHSR. 2015; 5(10):280-285.

6. Goon DT, Toriola AL, Shaw BS et al. Anthropometrically determined nutritional status of urban primary schoolchildren in Makurdi, Nigeria. BMC Public Health. 2011 Oct 6;11:769.

7. Prakash S, Yadav K. Anthropometric dimensions on nutritional grade among school children. J Nutr Health Food Eng. 2017;6(2):61-65.

8. Rahman MA, Khan B, Howlader MH. Secondary Education in Bangladesh: Issues and Challenges. Int. J. Bus. Soc. Sci. Res. 2018;6(2):19-25.

9. Akhter N, Sondhya FY. Nutritional status of adolescents in Bangladesh: Comparison of severe thinness status of a low–income family's adolescents between urban and rural Bangladesh. J Educ Health Promot. 2013 Jun 29;2:27

10. Shaikh MK, Kamble N, Bhawnani D et al. Assessment of nutritional status among school children of Karimnagar, Telangana, India. Int J Res Med Sci. 2016 Oct;4(10):4611-4617.

11. Akhtar MS, Bhatty N, Sattar M et al. Comparison of nutritional status in children of different socio-economic statuses. Medical Journal of Islamic Academy of Sciences. 2001; 14(3):97-102.

12. Shree A, Murthy MN. Impact of malnutrition on scholastic performance among school children in Mysuru. Clinical Epidemiology and Global Health. 2021 Jul 1; 11:100780.