Original Article

Practices on Prevention and Control of Diarrheal Diseases among Adult Population in A Selected Rural Area of Bangladesh

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Abstract

Background: Diarrhea is a waterborne disease that can be transmitted through biological and chemical contamination. Bangladesh has conditions favorable for the rapid transmission of enteric pathogens through the fecal-oral route. Infection may be transmitted during bathing, washing, drinking, in the preparation of food, or the consumption of contaminated food.

Objective: To assess the knowledge and practices regarding prevention and control of diarrheal diseases among the adult population in a selected rural area of Bangladesh.

Materials and Methods: It was a cross-sectional descriptive study conducted among 428 adult respondents. Data was collected by semi-structured questionnaire by face-to-face interview. This study was conducted between July and October 2023.

Results: In this study highest number of the respondents 170 (39.7%) were within the age group of 21-35 years. The mean (±SD) age of the respondents was 37.77 (± 20.78) years. The highest number of the respondents had secondary level education 144 (33.6%). The mean (±SD) monthly family income of the respondents was 23,327.58 (±27,10708.86) TK. Most of the respondents heard about hand hygiene 415 (97.0%). Regarding sources of drinking water, 257 (60%) used deep tube well water,138 (32.2%) drank direct supply water and 185 (43.2%) drank filter water. A few respondents 27 (6.3%) did not take ORS during diarrhea.

Conclusion: Almost all the respondents heard and knew about diarrheal diseases. The majority of the respondents' knowledge and practice about diarrheal diseases was satisfactory. As per the present study necessary measures should be taken against those who have not used ORS during diarrhea and improve their basic sanitation and personal hygiene.

Keywords: Diarrhea, Adult, Knowledge, Practice

Introduction

Globally, diarrhea is the second most common cause of death and illness.[1] Although diarrheal diseases are common among children and older adults, death due to diarrhea is three times more common among older adults specifically among those who belong to the population above 70 years of age than children under five years of age.[2] 'Shigella is the most common cause of diarrhea in older individuals and is responsible for 18.4 deaths per 100,000 people. Infection can occur through untreated water, spoiled food, or personal contact.[3] Numerous bacterial, viral, and parasitic species are also responsible for it.[4,5,6,7] In order to prevent diarrhea in older persons, the Ministry of Health and Family Welfare of the Government of India's current guidelines for managing the condition suggest taking a salt solution and taking zinc supplements.[8] According to a prior study based on a global systematic review, hand washing mitigates diarrhea by 40%; but hand cleaning after coming into touch with excreta is not widely practiced worldwide.[9] According to the data, this disease can be readily avoided by practicing safe drinking water, hand washing, good hygiene, and improved sanitation.[10]

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A major contributor to malnutrition and a major cause of childhood morbidity and mortality in poor nations are diarrheal illnesses. In many nations, cholera and other forms of diarrhea are major causes of morbidity in older adults and children. Prolonged diarrhea combined with malnourishment and bloody diarrhea (dysentery) are also significant causes of death. Dehydration causes a lot of diarrheal deaths. The finding that dehydration from acute diarrhea of any cause and at any age, with the exception of severe instances, may be safely and successfully treated in more than 90% of cases by the straightforward technique of oral rehydration with a single fluid is a significant advancement. An oral rehydration salt (ORS) solution is created by dissolving glucose and a number of salts in water. Additionally, the new ORS solution lowers stool volume by 20% and vomiting by 30%. The WHO and UNICEF have now formally endorsed this new decreased (low) osmolality ORS solution, which contains 75 m eq/l of sodium and 75 milli mol/l of glucose. Any reference to ORS/ORT in this updated publication refers to this new reduced (low) osmolality ORS solution.[11]

With over 4.6 million fatalities per year, diarrhea was the world's largest cause of infant mortality in 1980. Nowadays, 15% to 30% of mortality in children under five is caused by diarrhea. Oral Rehydration Therapy (ORT), which was first launched in 1979, has emerged as the mainstay of diarrhea control programs. Over the past few decades, efforts to prevent diarrhea have been founded on a number of potentially effective therapies.

Diarrhea-related mortality was also impacted by other measures, such as enhanced supplemental feeding, vitamin A supplementation, measles vaccination, breastfeeding promotion, safe water supply, and fecal disposal. Diarrhea accounts for one-third of all child fatalities in Bangladesh. An average rural child experiences 4.6 bouts of diarrhea a year, which results in over 230,000 child deaths. [12]

Challenges like high population density, which puts more people in a smaller area, solid waste production, unsanitary conditions, and a growing need for water supply and sanitary facilities are all visible. It is one of the primary causes of the high prevalence of waterborne illnesses like cholera, typhoid, dysentery, and diarrhea among the impoverished in both rural and urban areas. A reliable water supply is unavailable to about 1.1 billion people (one-sixth of the world's population), and 2.4 billion people (two-fifths) do not have access to sanitary facilities (WHO and UNICEF). Most of these individuals reside in Asia and Africa. Water-related illnesses are a challenging problem for developing nations in Asia and Africa, for instance. [13]

Materials and Methods

It was a cross-sectional descriptive type of study that was conducted in Keraniganj Upazila, Dhaka, Bangladesh. The total period of study was 4 months, from July to October 2023, and the sample size was 428. The study population was adult people who reached or completed his/her 20th birthday. A purposive non-probability sampling method was used for selecting the sample. Data were collected by face-to-face interviews. A semi-structured questionnaire was developed to collect data according to the objectives of the study. The questionnaire was pre-tested, and necessary modifications were done before finalization. After explaining the purpose of the study, written and verbal consent was obtained from the respondents. The research protocol was approved by the Community Medicine department of Ad-din Women's Medical College.

Result

The participant's ages ranged from below 20 to 65 years or older, with a mean age of 37.77 ± 20.78 years**.** The majority belonged to the 21–35 years age group which is 170 (39.7%)**,** followed by 36–50 years 113 (26.4%)**.** A smaller proportion was aged ≥65 years 33 (7.7%)**.** The study sample was predominantly female 283 (66.1%)**,** while male participants constituted 145 (33.9%) of the total population. The study sample comprised mostly

Table I: Socio-demographic characteristics of the respondents. (n=428)

Variables		Frequency (%)
Age group	≥20	43 (10%)
(years)	21-35	170 (39.7%)
	36-50	113 (26.4%)
	51-64	69 (16.2%)
	≥65	33 (7.7%)
	Mean (±SD)	37.77 (±20.78)
Gender	Male	145 (33.9%)
	Female	283 (66.1%)
Religion	Muslim	411 (96.0%)
	Hindu	17 (4.0%)
Education	Illiterate	106 (24.8%)
	Primary Education	139 (32.5%)
	Secondary Education	144 (33.6%)
	Graduate	27 (6.3%)
	Post-Graduate	12 (2.8%)
Occupation	Housewife	249 (58.2%)
	Business	50 (11.7%)
	Service holders	30 (7.0%)
	Farmers	10 (2.3%)
	Others	89 (20.8%)

females 283 (66.1%), with males making up 145 (33.9%). A significant proportion of participants had primary 139 (32.5%) or secondary education 144 (33.6%), while 106 (24.8%) were illiterate. A smaller fraction had graduate 27 (6.3%) or postgraduate 12 (2.8%) qualifications. The most common occupation was housewife 249 (58.2%), reflecting the high female representation in the sample.

Table 02 presents the distribution of respondents based on their knowledge of personal hygiene practices. The findings indicate that participants have a high level of awareness of key hygiene behaviors. The majority 420 (98.1%) reported washing their hands before meals, while only 8 (1.9%) did not practice this habit. Similarly, 422 (98.6%) of respondents washed their hands after defecation, with only 6 (1.4%) not adhering to this practice. These high percentages suggest a strong awareness of hand hygiene, which is crucial for preventing infectious diseases. 398 (93.0%) of participants reported keeping food covered, while 30 (7.0%) did not. 383 (89.5%) of respondents practiced proper disposal of garbage, whereas 45 (10.5%) did not. This indicates that while most individuals understand the importance of food hygiene, a small proportion still engage in risky practices that may lead to food contamination.

Table 02: Distribution of the respondents by their knowledge about Personal hygiene (n=428)

Variables	Yes (%)	No (%)
Washing hands before meal	420 (98.1)	8 (1.9)
Washing hands after defecation	422 (98.6)	6 (1.4)
Keep food covered	398 (93.0)	30 (7.0)
Proper disposal of garbage	383 (89.5)	45 (10.5)

Table 03 presents the distribution of the study population based on their source of drinking water and the type of latrine used. The majority of respondents 257 (60.0%) rely on deep tube wells for drinking water, which is generally considered a safer source compared to surface water. The majority 367 (85.7%) use sanitary latrines, reflecting good hygiene practices. Overall, the data suggest that while a significant portion of the population has access to improved water and sanitation facilities, there is still a small group using unsafe water sources and suboptimal latrines, highlighting areas for public health intervention.

Table 03: Distribution of the respondents by their practices about basic sanitation (n=428)

Variables	Frequency (%)
Source of drinking water	
Tap Water	169 (39.5%)
Deep Tube Well	257 (60.0%)
Pond Water	2 (.5%)
Type of latrine used	
Sanitary latrines	367 (85.7%)
Tin shed latrines	48 (11.3%)
Kacha latrines	13 (3.0%)

A majority of 337 (78.7%) of respondents reported using ORS to manage diarrhea, indicating good awareness and practice of this effective rehydration method in Table 04.

Table 04: Distribution of the respondents ORS used drinking water (n=428)

ORS used during diarrhea (n=428)	Frequency (%)
ORS used	337 (78.7)
Not used	27 (6.3)
Other measures	64 (15)

The highest percentage (48.4%) of respondents dispose of waste in closed spaces, indicating a preference for contained waste management. This practice helps reduce environmental contamination and health hazards in figure 1.

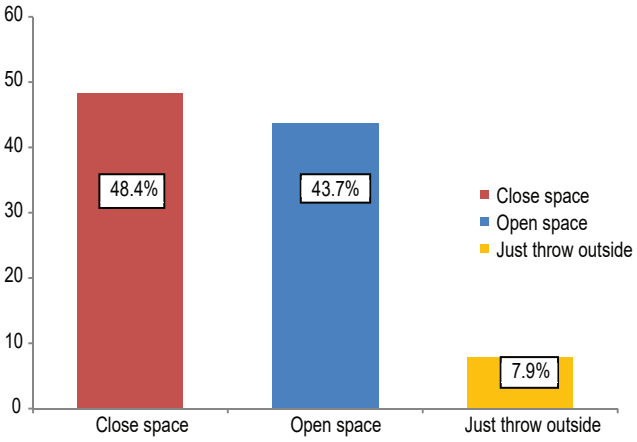

Figure 1: Distribution of the respondents' practices about disposal of garbage

While a majority of respondents 43% use some form of water purification, a notable percentage 32% still consume untreated water, which could increase the risk

of waterborne diseases. This highlights the need for awareness campaigns and better access to safe water purification methods to improve public health outcomes in figure 2.

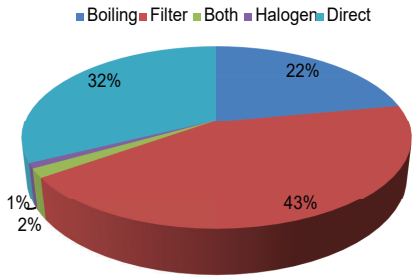

Figure 2: Distribution of the respondents by purification of drinking water

Discussion

The study found that most participants had a high level of knowledge and good hygiene practices for preventing diarrheal diseases, particularly in handwashing. This aligns with global findings that emphasize handwashing as a key intervention in reducing diarrheal disease. However, despite high awareness, an insignificant number of respondents did not use ORS during diarrhea, indicating gaps in effective management. Similar studies in Bangladesh and other low-income settings have reported challenges in ORS adoption due to lack of awareness or misconceptions. The study found that a significant number of respondents relied on deep tube wells for drinking water, which is a positive indicator of safe water access. However, most of the people drank directly from the supply water, and a small fraction used pond water, which may increase the risk of waterborne infections. Despite a significant number of respondents using sanitary latrines, a small fraction still relied on suboptimal sanitation facilities (tin shed and kacha latrines). This suggests that while sanitation infrastructure is improving, there is still a need for targeted interventions in hygiene promotion and improved waste management. Studies from other developing countries have shown that access to safe drinking water and improved sanitation can reduce diarrheal disease incidence by up to 40%. The findings of this study are consistent with similar research in Bangladesh, where improved sanitation and hygiene behaviors are key determinants in reducing diarrheal disease rates. Compared to national data, the level of hand hygiene practice in this rural setting appears relatively high. A Bangladesh Demographic and Health Survey (BDHS) report suggested that handwashing practices remain inconsistent in many rural regions, indicating possible behavioral improvements in this study area. Although a large number of respondents used ORS during diarrhea, the remaining did not use ORS or relied on other measures. Future interventions should emphasize community education programs that promote the universal use of ORS and zinc supplementation, as recommended by the WHO. Water purification practices were not universally adopted, with small number of respondents consuming untreated water. This highlights the need for further public health education on the risks of consuming unfiltered or untreated water. The findings underscore the importance of strengthening health education programs to promote universal ORS use and improved hygiene. Government and non-governmental organizations should work to increase access to improved sanitation and safe drinking water, particularly in rural areas. Future programs should also focus on behavioral change communication to reinforce safe hygiene and sanitation practices at the household level. A key strength of this study is its relatively large sample size, which enhances the generalizability of findings within the study region. However, the study used a purposive sampling method, which may introduce selection bias. Future studies using randomized sampling would help strengthen the reliability of the results.

Conclusion

The study highlights a high level of awareness and good hygiene practices among the rural adult population regarding the prevention and control of diarrheal diseases. Most respondents demonstrated satisfactory knowledge and adherence to proper hand hygiene, safe water consumption, and sanitation practices. However, gaps remain in ORS utilization during diarrhea, reliance on untreated drinking water, and the use of suboptimal sanitation facilities by a small fraction of the population. Addressing these gaps through targeted health education programs, community interventions, and improved access to safe drinking water and sanitation facilities is crucial. Strengthening behavioral change communication and promoting universal ORS and zinc supplementation use can further reduce the burden of diarrheal diseases. Future research with randomized sampling methods would enhance the generalizability of these findings and contribute to more effective public health strategies.

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