

ORIGINAL RESEARCH ARTICLE

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Article URL: <https://doi.org/10.68295/SRJ/GXFY3437>KNOWLEDGE AND PRACTICES REGARDING PERSONAL HYGIENE AMONG
PRIMARY SCHOOL STUDENTS IN NAOGAON, BANGLADESH: A CROSS-
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ABSTRACT

Background: Personal hygiene is an essential component of child health and well-being, particularly during the primary school years when lifelong health-related behaviours are being established. Although knowledge is a prerequisite for healthy behaviour, it does not always translate into appropriate and consistent hygiene practices. In Bangladesh, differences in socioeconomic conditions, parental education, health education, and access to school-based water, sanitation, and hygiene facilities may influence children's ability to maintain appropriate hygiene. However, district-specific evidence regarding personal hygiene among primary school students in Naogaon remains limited**Objective:** This study aimed to assess knowledge and personal hygiene practices among primary school students in Naogaon District, Bangladesh, and to examine selected sociodemographic and school-related factors associated with hygiene-related behaviours.**Methods:** A community-based cross-sectional observational study was conducted among 250 primary school-going children from Classes III–V in Naogaon District between May and August 2025. Participants were selected using multistage random sampling. Data were collected using a pre-designed, pre-tested, structured questionnaire covering sociodemographic characteristics, knowledge of personal hygiene, reported hygiene practices, and access to school health education and hygiene facilities. The questionnaire was developed in English, translated into Bengali, and back-translated to ensure consistency.**Corresponding Author:** Md. Abdul Mannan, Associate professor, Department of Unani Medicine, Hamdard University Bangladesh.; email: mannanmlt@gmail.com, Address: Hamdard City of Science, Education & Culture, Gazaria, Munshiganj, Dhaka, Bangladesh.

1.0. INTRODUCTION:-

1.1. Background:

Personal hygiene is an essential component of individual health and an important determinant of well-being throughout the life course. It refers to the routine practices performed by individuals to maintain cleanliness of the body and prevent illness. These practices include regular bathing, handwashing with soap and water, tooth brushing, oral care, wearing clean clothes, trimming fingernails, maintaining clean hair, using sanitary toilet facilities, and appropriate food and environmental hygiene. Healthy personal-hygiene practices are particularly important during childhood because children are developing habits that may continue into adolescence and adulthood. Schools therefore represent an important setting for establishing and reinforcing healthy behaviours.

Primary school children are particularly important from a public-health perspective because they frequently interact with classmates, teachers, family members, and the surrounding environment. Close contact in classrooms and playgrounds may facilitate transmission of infectious agents when children have poor hand hygiene or other inadequate hygiene practices. Handwashing is especially important because contaminated hands can provide a route for transmission of gastrointestinal and respiratory pathogens. Evidence from systematic reviews indicates that hand-hygiene interventions in educational settings can reduce illness-related outcomes, although the effectiveness of interventions varies according to their design, implementation, infrastructure, and methodological quality (Willmott et al., 2016; Lee et al., 2018).

Personal hygiene is not determined solely by knowledge. Children may know that handwashing is important but fail to perform it at appropriate times because of lack of soap, inadequate water supply, inconvenient facilities, social influences, insufficient supervision, or established behavioural habits. This distinction between knowledge and practice is particularly important in school-based health research. A Bangladeshi study conducted among primary school children living in a Dhaka slum found a considerable gap between knowledge and practice of personal hygiene and identified misconceptions regarding some hygiene indicators. The study also reported an association between children's hygiene practices and their mothers' educational status (Rahman & Sarker, 2015). These findings demonstrate that children's hygiene behaviour can be influenced by household and socioeconomic circumstances as well as by individual knowledge.

Hand hygiene represents one of the most important components of personal hygiene. The World Health Organization and UNICEF identify basic hygiene services in schools as facilities where handwashing facilities have soap and water available. School WASH services are recognized as essential components of a safe and effective learning environment. Globally, however, substantial gaps remain in access to basic water, sanitation, and hygiene services in schools (WHO & UNICEF, 2024). The latest WHO/UNICEF monitoring emphasizes that universal access to basic WASH services in schools remains off track for the 2030 Sustainable Development Goals (WHO & UNICEF, 2026).

The situation is also relevant to Bangladesh. UNICEF and WHO reported that in 2021 approximately 19% of schools in Bangladesh lacked safe drinking water, 43% lacked basic sanitation services, and 44% lacked basic hygiene services consisting of handwashing facilities with water and soap. Approximately 7% of schools had no WASH facilities at all (UNICEF & WHO, 2022). These conditions illustrate why knowledge and practice should be examined together. Even when children understand the importance of hygiene, inadequate facilities can prevent them from translating knowledge into appropriate behaviour.

Bangladesh has nevertheless made progress in promoting hygiene behaviour among schoolchildren. National and school-based initiatives have emphasized handwashing with soap and the importance of critical handwashing occasions, such as before eating and after using the toilet. UNICEF Bangladesh reported that millions of students in government primary schools participated in Global Handwashing Day activities, illustrating the role of schools in communicating hygiene messages and encouraging behaviour change (UNICEF Bangladesh, 2019).

Research from different regions of Bangladesh demonstrates variation in children's hygiene knowledge and practices. In Noakhali District, Alam et al. (2020) studied 400 primary school children and reported that 89% had good knowledge of handwashing, whereas 71.6% demonstrated good handwashing practice. Grade level and previous handwashing training were associated with better knowledge and practice. These findings suggest that knowledge is important but does not automatically result in appropriate behaviour.

Similarly, a study among primary-school-going children in Sadar Upazila of Noakhali District examined knowledge, attitude, and practice regarding personal hygiene. The investigators identified personal hygiene as an important childhood health behaviour and demonstrated the relevance of school-based assessment of hygiene knowledge and practice (Ghosh et al., 2020). Such studies provide valuable evidence from Bangladesh, but findings from one geographical area cannot automatically be generalized to other districts.

Naogaon District provides an important setting for examining these issues because children's living conditions, family educational background, socioeconomic circumstances, school facilities, and access to hygiene resources may differ from those in major urban centres. Rural and semi-rural children may experience different opportunities for health education and different levels of access to water, sanitation, soap, and other hygiene resources. Therefore, local evidence is necessary for planning appropriate school-health interventions.

Personal hygiene also encompasses oral hygiene. Tooth brushing and appropriate oral-care practices are important components of children's general hygiene and health. Research among primary school children in rural Bangladesh found limited awareness and poor knowledge of some oral-hygiene practices, demonstrating that hygiene education should extend beyond handwashing alone (Islam et al., 2020). School-based oral-health education has also been shown to improve knowledge, attitudes, and reported practices among Bangladeshi schoolchildren (Haque et al., 2016).

The relationship between hygiene education and actual behaviour is therefore complex. A large randomized controlled trial of skill-based health education in rural Bangladesh found improvements in school hygiene practices, children's handwashing, and dental-care behaviours, providing evidence that structured, repeated health education can contribute to behavioural change (Omura et al., 2025). A separate Bangladesh study of a school-based hand-hygiene programme also found significant improvements in knowledge, attitude, and practice after the intervention, although the small sample and single-school design limited generalizability (Akhter et al., 2026).

The present study is important from both educational and public health perspectives. Assessing children's knowledge of personal hygiene can identify their understanding of essential hygiene practices, whereas evaluating their reported practices can determine the extent to which this knowledge is translated into everyday behavior. Comparing knowledge and practice may reveal important gaps and identify factors that can be addressed through targeted school-based health education. The findings may provide useful baseline evidence for teachers, parents, school health personnel, local health authorities, and policymakers. Identifying deficiencies in handwashing, bathing, oral hygiene, nail and hair care, clothing cleanliness, toilet practices, and other personal hygiene behaviors may help guide appropriate health-promotion interventions. Strengthening hygiene education alongside improved access to adequate water, sanitation, and hygiene facilities may contribute to healthier school environments and support the development of sustainable, health-promoting behaviors throughout childhood and later life.

1.2. LITERATURE REVIEW:-

1.2.1. Concept of personal hygiene

Personal hygiene encompasses behaviours individuals undertake to maintain bodily cleanliness and protect health. Among schoolchildren, important components include handwashing, bathing, tooth brushing, oral care, nail trimming, hair cleanliness, clean clothing, and appropriate toilet practices. Personal hygiene is particularly relevant during primary-school years because children increasingly perform their own daily hygiene activities while still receiving substantial influence from parents, teachers, peers, and the school environment. The relationship between hygiene and infectious disease prevention has received considerable attention. Handwashing is one of the most extensively studied personal-hygiene behaviours because contaminated hands can facilitate transmission of gastrointestinal and respiratory infections. Systematic reviews of school-based interventions have reported evidence that hand-hygiene interventions may reduce illness and absenteeism among children, although the quality and consistency of evidence vary across studies (Willmott et al., 2016; Lee et al., 2018).

1.2.2. Knowledge and practice of hygiene among schoolchildren

Knowledge is an important prerequisite for healthy behaviour, but knowledge alone does not necessarily produce appropriate practice. Children may know that hands should be washed after using the toilet but fail to do so because soap or water is unavailable, facilities are inconvenient, or the behaviour has not become habitual. Rahman and Sarker (2015) examined knowledge and practice of personal hygiene among 104 primary school children living in a slum area of Korail, Dhaka. Their cross-sectional study identified a considerable gap between knowledge and practice and also reported misconceptions concerning some personal-hygiene indicators. Female students demonstrated better knowledge than male students, while hygiene practice was significantly associated with maternal educational status. The authors emphasized the importance of parents and teachers in developing children's hygiene behaviour. This finding is consistent with the broader behavioural-health literature, which suggests that health behaviour is influenced by knowledge, attitudes, environmental opportunities, social norms, and reinforcement. A systematic review of hand-hygiene interventions among children concluded that interventions should consider both individual behaviour and environmental conditions rather than relying exclusively on information provision (Staniford & Schmidtke, 2020).

1.2.3. Handwashing knowledge and practice in Bangladesh

Handwashing is one of the most important measurable components of personal hygiene. Alam et al. (2020) conducted a cross-sectional study among 400 primary school children in Noakhali District, Bangladesh. The study reported that 89% of students had good knowledge of handwashing, whereas 71.6% had good practice. Grade level and previous handwashing training were associated with better knowledge, while grade level, paternal occupation, maternal education, and handwashing training were associated with practice. The difference between knowledge and practice in this study is particularly relevant to the present research. If children understand the importance of hygiene but do not consistently practise it, health education alone may be insufficient. Availability of water and soap, supervision, convenience of facilities, and repeated reinforcement may also be necessary. Research on Bangladeshi schools has demonstrated that infrastructure and behaviour are closely related. A study evaluating WASH facilities and practices in Bangladeshi schools from 2014 to 2018 reported improvements in students' perceptions and practices concerning handwashing with soap. In 2018, 88% of students believed that handwashing with soap reduced disease, while reported practice at important occasions also improved compared with 2014 (UNICEF/WHO-related school WASH evidence). A low-cost school handwashing intervention in Bangladesh further demonstrated the importance of access to facilities. At baseline, observed handwashing with soap was extremely uncommon around critical events. Following installation of child-friendly handwashing facilities and behaviour-change communication, substantially more children used soapy water. However, use declined after 14 months, suggesting that maintaining behaviour requires continued reinforcement and sustainable access to resources (Sultana et al., 2022).

1.2.4. Personal hygiene and school WASH facilities

School infrastructure plays an important role in children's ability to practise hygiene. The WHO/UNICEF Joint Monitoring Programme defines a basic school hygiene service as a handwashing facility with soap and water available at the time of observation. WASH services are linked not only to infection prevention but also to children's dignity, safety, attendance, and ability to learn (WHO &

UNICEF, 2024). Bangladesh continues to face inequalities in school WASH provision. UNICEF and WHO reported that 44% of schools lacked basic hygiene services in 2021, while 43% lacked basic sanitation services (UNICEF & WHO, 2022). These findings suggest that children's personal-hygiene practices cannot be interpreted independently of their school environment. The latest global monitoring also indicates that countries are not currently progressing rapidly enough to achieve universal basic WASH coverage in schools by 2030 (WHO & UNICEF, 2026). Therefore, school-based hygiene research remains relevant to both health and educational policy.

1.2.5. Oral hygiene among Bangladeshi children

Oral hygiene is another important component of personal hygiene. Regular tooth brushing, appropriate use of fluoride toothpaste, and reduction of harmful dietary practices contribute to oral health. Islam et al. (2020) studied oral-hygiene awareness and practices among 150 primary school children aged 5–12 years in Mathbaria Upazila, Pirojpur District. The study reported limited awareness and inadequate knowledge of oral-hygiene habits among the children. The findings indicate that oral hygiene should be included when assessing overall personal hygiene among primary school students. School-based oral-health education may improve both knowledge and behaviour. Haque et al. (2016) conducted a school-based oral-health education intervention among 944 students in grades 6–8 in Narayanganj District. After six months, significant improvements were observed in oral-health knowledge, attitudes, and reported practices, and the prevalence of untreated dental caries was reduced. Although the participants were older than primary-school children, the study provides evidence that structured school-based education can influence hygiene-related behaviour.

1.2.6. Health education and behavioural change

Health education is widely regarded as an important strategy for improving children's hygiene. However, educational interventions may be more effective when they are skill-based, repeated, participatory, and supported by appropriate facilities. A recent randomized controlled trial in rural Bangladesh evaluated skill-based health education delivered through trained para-teachers in primary schools. The intervention produced significant improvements in overall hygiene practices and health/hygiene knowledge. The study also reported improvements in child handwashing and dental-care outcomes, indicating that school-based education can influence several components of personal hygiene simultaneously (Omura et al., 2025). Similarly, Akhter et al. (2026) evaluated a two-week hand-hygiene education programme among schoolchildren in Dhaka. Significant improvements were observed in knowledge, attitude, and practice scores after the intervention. Knowledge was positively correlated with practice, although the authors noted limitations associated with the small sample, single-school setting, short follow-up, and absence of a control group. These findings reinforce the importance of investigating both knowledge and practice. A student may score highly on knowledge questions while demonstrating inadequate behaviour. Conversely, some children may practise particular hygiene behaviours because of parental routines even when their formal knowledge is limited.

1.2.7. International evidence

International studies provide additional support for school-based hygiene promotion. A systematic review and meta-analysis of randomized trials in educational settings examined hand-hygiene interventions and their effects on respiratory and gastrointestinal illness and absenteeism. The review identified 18 cluster randomized trials and concluded that individual studies suggested potential reductions in absence and respiratory or gastrointestinal outcomes, although methodological heterogeneity and study-quality limitations were present (Willmott et al., 2016). Lee et al. (2018) reviewed hand-hygiene intervention strategies among schoolchildren in developing countries and identified eight randomized or cluster-randomized trials. The review emphasized that methodological quality varied considerably, highlighting the need for well-designed interventions and stronger evaluation. Jess and Dozier (2020) reviewed behavioural strategies for increasing handwashing among young children and emphasized that effective behaviour change requires more than simply providing information. Similarly, Curtis et al. and other hygiene researchers have emphasized the importance of habit formation, environmental cues, access to facilities, and social reinforcement. These findings are relevant to Bangladesh because they suggest that personal hygiene should be understood as a behavioural and environmental issue rather than simply a matter of knowledge.

1.2.8. Research Gap and Rationale

Although several studies have examined personal hygiene among schoolchildren in Bangladesh, the available evidence remains geographically uneven. Previous Bangladeshi studies have primarily focused on specific locations, including Dhaka, Noakhali, Narayanganj, and Pirojpur. These studies have demonstrated that children's knowledge of personal hygiene does not always correspond to their actual hygiene practices. They have also indicated that factors such as parental education, grade level, exposure to health education or hygiene training, and the availability of appropriate school facilities may influence children's hygiene-related behaviours. However, district-specific evidence concerning personal hygiene knowledge and practices among primary school students in Naogaon District remains comparatively limited. Local assessment is important because hygiene-related knowledge and behaviours

may vary according to socioeconomic circumstances, parental and family educational status, school infrastructure, availability of safe water and soap, cultural practices, and exposure to health-education programmes. Findings obtained from other districts therefore may not fully represent the situation of primary school students in Naogaon.

The present study seeks to address this local research gap by assessing both knowledge and practices related to personal hygiene among primary school students in Naogaon, Bangladesh. Examining knowledge together with reported practices is particularly important because awareness of appropriate hygiene behaviours does not necessarily result in their consistent implementation in daily life. Assessment of both dimensions can therefore provide a more comprehensive understanding of students' hygiene-related behaviours and may identify specific areas in which additional health education, behavioural reinforcement, parental involvement, or improvements in school facilities are needed.

The existing literature suggests that personal hygiene is an important component of child health and well-being, while also demonstrating that improvements in knowledge alone may not be sufficient to produce sustained behavioural change. Effective hygiene promotion among schoolchildren is therefore likely to require a comprehensive and supportive approach involving age-appropriate health education, repeated behavioural reinforcement, adequate water, sanitation and hygiene facilities, parental participation, and regular monitoring. A context-specific assessment can help identify the most relevant gaps within a particular community and school environment.

Therefore, the present study is justified by the need for locally relevant evidence regarding personal hygiene among primary school students in Naogaon District. By documenting students' level of knowledge and reported hygiene practices, the study may contribute to a better understanding of existing strengths and deficiencies and provide evidence that can support the development of appropriate school-based health-education and hygiene-promotion strategies. The findings may also provide a useful baseline for future studies and interventions aimed at improving personal hygiene behaviours among primary schoolchildren in Naogaon and similar settings in Bangladesh.

2.0. Materials and Methods:

2.1. Study Design and Setting

A community-based cross-sectional observational study was conducted among primary school-going children in Naogaon District, Bangladesh. The study was carried out in selected primary schools within the district.

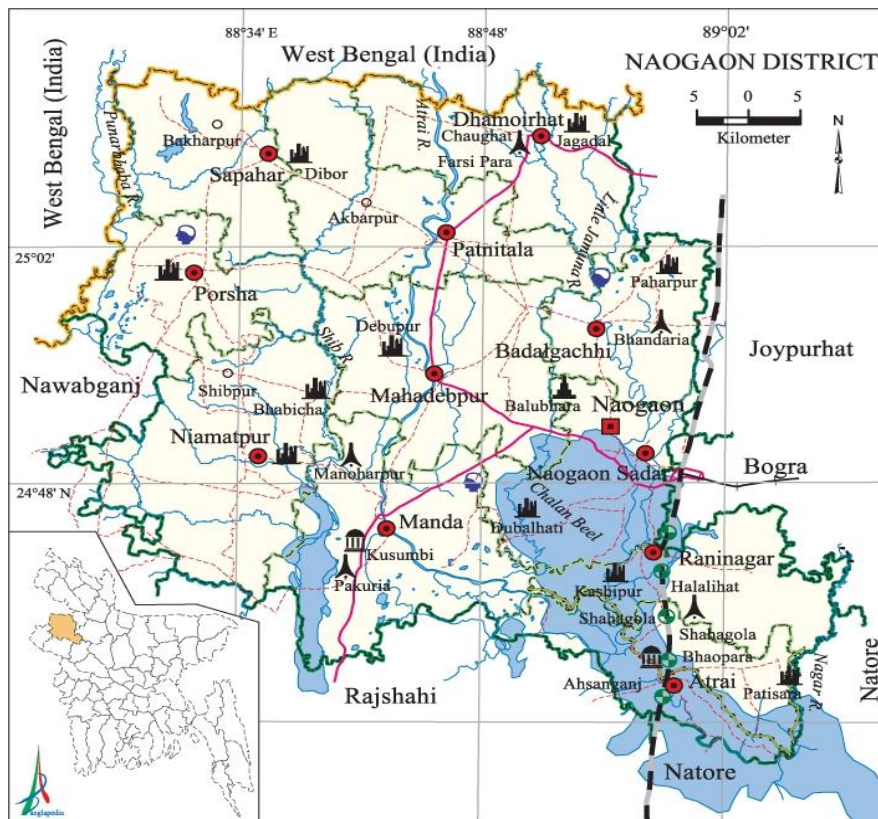


Figure 1.1. Map of Naogaon District.

2.2. Study Period

The study was conducted over a four-month period, from May 2025 to August 2025.

2.3. Sample Size

The required sample size was estimated based on findings from previous studies using Raosoft sample size calculation software. The calculated sample size was 250 participants.

2.4. Sampling Technique

A multistage random sampling technique was employed to select the study participants. In the first stage, the primary sampling units, including Upazilas, Unions, and villages, were selected using a random sampling method. In the subsequent stage, eligible primary school-going children were selected from the chosen schools using a random sampling technique.

2.5. Inclusion and Exclusion Criteria

The study included primary school-going children who were willing to participate in the study. Children who were physically unable to respond to the questionnaire or had a mental disability that prevented them from providing appropriate responses were excluded from the study.

2.6. Study Instrument

Data were collected using a pre-designed, pre-tested, and structured questionnaire developed based on the objectives of the study and relevant literature.

2.7. Data Collection Procedure

Prior permission was obtained from the respective school authorities before commencing data collection. The questionnaire was initially developed in English and subsequently translated into Bengali, the local language. The Bengali version was then back-translated into English to ensure linguistic consistency and accuracy.

Prior to the main data collection, the questionnaire was pre-tested among students from a school that was not included in the main study. Based on the findings of the pre-test, necessary modifications were made to improve the clarity, appropriateness, and consistency of the questionnaire. The finalized questionnaire was then used for data collection.

2.8. Data Management and Analysis

At the end of each day of data collection, all completed questionnaires were reviewed for completeness, consistency, and accuracy. Data entry was initiated following completion of the data collection process. The collected data were coded, entered, cleaned, and analyzed using Statistical Package for the Social Sciences (SPSS), version 26. Descriptive statistics were used to summarize the study variables. Categorical variables were presented using frequencies and percentages, while appropriate tests of significance were applied where applicable. Data analysis was conducted in accordance with the specific objectives of the study.

2.9. Ethical Considerations

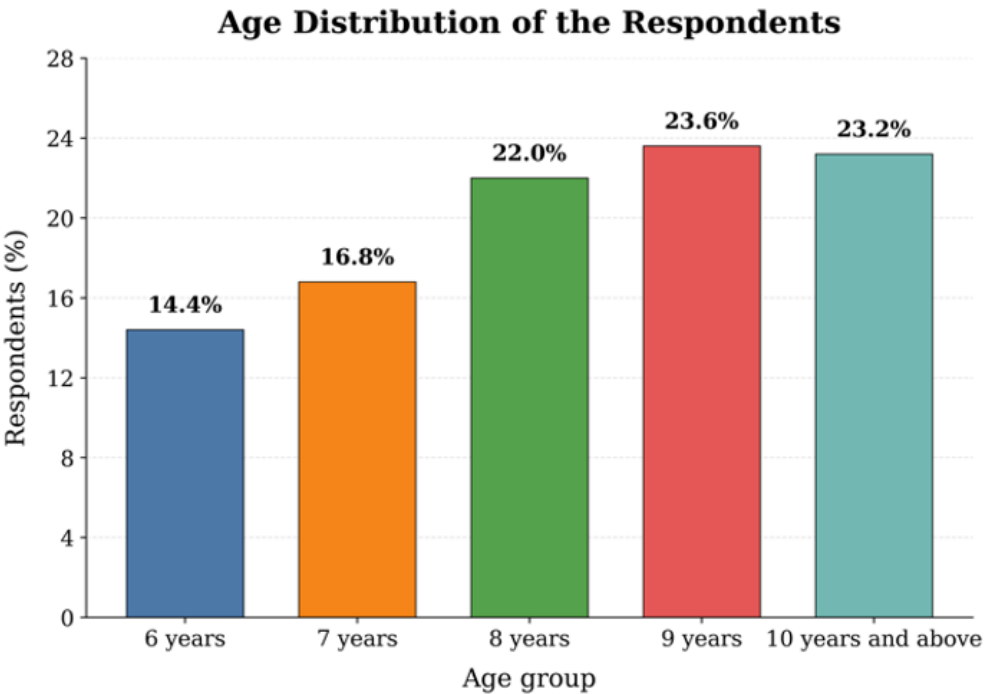
Ethical approval was obtained from the appropriate institutional ethics committee prior to commencement of the study. Permission was also obtained from the relevant school authorities. Before data collection, the purpose, objectives, and procedures of the study were explained clearly to the participants and, where applicable, their guardians. Participation was voluntary, and participants were informed of their right to decline participation or withdraw from the study at any stage without penalty. As the study involved only questionnaire-based data collection, no invasive procedures or interventions were performed. Participants were assured that all information collected would be treated confidentially and used solely for research purposes. Personal identifiers, including participants'

names and other information that could reveal their identities, were not disclosed in any report or publication. Appropriate assent was obtained from the participating children before commencement of the interview, with parental or guardian consent obtained where required. All participants' contributions were acknowledged and respected throughout the study.

3.0. RESULTS

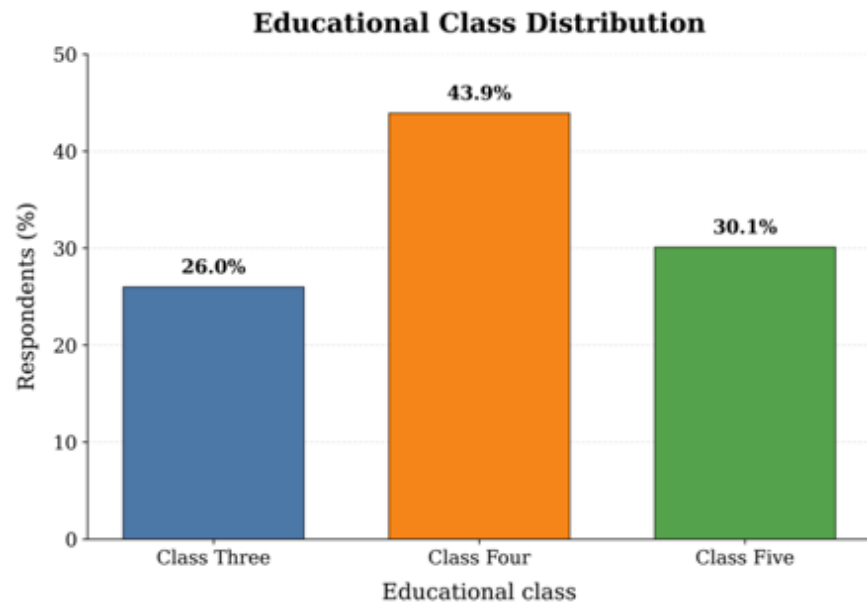
3.1. Sociodemographic Characteristics of the Respondents

A total of 250 primary school-going children participated in the study. The age distribution of the respondents was relatively balanced across the different age groups. Among them, 36 (14.4%) were aged 6 years, 42 (16.8%) were aged 7 years, 55 (22.0%) were aged 8 years, 59 (23.6%) were aged 9 years, and 58 (23.2%) were aged 10 years or older. Thus, approximately 69% of the respondents were aged 8 years or above, while children aged 6 years constituted the smallest proportion of the sample.



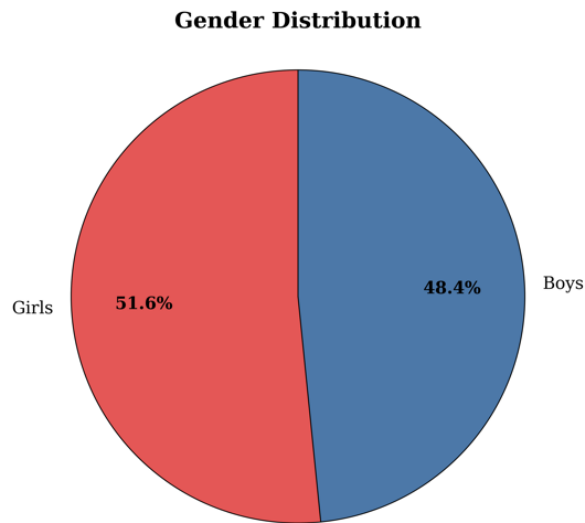
Graph 3.1. Age distribution of the respondents

Regarding educational level, the respondents were distributed across Classes III, IV, and V. Among the 250 students, 65 (26.0%) were from Class III, 110 (43.9%) were from Class IV, and 75 (30.1%) were from Class V. Class IV students constituted the largest proportion of the study population.



Graph 3.2. Educational class distribution

The sex distribution was nearly equal, with a slight predominance of girls. Of the total respondents, 121 (48.4%) were boys and 129 (51.6%) were girls. This indicates a relatively balanced representation of both sexes in the study population.



Graph 3.3: Gender distribution of participants

With respect to religion, the majority of respondents were Muslim (194, 77.6%), followed by Hindu (48, 19.2%), Christian (2, 0.8%), and other religious groups (8, 3.2%).

3.2. Parental Educational Status

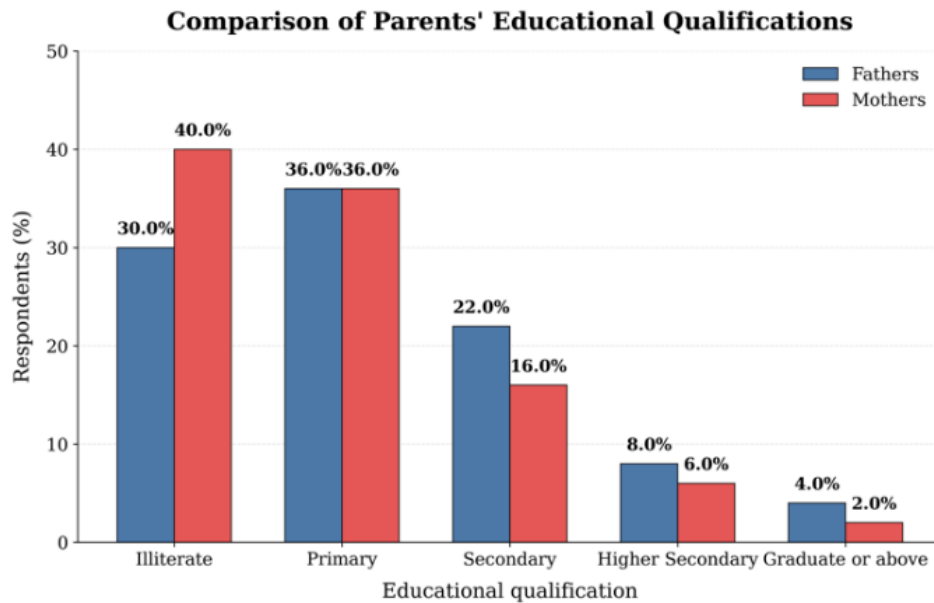


Figure 3.4: Comparison of parents' educational qualification

The educational status of the respondents' fathers indicated a relatively low level of formal education. Among the 250 fathers, 90 (36.0%) had completed primary education, while 75 (30.0%) were illiterate. A further 55 (22.0%) had completed secondary education, 20 (8.0%) had completed higher secondary education, and only 10 (4.0%) had attained graduate-level education. Overall, the findings indicate that a substantial proportion of fathers had limited formal educational attainment. The educational profile of mothers was comparatively lower. Approximately 76% of mothers were either illiterate or had education only up to the primary level, while only 2% had attained graduate-level education or above. This indicates a generally low level of educational attainment among the mothers of the study participants.

3.3. Parental Occupation

The occupational distribution of the respondents' fathers demonstrated a predominantly agriculture- and labor-based livelihood pattern. Among the 250 fathers, 120 (48.0%) were farmers, 70 (28.0%) were day laborers, 25 (10.0%) were employed in service or office-based occupations, 20 (8.0%) were engaged in business, and 15 (6.0%) were unemployed. Thus, farming and day labor constituted the major sources of livelihood among the respondents' fathers. The majority of mothers were not engaged in paid employment. Of the 250 mothers, 180 (72.0%) were unemployed, while 30 (12.0%) were farmers and 25 (10.0%) were day laborers. Only 10 (4.0%) were engaged in service or office-based occupations, and 5 (2.0%) were involved in business. The findings indicate that most mothers were not involved in formal income-generating activities.

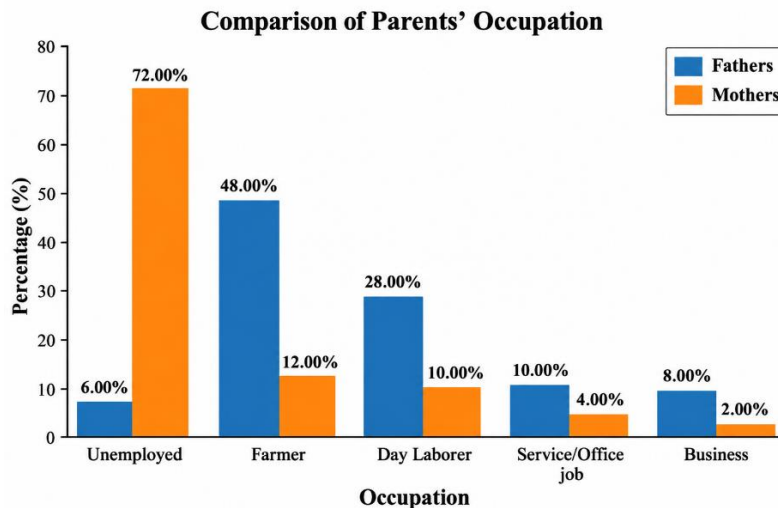


Figure 3.5: Comparison of parents' occupation

3.4. Monthly Family Income

The monthly family income distribution demonstrated that most respondents belonged to lower- to middle-income households. Among the 250 families, 60 (24.0%) reported a monthly income of less than BDT 5,000, while 110 (44.0%) had an income of BDT 5,000–10,000. Another 60 families (24.0%) reported an income of BDT 10,001–20,000, whereas only 20 families (8.0%) had a monthly income exceeding BDT 20,000. Overall, 68.0% of the families reported a monthly income of BDT 10,000 or less, indicating that a considerable proportion of the study population came from economically constrained households.

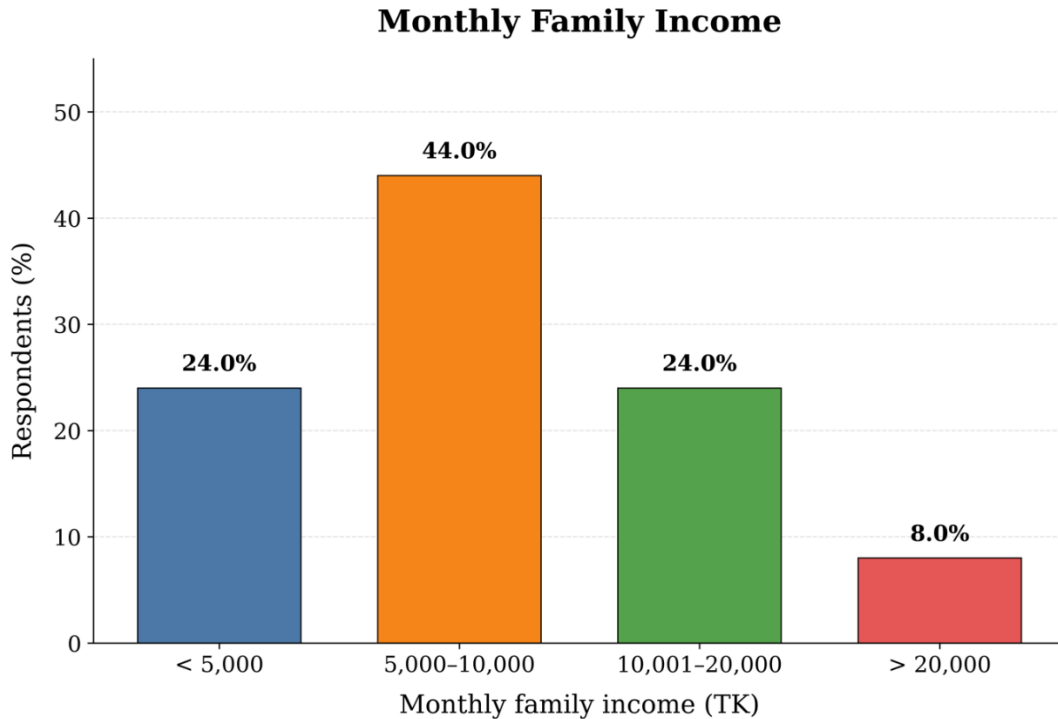
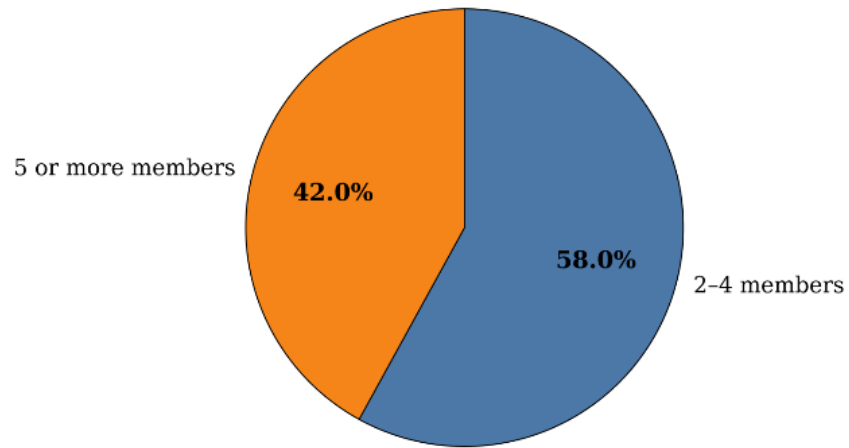


Figure 3.6. Monthly family income

3.5. Family Size and Structure

The distribution of household size indicated that 58% of the respondents belonged to smaller households, whereas 42% lived in larger households. This suggests that both smaller and extended household arrangements were present within the study population. Regarding family structure, 175 (70.0%) respondents belonged to nuclear families, while 75 (30.0%) belonged to joint families. Thus, nuclear families constituted the predominant family structure among the respondents. Overall, the sociodemographic findings indicate that the study population was characterized by a relatively balanced distribution of age and sex, predominantly Muslim religious affiliation, comparatively low parental educational attainment, agriculture- and labor-based paternal occupations, high levels of maternal non-employment, and predominantly lower- to middle-income households. Nuclear families represented the majority of household structures among the respondents.

Number of Family Members



Graph 3.7: Number of family members

Type of Family

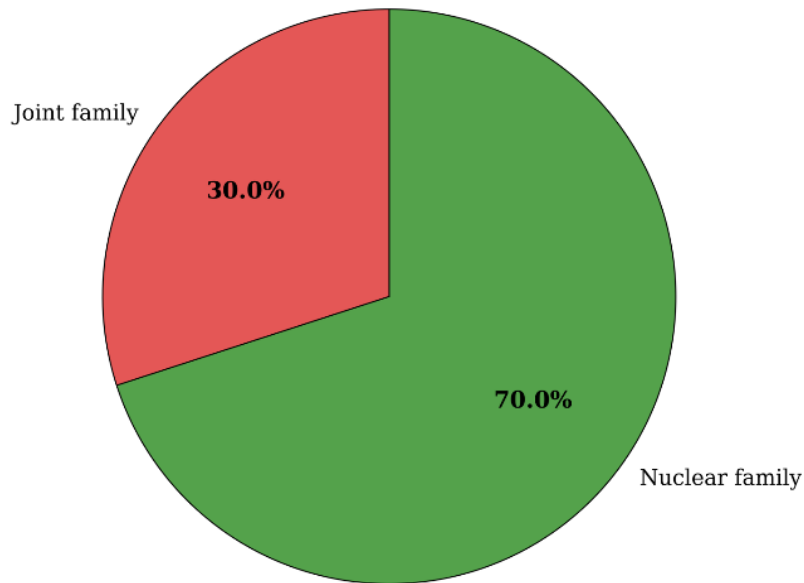


Figure 3.8. Types of families

Table No. 3.1. Socio-demographic Information(n=250)

Questions	Coding Categories	Frequency	Percent
Age	6 yr	36	14.40
	7yr	42	16.80
	8yr	55	22.00
	9yr	59	23.60
	10 years and above	58	23.20
	Mean Age =8.24		
Educational Class	Class Three	65	26.00
	Class Four	110	43.90
	Class Five	75	30.10

Gender	Boy	121	48.40
	Girl	129	51.60
Religion	Islam	194	77.60
	Hindu	48	19.20
	Christian	2	.80
	Others	8	3.20
Fathers Educational Qualification	Illiterate	75	30.00
	Primary	90	36.00
	Secondary	55	22.00
	Higher Secondary	20	8.00
	Graduate or above	10	4.00
Mothers Educational Qualification	Illiterate	100	40.00
	Primary	90	36.00
	Secondary	40	16.00
	Higher Secondary	15	6.00
	Graduate or above	5	2.00
Fathers Occupation	Unemployed	15	6.00
	Farmer	120	48.00
	Day Laborer	70	28.00
	Service/Office job	25	10.00
	Business	20	8.00
Mothers Occupation	Unemployed	180	72.00
	Farmer	30	12.00
	Day Laborer	25	10.00
	Service/Office job	10	4.00
	Business	5	2.00
Monthly Family Income in TK	< 5,000	60	24.00
	5,000–10,000	110	44.00
	10,001–20,000	60	24.00
	> 20,000	20	8.00
Number of family members	2-4	145	58.00
	5 or more	105	42.00
Type of Family	Nuclear family	175	70.00
	Joint family	75	30.00

Availability of Health Education in Schools

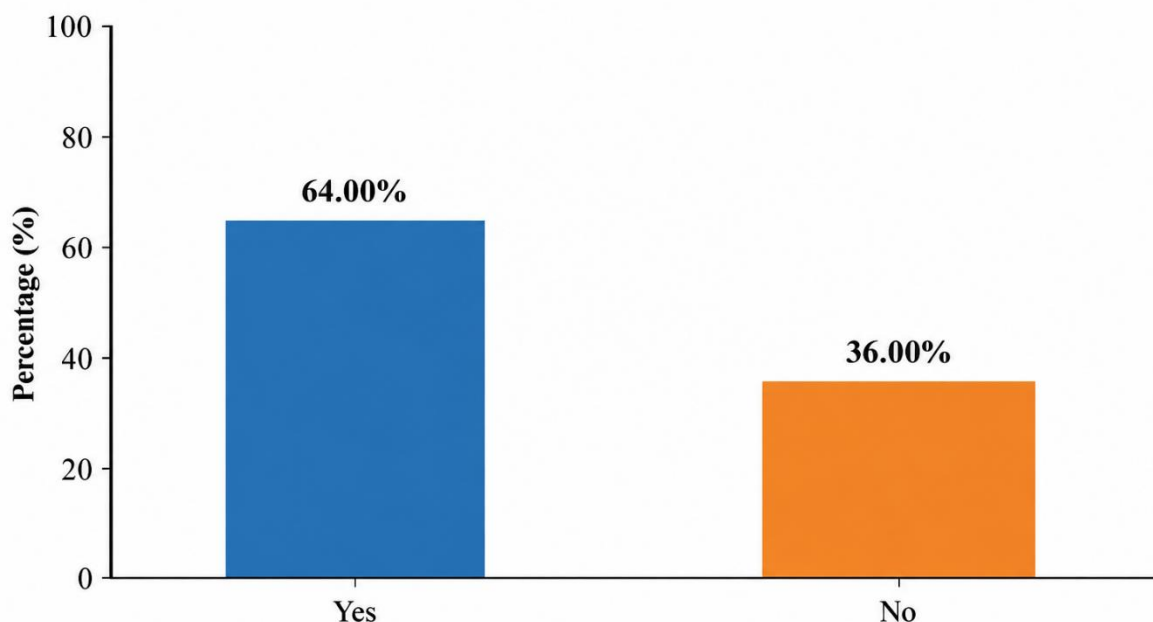


Figure 3.9. Availability of Health Education in school

This figure shows that 64% of students reported receiving health education at school, while 36% did not. Although most students have access to health education, over one-third still lack this essential learning opportunity, highlighting the need for more consistent implementation across schools.

Figure 3.10 revealed that 72% of students had access to essential hygiene facilities at school, such as water, soap, and toilets, while 28% did not. Although most students can maintain hygiene at school, over one-quarter still lack adequate facilities, indicating the need for improved and more consistent hygiene infrastructure across schools.

Access to Hygiene Facilities in School

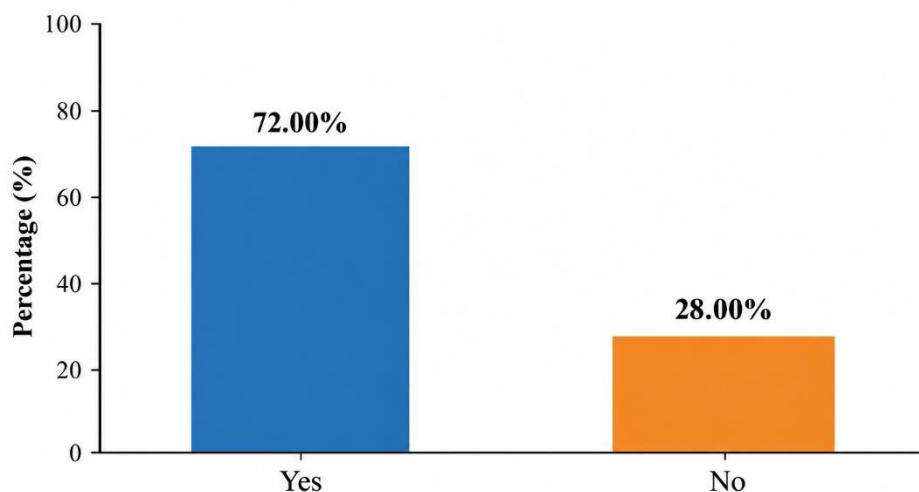


Figure 3.10. Access to Hygiene Facilities in School (Water, Soap, Toilets, etc.) (n=250)

Table No. 3.2. Knowledge about Personal Hygiene(n=250)

Knowledge Questions	Know		Don't Know	
	No.	Percent	No	Percent
1. Know the importance of hand washing	203	81.20%	47	18.80%
2. Know the importance of foot washing?	166	66.40%	84	33.60%
3. Know the importance of cleaning ear	210	84.00%	40	16.00%
4. Knowledge about the importance of tooth washing	226	90.40%	24	9.60%
5. Know the difference between personal and general hygiene requirements	26	10.40%	224	89.60%

This table shows that students showed high knowledge in several personal hygiene areas, including tooth washing (90.4%), handwashing with soap (85.6%), cleaning ears (84.0%), general handwashing importance (81.2%), towel use (79.6%), brushing teeth twice daily (78.0%), harm of poor hygiene (75.6%), and harm of nail biting (71.2%). Moderate awareness was seen for foot washing (66.4%) and weekly bathing frequency (54.8%). However, major knowledge gaps were evident in understanding the difference between personal and general hygiene (10.4%) and proper sneezing etiquette (25.2%). Overall, while basic hygiene knowledge is strong, important preventive concepts remain poorly understood.

Table 3.3. showed that many personal hygiene practices are widely followed by students, including washing the face in the morning (87.2%), combing hair after bathing (86.0%), using toothpaste after meals (85.6%), daily bathing (81.2%), and washing hands and feet after playing (79.2%). Good adherence was also seen in handwashing after toilet use (78.0%), weekly nail trimming (78.8%), handwashing before meals (75.2%), washing hands after handling animals (72.8%), and wearing clean clothes (71.2%). Moderate adherence was reported for caretaker ear cleaning (62.4%) and avoiding barefoot walking (61.2%). However, some behaviors were poorly practiced, notably brushing teeth twice daily (42.4%) and avoiding street food (45.2%). These gaps indicate that although students understand many hygiene concepts, they do not practice them consistently, especially oral hygiene and safe eating. Behavioral reinforcement programs are needed to translate knowledge into healthy daily habits.

6. Know the harm of nail biting on health	178	71.20%	72	28.80%
7. Knowledge about the harm of poor personal hygiene on health	189	75.60%	61	24.60%
8. Knowledge about the number of times tooth brushing per day	195	78.00%	55	22.00%
9. Know the importance of hand washing with soap	214	85.60%	36	14.40%
10. Know what you should do during sneezing	63	25.20%	187	74.80%
11. Knowledge about the number of times bathing per week	137	54.80%	113	45.20%
12. Towel as a personal hygiene instrument	199	79.60%	51	20.40%

Table No. 3.3. Practice of Personal Hygiene(n=250)

Practice Questions	Know		Don't Know	
	No.	Percent	No	Percent
1. Wash face in the morning	218	87.20%	32	12.80%
2. Brush teeth twice per day	106	42.40%	144	57.60%
3. Take a bath once per day	203	81.20%	47	18.80%
4. Mother/Caretaker clean your ear after bathing	156	62.40%	94	37.60%
5. Wash hands with soap before meals	188	75.20%	62	24.80%
6. Wash hands with soap after using the toilet	195	78.00%	55	22.00%
7. Comb hair after a bath	215	86.00%	35	14.00%
8. Mother cuts your nails at least once a week	197	78.80%	53	21.20%
9. Use toothpaste after meals to clean teeth	214	85.60%	36	14.40%
10. Avoid walking with bare feet	153	61.20%	97	38.80%
11. Wear clean, washed clothes every day in school	178	71.20%	72	28.80%
12. Wash hands after dealing with an animal	182	72.80%	68	27.20%
13. Eat from street vendors	113	45.20%	137	54.80%
14. Wash your hands and feet after playing outside	198	79.20%	52	20.80%

4.0. DISCUSSION:

4.0. DISCUSSION:

The present study assessed knowledge and practices related to personal hygiene among primary school children in Naogaon District, Bangladesh, and examined selected sociodemographic and school-related characteristics. The findings provide an overview of children's hygiene-related knowledge and reported behaviors and identify several areas in which adequate knowledge did not necessarily translate into appropriate or consistent practice.

A notable strength of the study was assessing both hygiene-related knowledge and practices. Rather than examining knowledge alone, the study considered children's reported behaviors together with parental education, occupation, household economic circumstances, family structure, and access to school health resources. Previous studies among schoolchildren have similarly emphasized the importance of examining hygiene knowledge and behavior together when assessing children's overall hygiene status (Vivas et al., 2010; Rahman et al., 2019; Sarkar, 2013). Using a structured, pretested questionnaire also supported consistent data collection.

The age distribution of participants was relatively balanced, although children aged 8–10 years constituted the largest proportion of the sample. Middle childhood is an important period for establishing personal hygiene behaviors. Hygiene-related behaviors acquired during childhood may be influenced by family, school, and social environments and can become established as habitual practices (Richmond & Kotelchuck, 1984; Vivas et al., 2010). The relatively high representation of Class IV students in the present study also indicates that middle-grade schoolchildren constituted an important part of the study population.

The sex distribution was almost balanced, with girls accounting for 51.6% and boys for 48.4% of participants. This relatively similar representation of boys and girls provides an appropriate basis for describing hygiene-related knowledge and practices within the study population. Previous research among schoolchildren has examined hygiene behavior across both sexes, highlighting the importance of providing hygiene education to all children rather than limiting interventions to a particular sex (Vivas et al., 2010; Khawa et al., 2021).

Most participants in the present study were Muslim (77.6%). This distribution should primarily be interpreted in relation to the demographic characteristics of the study setting rather than as an independent determinant of hygiene behavior. The study population was drawn from a specific geographic area; therefore, the religious distribution observed here should not necessarily be generalized to all schoolchildren in Bangladesh.

Parental educational attainment was relatively low. Approximately two-thirds of fathers had either no formal education or only primary education, while 76% of mothers were either illiterate or educated only to the primary level. Previous research has identified the family environment and parental characteristics as important contextual influences on children's health-related knowledge and behaviors (Richmond & Kotelchuck, 1984; Assefa & Kumie, 2014). Similarly, studies among schoolchildren have demonstrated that children's hygiene behavior is influenced by factors operating at both household and community levels (Deb et al., 2010; Vivas et al., 2010). Limited parental education may therefore present a challenge to the consistent reinforcement of appropriate hygiene practices at home. The occupational distribution of the fathers was dominated by farming and day labor, while most mothers were not engaged in paid employment. This pattern reflects the socioeconomic characteristics of the study population and is consistent with the broader rural context in which the study was conducted. Socioeconomic circumstances can influence children's exposure to health information, availability of hygiene materials, and ability to access adequate sanitation and other health-related resources (Sachan et al., 2012; Taludkar & Baruah, 2015).

Household income also indicated a relatively disadvantaged economic profile. Approximately 68% of families reported a monthly income of BDT 10,000 or less. Economic circumstances may influence hygiene practices through access to water, sanitation facilities, soap, toothbrushes, toothpaste, and other hygiene materials. Previous research shows that environmental and socioeconomic conditions, in addition to individual knowledge, influence hygiene behavior among schoolchildren (Assefa & Kumie, 2014; Deb et al., 2010). However, socioeconomic status should not be considered the sole explanation for hygiene behavior because individual, family, school, and environmental factors may operate simultaneously.

Most respondents belonged to nuclear families (70%), while 30% belonged to joint families. The presence of both family structures indicates variation in household organization within the study population. Family structure may influence children's opportunities for supervision and reinforcement of hygiene behaviors, although the present cross-sectional findings do not establish a causal relationship between family structure and hygiene practices.

Access to School Health Resources

Access to school-based health resources was not universal. Approximately 64% of respondents reported receiving health education, while 36% reported that they had not received such education. Similarly, 72% reported having access to hygiene facilities, whereas 28% reported a lack of such facilities. These findings are important because schools represent an important setting for providing health education and reinforcing appropriate hygiene behaviors.

Previous studies have demonstrated that school-based educational interventions can improve children's knowledge and personal hygiene practices (Mukherjee et al., 2014; Dongre et al., 2007). Research from Ethiopia has also identified school- and environmental-level factors as important influences on hygiene behavior among schoolchildren (Assefa & Kumie, 2014). UNICEF has similarly emphasized the importance of adequate water, sanitation, and hygiene facilities within schools for creating a healthy learning environment (UNICEF, n.d.). The finding that more than one-quarter of respondents lacked access to hygiene facilities therefore represents an important environmental consideration when interpreting their reported practices.

Knowledge of Personal Hygiene

The respondents demonstrated relatively high levels of knowledge regarding several basic personal hygiene practices. Knowledge of the importance of tooth brushing was reported by 90.4% of participants, while knowledge related to handwashing ranged from 81% to 85%. In addition, 84% demonstrated knowledge regarding ear cleaning. These findings are broadly consistent with previous studies reporting relatively good awareness of commonly emphasized hygiene behaviors among schoolchildren (Vivas et al., 2010; Sarkar, 2013; Rahman et al., 2019).

Hand hygiene represents one of the most extensively studied areas of personal hygiene. Evidence from systematic reviews and intervention studies has demonstrated the importance of handwashing in reducing transmission of infectious diseases, particularly diarrheal and respiratory infections (Curtis & Cairncross, 2003; Rabie & Curtis, 2006; Luby et al., 2005). The relatively high level of handwashing knowledge observed in the present study may therefore reflect the emphasis generally placed on hand hygiene in school and community health education.

Knowledge regarding bathing and foot washing was comparatively lower, at 54.8% and 66.4%, respectively. Similar variation across different hygiene domains has been reported among schoolchildren, with behaviors receiving greater attention from parents, teachers, and health programs generally demonstrating higher levels of awareness (Vivas et al., 2010; Sarkar, 2013). This suggests that hygiene education should address a broad range of practices rather than concentrating primarily on handwashing and oral hygiene.

The most substantial knowledge gaps were observed for sneezing etiquette and the distinction between personal and general hygiene.

Only 25.2% of participants demonstrated knowledge regarding appropriate sneezing practices, while only 10.4% were able to distinguish between personal and general hygiene. These findings suggest that children's hygiene education may be stronger for routine visible behaviors than for less frequently emphasized preventive concepts. Previous work on hygiene education among schoolchildren similarly indicates that structured education can improve children's understanding of less familiar hygiene behaviors (Dongre et al., 2007; Mukherjee et al., 2014).

Practices Related to Personal Hygiene

The reported practice of several routine hygiene behaviors was relatively favorable. Daily face washing was reported by 87.2% of participants, 81.2% reported bathing regularly, and 85.6% reported cleaning their teeth with toothpaste. Furthermore, 78% reported washing their hands after using the toilet. These findings suggest that behaviors that are routinely reinforced within households and schools may be more consistently practiced by children.

Previous studies have documented substantial variation in personal hygiene practices among schoolchildren. Rahman et al. (2019) reported on personal hygiene knowledge and practices among primary school students in Dhaka, while Sarkar (2013) examined personal hygiene among primary schoolchildren living in a slum setting in Kolkata. Similarly, Vivas et al. (2010) reported variation between hygiene knowledge and actual practices among schoolchildren in Ethiopia. The findings of the present study are consistent with the broader observation that knowledge and practice may differ across specific hygiene behaviors.

An important knowledge–practice discrepancy was observed in oral hygiene. Although 90.4% of respondents knew the importance of tooth brushing, only 42.4% reported brushing their teeth twice daily. This difference suggests that awareness of the importance of a behavior does not necessarily result in consistent adherence to the recommended frequency. Family supervision, availability of oral hygiene materials, established household routines, and reinforcement of behavior may all contribute to this discrepancy (Richmond & Kotelchuck, 1984; Rahman et al., 2019).

Food-related behavior was another area of concern. Nearly half of the respondents (45.2%) reported consuming food from street vendors. Food safety among children may be affected by food handling, preparation, storage, water quality, and environmental sanitation. Research concerning food safety among street food vendors in Bangladesh has identified gaps in food safety knowledge and practices, indicating the relevance of the food environment to public health (Abid et al., 2022). Consequently, hygiene education for schoolchildren should include not only personal cleanliness but also practical guidance concerning safe food consumption.

Moderate levels of adherence were observed regarding avoidance of barefoot walking and caretaker-assisted ear cleaning. Approximately 61.2% of respondents reported avoiding barefoot walking, while 62.4% reported caretaker-assisted ear cleaning. These behaviors received less favorable responses than several routine hygiene practices. Previous research has shown that hygiene behaviors vary substantially according to the perceived importance of the behavior, social reinforcement, and the extent to which the behavior is incorporated into everyday routines (Curtis et al., 2009; Vivas et al., 2010).

Knowledge Practice Gap

The findings demonstrate a clear difference between knowledge and reported practice for some hygiene behaviors. The most notable example was tooth brushing: although 90.4% of participants recognized its importance, only 42.4% reported brushing twice daily. Studies of schoolchildren have reported similar differences between hygiene knowledge and behavior (Vivas et al., 2010; Sarkar, 2013; Rahman et al., 2019).

The knowledge–practice gap is also important for respiratory and food hygiene. Knowledge of sneezing etiquette was particularly low, indicating that respiratory hygiene requires greater emphasis in health education. At the same time, 45.2% of respondents reported consuming street-vended food, highlighting the importance of integrating food safety into school health education.

Evidence indicates that knowledge alone is not sufficient to produce sustained behavioral change. Hygiene practices may depend on motivation, habit formation, environmental conditions, social norms, facility availability, and reinforcement from parents and teachers (Curtis et al., 2009; Assefa & Kumie, 2014). Intervention studies have also demonstrated that structured educational approaches can improve hygiene-related knowledge and behaviors among schoolchildren (Mukherjee et al., 2014; Dongre et al., 2007).

Implications for School Health

The findings have implications for school-based health promotion in Naogaon District. First, hygiene education should address both commonly practiced behaviors and less familiar preventive behaviors. Particular attention should be given to respiratory hygiene, correct handwashing, oral hygiene frequency, food safety, and the broader concept of personal hygiene.

Second, health education should be accompanied by an enabling school environment. Education alone may have limited impact when children do not have adequate access to hygiene facilities. The finding that 28% of respondents lacked access to hygiene facilities indicates the importance of strengthening water, sanitation, and hygiene resources in schools. UNICEF has emphasized the role of adequate WASH facilities in supporting healthy and inclusive school environments (UNICEF, n.d.).

Third, parents and caregivers should be incorporated into hygiene-promotion programs. The relatively low educational attainment of parents in the present study suggests that simple, practical, and culturally appropriate health messages may be particularly useful for reinforcing children's behaviors at home. Previous studies have emphasized the importance of household and caregiver involvement in developing and maintaining children's hygiene behaviors (Pati et al., 2014; Richmond & Kotelchuck, 1984).

Overall, the present study indicates that primary schoolchildren in Naogaon demonstrated relatively good knowledge and reported favorable practices for several basic hygiene behaviors, but important gaps remained in specific preventive behaviors and in the consistency with which knowledge was translated into practice. The findings particularly highlight the discrepancy between oral hygiene knowledge and reported tooth-brushing frequency, as well as limited knowledge of sneezing etiquette and the distinction between personal and general hygiene. A comprehensive approach combining age-appropriate health education, practical demonstrations, parental involvement, regular reinforcement, and adequate school hygiene facilities may provide a more supportive environment for developing sustainable hygiene behaviors.

5.0. CONCLUSION and RECOMMENDATION

5.1. Conclusion

The study shows that while students in Naogaon primary schools possess relatively strong knowledge of basic hygiene practices such as handwashing, face washing, and oral care, their actual practices remain inconsistent. Particularly, preventive practices like proper sneezing etiquette and brushing teeth twice daily were poorly followed. The gap between awareness and practice reflects the influence of socioeconomic conditions, parental education, and school-level hygiene facilities. Overall, personal hygiene among school children is improving, but the persistence of risky behaviors indicates a need for more structured, consistent interventions.

5.2. Recommendations

1. Strengthen School Health Education: Regular and structured hygiene lessons should be integrated into the curriculum, emphasizing less understood practices such as sneezing etiquette and food safety.
2. Parental Involvement: Awareness programs should target parents, particularly mothers, given their strong influence on children's hygiene habits.
3. Improve School Facilities: Ensure universal access to clean water, soap, and functional toilets in schools, as 28% of children still reported inadequate facilities.
4. Behavioral Reinforcement: Teachers should actively supervise daily hygiene routines, e.g., handwashing before meals and after toilet use.
5. Community Engagement: Local authorities and NGOs should conduct campaigns addressing oral hygiene and food safety, discouraging street food consumption among children.
6. Policy Integration: Government should incorporate hygiene promotion into child health programs and ensure monitoring of hygiene education at the school level.

6.0. Limitations of the Study

1. Cross-sectional design: Limits the ability to establish causality between knowledge and hygiene practices.
2. Geographic scope: Conducted only in Naogaon district; results may not represent all rural or urban school children in Bangladesh.
3. Limited qualitative insight: The study did not explore cultural or behavioral factors in depth that may explain why knowledge does not always translate into practice.
4. School-based sample: Children not attending school were excluded, although they may represent an even more vulnerable group.

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