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Original Article

Understanding the Unseen Burden of Common Health Problems of School-going Children in Sub-urban Area: Insights from a Single-day Health Programme

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Abstract

Background: Children are considered as the future leaders of a nation. But, in developing countries like Bangladesh, school-age children often face a specific burden of preventable health issues that are aggravated by poor living conditions, inadequate hygiene, and health knowledge.

Objective: The study aimed to assess the common health problems among school-going children in a sub-urban area of Chattogram city, Bangladesh.

Methodology

This was a descriptive cross-sectional study conducted among 181 school children going to a sub-urban school in Chattogram city on April 9, 2025. A semi-structured questionnaire was used for data collection. Sociodemographic information, health practices and problems related data were recorded and analyzed. Descriptive statistics were performed using Microsoft Excel.

Results: Age of the participants ranged from 5 to 16 years, with a mean age of 9.43 (±2.76). Majority of them were boys (62.43%). Deworming and immunization status were 70.17% and 33.15% respectively. Common health complaints included dental caries (46.41%), undernutrition (39.78%), dental plaque (34.81%), scabies (30.39%), and anemia (27.07%).

Conclusion: Dental health problems are the commonest complaints among school-age children. The study also addressed a high burden of other preventable health conditions such as undernutrition, scabies and anemia. These findings underscore the need for regular school health screening programs and large-scale studies to improve health promotion initiatives in school level.

Key words: School children, malnutrition, anemia, scabies, dental health, sub-urban area.

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Introduction

Children are the most valuable asset of any nation [1]. They are defined as human beings from the moment of birth up to the age of 18, unless legal adulthood is attained earlier [2,3]. This is the most vulnerable period that influences a child's growth, development, and long-term well-being [3]. In low-income and middle-income countries (LMICs), children face a wide range of health issues, including both communicable and non-communicable diseases [4]. School-age children go through a phase of physical and mental development that shapes them into potential adults [5]. As children between 6 to 15 years spend a significant hour of the day in school, their health status greatly impacts their ability to learn. As a consequence, healthy children are more likely to succeed academically and grow into productive adults who can contribute to the nation's progress [1,3].

Although there has been tremendous development in the world at addressing health care issues over the last few decades, there are still disparities in health care among countries and areas within countries [8]. Common health conditions in high-income countries (HICs) differ from those in LMICs [6]. HICs such as Great Britain, USA, and Japan made a substantial progress in the control of infectious diseases. While the prevalence of visual defects, dental caries and malnutrition is still high in developing countries [7]. School going children often suffer from numerous health issues such as infections, malnutrition, vitamin deficiency, upper respiratory tract infections, and anemia. Due to low economic status, limited resources, prevalent socio-cultural beliefs, health service facilities are not available to all Bangladeshis [2, 20].

Although most of the studies were done in rural, urban settings, there still lacks nationwide school health related data [10]. There are inadequate literatures on under privileged school going children, particularly in sub-urban area. Therefore, this study aims to investigate the common health problems affecting the sub-urban school going children of Chattogram city, Bangladesh.

Methodology

Study setup: The present study was conducted at a school of sub-urban area on 9th April, 2025 in the district of Chattogram. This was an outreach health program organized by Chittagong Research Institute for Children Surgery (CRICS) and supported by A.K. Khan Foundation, a non-profit social welfare organization in Chattogram. Since its establishment (1991), the foundation is actively contributing to different types of philanthropic activities including health, education, social welfare and more in Chattogram city and across the country. Our study site (school) is also a part of its humanitarian activities. This was a single-day cross-sectional study conducted among 181 students aged from 5 to 16 years.

Survey administration: There were two pediatric surgeons, two pediatricians, one gynecologist, two dermatologists, and one oral and maxillofacial surgeon. In addition, there were two postgraduate trainees, twelve CRICS research assistants. There was also a team of SANDHANI Chittagong Medical College Unit who are medical students. There were six stations for overall health screening including medical conditions, surgical conditions, dermatological problems, gynecological assessment and oral health conditions of the students. There were a senior doctor, a post graduate trainee, one or two medical students and a research assistant in every station. There was an additional station for blood grouping and hemoglobin measurement which was done by SANDHANI team.

A comprehensive program schedule was sent to the A.K. Khan foundation two weeks before the visit to ensure that the program was properly organized. A questionnaire was developed to record the relevant information of the students. All the data collectors were briefed on the procedure of the data collection. Students who agreed to participate in the study with consent from their parents were included. Each student was given with a questionnaire and they were asked to carry the form at every station and return the forms after completing the survey. However, some information was collected from their parents as some students were unable to give accurate answer. ABO blood grouping and hemoglobin measurement was done at first and then clinical assessments of the students were performed by the panel of specialists at every station.

Study instrument: The health record form included sociodemographic and health practice related information- age, gender, religion, residence, occupation of parents, housing condition, source and treatment of drinking water, hand washing habit, height, weight, BMI, immunization, deworming status. The students were asked to report any present illness and any known congenital anomalies, regular health checkup history. These data were recorded in the general health section.

ABO blood grouping, Rh typing and the assessment of hemoglobin level were also performed and noted as general health related data. Nutritional status was defined based on BMI according to CDC age-for-BMI growth chart. Questions related to systemic conditions such as presence of any surgical condition, complaints of pain (abdomen/chest/others), respiratory distress, ENT problems, skin diseases, dental caries, calculus were recorded in the clinical section. A patient diagnosed with surgical condition (Left sided posterior auricular abscess) was referred to our center for better treatment. All these problems were identified by expert opinion. Only the students who completed the survey were considered for the analysis. (Appendix 1)

Statistical Analysis: Data were analyzed using Microsoft Excel. Categorical data were presented as frequency and percentage, and continuous data as mean and standard deviation. This study guaranteed the confidentiality of data by expressly omitting names from the case record forms and data were collected and processed in absolute anonymity with restricted user.

Results

A descriptive analysis was performed on a sample of 181 school going students to understand the health practice and burden of health (general and oral) conditions among them. The age of the participants ranged from 5 to 16 years with a mean of 9.43 (± 2.76), with the maximum representation of boys (n=113, 62.43%) and girls (n=68, 37.57%). Number of students from KG, class 1, class 2, class 3, class 4, class 5 and above class 5 were respectively 27 (14.92%), 22 (12.16%), 25 (13.81%), 36 (19.89%), 26 (14.36%), 37 (20.44%) and 8 (4.42%). A great number of students were Muslim (n= 167, 92.27%), followed by Hindu (n= 11, 6.07%) and Buddhist (n= 3, 1.66%). Majority of their fathers were manual worker (n= 95, 52.49%), followed by professional/managerial/technical employee (n= 44, 24.31%) and self-employed (n= 12, 6.63%). Most of the mothers were housewives (n= 119, 65.74%), followed by manual laborers (n=35, 19.33%) and 7.73% (n= 14) in professional or technical roles.

Majority of the students lived in semi-paka houses (n= 96, 53.04%), 28.73% (n= 52) in paka houses, and 7.18% (n= 13) in kancha houses, while a few students (n= 20, 11.05%) could not mention about their housing facility. Additionally, the source of drinking water was pipe water (n= 94, 51.93%), tube well water (n= 29, 16.02%), ground water (n= 25, 13.81%) and combined source (n= 1, 0.55%). However, 17.69% students (n= 32) could not specify the water source. Most children consumed water directly from the source (68.51%), while some used boiled water (8.83%) or filtered water (4.97%). [Table 1]

Table 1: Characteristics of the participants (N= 181)

Variables	N	%
Age (mean ± SD)	9.43 ± 2.76	
Gender		
Boys	113	62.43
Girls	68	37.57
Class		
KG	27	14.92
Class 1	22	12.16
Class 2	25	13.81
Class 3	36	19.89
Class 4	26	14.36
Class 5	37	20.44
Above class 5	8	4.42
Religion		
Islam	167	92.27
Hinduism	11	6.07
Buddhism	3	1.66
Father's Occupation		
Not alive	5	2.76
Manual worker	95	52.49
Professional/Technical/Managerial	44	24.31
Non Resident Bangladeshi (NRB)	2	1.1
Self-employed	12	6.63
Unknown	23	12.71
Mother's Occupation		
Not alive	2	1.1
Manual worker	35	19.33
Professional/Technical/Managerial	14	7.73
Housewives	119	65.74
Unknown	11	6.1

Housing Facility		
Semi paka	96	53.04
Paka	52	28.73
Kancha	13	7.18
Unknown	20	11.05
Source of drinking water		
Pipe water	94	51.93
Tube well water	29	16.02
Ground water	25	13.81
Pipe and ground water	1	0.55
Unknown	32	17.69
Household water treatment method		
Direct from source	124	68.51
Boiled water	16	8.83
Filtered water	9	4.97
Unknown	32	17.69

N= Number of participants, SD= Standard Deviation

Table 2 summarizes 70.17% (n= 127) had history of complete immunizations, with only 33.15% (n= 60) having dewormed. The most common blood group was O (+ve) (n= 53, 29.28%), followed by followed by B(+ve) (n= 47, 25.97%) and A(+ve) (n= 24, 13.26%). In terms of blood group Regarding blood group distribution, the most common was O (29.28%), followed by B(+ve) (25.97%) and A(+ve) (13.26%). In terms of nutritional status based on BMI, the majority of children (59.12%) were of normal weight, while 39.78% were underweight, and only 1.1% was overweight. Health complaints were reported by 72.38% of the participants, with 27.62% reporting no such issues. Hygiene habits showed that 79.01% of the children practiced hand washing both before eating and after using the toilet, while 20.99% followed only one of these practices. Additionally, a high proportion (83.43%) reported brushing their teeth regularly, whereas 16.57% did not maintain this habit.

Table 2: Health and hygiene status of the participants (N= 181)

Variables	**N**	**%**
Immunization status		
Yes	127	70.17
No	40	22.10
Unknown	14	7.73
Deworming		
Yes	60	33.15
No	88	48.62
Unknown	33	18.23
Blood Group		
A(+ve)	24	13.26
B(+ve)	47	25.97
O(+ve)	53	29.28
AB(+ve)	14	7.73
A(-ve)	1	0.55
B(-ve)	2	1.10
Unidentified	40	22.11
Nutritional status based on BMI		
Normal weight	107	59.12
Under weight	72	39.78
Over weight	2	1.1
Presence of complaints		
Yes	131	72.38
No	50	27.62
Hand washing habit (Before eating/after using toilet)		
Both	143	79.01
Any of them	38	20.99
Habit of regular teeth brushing		
Yes	151	83.43
No	30	16.57

N= Number of participants, SD= Standard Deviation

The bar plot in Figure 1 shows the prevalence of various common health problems identified by the panel of specialists dentists in the school going children. The most common health problems were dental caries (n= 84, 46.41%), under nutrition (n= 72, 39.8%), dental plaque (n= 63, 34.81%), scabies (n= 55, 30.39%), anemia (n= 49, 27.07%). Some other skin infections such as impetigo, eczema, allergic dermatitis (n= 23, 12.71%) were also reported along with scabies. However, other reported health problems including abdominal pain (n= 17, 9.39%), ENT problems (n= 15, 8.29%), headache (n= 12, 6.63%), cough (n=11, 6.08%) and over nutrition (n= 2, 1.11%) were less likely reported.

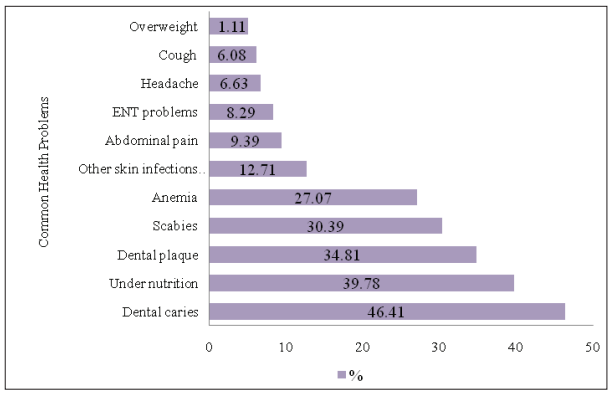

Figure 1: Bar plot showing the prevalence of common health problems among the students

Discussion

School Health Programs are a coordinated set of planned and continuous strategies, activities, and services associated with schools, designed to promote the best possible physical, emotional, social, and academic growth of students within the educational environment [1]. Understanding the distribution of easily preventable health issues is crucial for developing necessary health initiatives. The present study highlights a notable burden of preventable health conditions among school-going children, particularly in disadvantageous population. It underscores several obstacles they face due to socioeconomic, behavioral, and environmental factors.

We found that approximately 72.38% participants reported of some health problems. Dental caries, dental plaque, malnutrition, anemia are commonly found. Nearly half of the participants were affected by dental caries (46.41%), which not only affects oral health but also has implications for nutrition, self-esteem, and school attendance. This finding aligns with the result of Zhou et al. that found dental caries was prevalent in 41.15% of Chinese youngsters, linking high caries rates to inadequate brushing practices, sugary diets, and a lack of preventive care [8]. According to a national survey in Saudi Arabia, dental caries is still one of the most common non communicable diseases in children, with a rate of 65.6% prevalence [10] . Systemic problems restricting access to dental care, low parental awareness, and the lack of school-based dental screening programs are reflected in these numbers.

The higher prevalence of undernutrition (39.78%) and anemia (27.07%) among the participants that linked to the inadequate consumption of vital nutrients, including iron, protein, and vitamins. These nutritional deficits are one of the leading causes of illness in children worldwide. A systematic review on Ethiopian children highlighted similar facts regarding the prevalence (21%) of anemia [11]. Furthermore, another study addressed that stunting, cognitive delays, and an increased vulnerability to infectious diseases are all major consequences of undernutrition, especially in its acute and chronic forms. This vicious cycle impairs both individual development and societal productivity [12]. Additionally, our study found a remarkable distribution of scabies (30.39%) that raises serious public health concern, as the disease is extremely contagious and is closely linked to crowded housing, inadequate sanitation, and a lack of access to clean bedding and clothes [13]. Previous studies support this finding, emphasizing that poor hygiene maintenance, negligible attitude contributes to the increasing incidence of scabies [14,15].

Environmental and behavioral factors have significant contribution to child health problems. In our study, 48.62% of the participants were not dewormed, 68.51% of them drank untreated water and about 21% did not practice regular handwashing habit. Studies revealed that such behaviors increase the risk of exposure to intestinal parasites and waterborne pathogens in children. Disease transmission is high in school-settings due to suboptimal hand washing practices. [16]. For this reason, regular deworming programs are warranted in school going children to reduce the infestation of soil-transmitted helminths [17].

Nevertheless, sociodemographic disparities are also a major concern for the occurrence of health problems. The present study primarily focused on a center where majority of the students belong to lower-income families. These trends are indicative of more widespread structural injustices that restrict access to quality healthcare, education, and housing. Health disparities based on socioeconomic position can have a major impact on child growth, nutrition, and survival [18]. In order to address these factors holistically, the World Health Organization (2021) also supports comprehensive, school-based health promotion programs that incorporate dietary assistance, hygiene education, dental care, and family involvement [19].

Limitations

This study had certain limitations. It is unable to prove a causal relationship between risk variables and health

issues due to the nature of the study design. Single day visit, small sample size and purposive sampling technique produce potential biases. As data were collected via face to face interview, recall bias may be present. Health related data were recorded only based on verbal history and clinical examination. No confirmatory investigations were done. More vulnerable individuals may have been excluded due to participation bias. Nonetheless, the study has provided some major concern areas to be considered for further large-scale research in such less privileged, sub-urban areas.

Conclusion

This study highlights that dental health conditions are prevalent among half of the students living in low income areas. Additionally, the rate of scabies, undernutrition, and anemia among school going children are also alarming. Therefore, our findings emphasized the need for providing regular basic health services to the children who often suffer a lot from minor illnesses. Furthermore, this study also supports the idea to conduct large scale study for mapping the health profile of school-age children in future.

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