

Domestic Hygiene Practices and Factors that Risks for Childhood Diarrhoea Among Under Five Children in Isolated Chars of Gaibandha, Bangladesh

*MB Hossain¹, A Lutf², AMAA Awwal³

ABSTRACT

Background: Worldwide diarrheal disease is the second leading cause of death in under-five years children. In Bangladesh diarrhoea kills half million under-five children every year second to pneumonia. The study was aimed to assess the domestic hygiene practices and find the factors that risked for diarrheal disease in under-five children among the families that resides in isolated chars of Gaibandha district.

Method: A community based cross-sectional study design was employed in 2011 at three unions of Gaibandha district. Random sampling technique was employed to select 322 households that had at least one under-five children. Data was collected using pretested structured questionnaire.

Result: A total of 322 children were enrolled. The overall diarrhoea prevalence was 20.8%. About 71% (n=255) of households collected drinking water from improved water sources and only 10.8% (n=17) had been using river water for their cooking. We found a lower prevalence of diarrhoea in children whose mother had a higher education level. More than 60% mothers didn't wash their hands before feeding their children. A good scenario has been observed that babies were breastfed for sufficient time period. Apart from diarrhoea, Otitis media and skin diseases were significantly found in chars babies. About 20% of the babies were found not immunized and 43.2% found immunized and over 40% partially immunized. Half of the families were found deprived from primary health care facilities and there were found only one satellite clinic in the study sites.

Conclusion: The level of diarrheal disease variation was varied due to maternal education, socio-economic status, personal hygiene, waste disposal system and public awareness. Thus enhancing community based behavioural change communication that emphasize on personal hygiene and sanitation should be strengthening to reduce childhood diarrhoea.

Key Words: Childhood diarrhoea, house hold, isolated chars, Brahmaputra

Introduction

Diarrhoeal diseases are the second leading cause of death in children aged under 5 years worldwide.¹ An estimated 2.5 million cases of diarrhoea occur annually in these children, with Asia and southern Africa accounting for more than half.² Three quarters of global childhood diarrheal deaths occur within only 15 countries and Bangladesh is in 7th position with 50,800 annual childhood deaths.³

In Bangladesh, a rural child, on average suffers from 4.6 episodes of diarrhoea every year while 230,000 children die due to the disease.⁴ The infectious agents associated with diarrhoeal disease are transmitted mainly through the faecal-oral route.¹ In developing countries, diarrhoeal infections under 5 years child are generally associated with rotavirus.⁵ Diarrheal diseases can be

¹Dr. Muhammad Belal Hossain, Department of public health, American International University-Bangladesh

²Dr. Lutf Akther, Program co-ordinator (Training), RHSTEP, Dhaka Medical College Hospital, Dhaka

³Dr. A. A. M. Anisul Awwal, Director, (Training), National Institute of Population Research and Training, Bangladesh

*Corresponding Author

Date of submission: 26.01.2017 Date of acceptance: 20.07.2018

attributed to contaminated drinking water, poor sanitation and hygiene, and more broadly to poverty.⁶ Ingestion of contaminated water, inadequate availability of water for hygiene, and lack of access to sanitation contribute to about 1.5 million child deaths and around 88% of deaths from diarrhea per year.⁷

Over the last few decades, remarkable improvements have been made in understanding the epidemiology, ecology, interventions, and prevention methods of diarrhoeal diseases. However, the incidence of diarrhoea appears to have remained stable globally.⁸ The inhabitants of island of Brahmaputra had been suffering from massive natural disasters like river erosion, flood, and diseases epidemics. Little is known about their health care status thus the present study was conducted to assess their domestic hygiene status and childhood diarrhoea prevalence.

Methods

The study was conducted in three unions namely Kamarjani, Erendabari and Mollarchar of two upazila (Gaibandha sadar and Fulchari) of Gaibandha district using random sampling technique. The study carried out in the rural communities of isolated islands of the river Brahmaputra, a trans-boundary river and one of the major rivers of Asia. The study was cross sectional in nature during the period of January to June of 2011, among nine village communities participated in different NGO activities. Participants were selected who had no land more than 3 decimals, no permanent house and had at least one river erosion experience. 322 participants were included in the study whom was asked for an in-depth interview with a pretested questionnaire. The respondents were consented before interviewing. Data were analyzed using SPSS for Windows version 15.2 (SPSS Inc., USA).

Results

Table 1: General characteristics of enrolled households

Characteristics	n (%)
Weight at birth	
<2.5 Kg	96 (29.8)
2.5-3.5 Kg	188 (58.3)
Don't know	38 (11.8)
Sex	
Male	170 (52.8)
Female	152 (47.2)
Occupation of mothers	
Housewife	302 (93.8)
Services (maid servant)	10 (3.1)
Others	10 (3.1)
Education level of mothers	
No schooling	70 (21.7)
Primary school	172 (53.4)
Secondary school	70 (21.7)
Higher secondary and above	10 (3.1)
Occupation of fathers	
Farmer	122 (37.9)
Day labour	80 (24.8)
Fisherman	50 (15.5)
Service	20 (6.2)
Boatman	20 (6.2)
Grocer	20 (6.2)
Others	10 (3.1)

Table 1 describes that, about 30% children had weight less than 2.5 Kilograms at their birth, 58% had 2.5-3.5 kilogram and 12% respondents didn't know the birth weight of their children. Among the surveyed households 21% mothers of enrolled children had no schooling; half of the mothers had attended primary school and quarter of mothers passed primary level of education. Almost half of the fathers of children were farmer, quarter of them was day labour, 16% fisherman, 6% boatman, and rest were involved with other business.

Table 2: Socio-economic status of enrolled households

Characteristics	n (%)
Monthly family income of the household	
< 5000 BDT (60 USD)	132 (41)
5000-10000 BDT (60-125USD)	170 (52.8)
> 10000 (125USD)	20 (6.2)
Floor type of households	
Sand	282 (87.6)
Mud	40 (12.4)
Water sources for cooking	
River water	35 (10.8)
Tube well water	229 (71.1)
Mixed (Partially from both)	58 (18)
Hand washing practices before feeding of child	
Yes	120 (37)
No	202 (62.7)
Duration of breast feeding	
< 6 Months	36 (11.2)
6-12 Months	190 (59)
> 12 Months	96(29.8)
Type of latrine using in households	
Traditional	179 (55.6)
Sanitary	143 (44.4)
Handwashing practices after defecation	
Soap	202 (62.7)
Soil	25 (7.8)
Ash	07 (2.2)
Nothing	88 (27.3)

Table 2 depicts that, Over 40% of the families living in isolated chars of Brahmaputra were living under poverty margin, which is higher than national poverty rate of 26%. More than half of the households' monthly income ranges 5000-1000 Taka (60-125 USD). It was found that almost every households' floor were consists of sand and only 12% of them were by soil. There were no cemented house had been observed. Majority (71%) of the families used tube well water for their cooking purpose and 10% respondents' families used river water and 18% families used both sources. About 40% respondent households used to use sanitary latrine and 55% were using traditional pit latrine or practiced open defecation. Hand washing practices

after defecation was observed quite well among the respondents, 62% used soap, 8% used soil, 2% used ash and 27% of respondents used nothing. We found, 11% babies were breastfed less than six months of their age, 59% children had breastfed up to twelve months and rest were fed more than one year.

Table 3: Prevalence of diarrhoea and clinical information of enrolled children

Characteristics	n (%)
Occurrence of diarrhoea (in past four week of interview)	
Yes	67 (20.8)
No	255 (79.2)
Types of diarrhoea	
Simple watery	242 (75.2)
Mucoid	80 (24.8)
History of measles	
Yes	20 (6.2)
No	302 (93.8)
History of chronic diseases	
Yes	44 (13.7)
No	278 (86.3)
Vitamin A intake	
Yes	196 (61.4)
No	78 (24.2)
Don't know	48 (14.9)
Immunization status of children	
Immunized (all vaccines)	139 (43.2)
Not immunized	64 (19.9)
Partially immunized	119 (40)

In table 3, we observe that prevalence of diarrhoea among under five children was 21% past three weeks of interview of respondent mothers. Three quarter of the diarrhoea was simple watery in nature and 25% was Mucoid type. More than 90% children had no history of Measles but majority of children have had chronic diseases since their birth like respiratory distress and hydrocele. Over 80% children had taken Vitamin A capsule and 9.3% mothers did not know whether their children taken or not. 43% children were found immunized, 20% were not and 40% had not been completed all vaccines of expanded programmed on immunization.

Table 4: Management of diarrhoea and provision of primary health care facilities

Characteristics	n (%)
Knowledge on ORS making in home condition	
Yes	60 (18.6)
No	132 (41)
Not fully	130 (40.4)
Management practices of diarrhoea	
Homemade ORS	20 (6.2)
Manufactured ORS	252 (78.3)
Green Coconut juice	20 (6.2)
Other foods	30 (9.3)
Zinc supplementation during diarrhoea	
Yes	70 (21.7)
No	252 (78.3)
Distance from primary health care centre	
0-2 KM	90 (27.9)
2-4 KM	182 (56.5)
>4 KM	50 (15.5)
Type of health care providers	
Traditional healer (Kobiraj)	80 (24.8)
Government health worker	20 (6.2)
Drug sellers	60 (18.6)
Family planning worker	22 (6.8)
NGO staff	120 (37.3)
Paramedics	20 (6.2)

Table 4 describes, about 19% respondent mothers knew how to make oral rehydration saline, 41% did not know and 40% knew the process part. In the present study, it was observed that 78% cases of childhood diarrhoea was managed by commercially manufactured ORS, some used green coconut juice, homemade ORS and 9.3% feed other foods in response to diarrhoea. Zinc was not found significantly supplemented in chars area; only 22% mothers supplemented zinc during the onset of diarrhoea to their children.

Facilities of primary health care were found very poor in the study area, where only 28% families had the access to PHC within two kilometers of distance. Half of the households had very less scope to get PHC facilities and 16% families were found very vulnerable in terms of health emergency. There were no graduate physician in chars area and quarter of respondent families relies on traditional

healer. NGO health care staffs provided health care support in 37%, cases followed by drug sellers 18.6%, family planning worker 6.8%, and Paramedics 6.2% respectively.

Discussion

An overwhelming majority of the people in island are extremely poor. This rate is exceedingly high compared to the national average. It is evident from the comparative rates that the prevalence of poverty is more than double in island compared to mainland. Lower socioeconomic status and lack of breastfeeding are key correlates of increased risk for cholera hospitalization among those under five in rural and urban Bangladesh⁹ and similar things found in another study conducted in Ethiopia.¹⁰

It was observed that diarrhoea prevalence was high in those babies whose maternal education was low. This finding supports Mahalanabis *et al.* study¹¹ and a similar study in Iraq¹², Vietnam¹³ where the risk of diarrhoea was three times higher among children with fathers who had lower level of education. However, the findings contrary to an Ugandan study where investigators found diarrhoea was more likely to happen among those children of mothers with a secondary level of education.¹⁴ A significant number of the study households did not use the sanitary latrines (25%) whereas 75% of had used sanitary latrines that agrees the study in Kustia¹⁵ where 36% of study households had kaccha and 58.75% had sanitary latrines and 5.25% used others. It was mentioned in a study in Vietnam that diarrhea could be prevented in about 20% of the children by having access to hygienic latrines in the households.¹³

In the present study, 11% of the households had been using river water for cooking and 71% tube well water. Usually mother feed their children with their own hand but they don't use soap for washing their hand. 37% mothers washed their hands before feeding their children and 63% did not. Knowledge on drinking safe water was quite low in chars peoples. More than quarter of dwellers didn't use soap for washing their hands before eating, similar findings was observed in a study of Ethiopia.¹⁶

Around 44 percent chars peoples had been using traditional pit toilet, 56 percent had used sanitary toilet with the help of different NGOs. Practice of washing hands after defecation was found quite

better, about 62 percent peoples used soap and maintained a considerable hygiene practices, 7.8 percent used soil, 2.2 percent used ash and 27.3 percent respondents didn't practice anything after defecation.

The overall prevalence of diarrhoea among under five children was found 20.8% which is similar to an study conducted in Kustia 15 In a study in Uganda, researchers found age was significantly associated with rotavirus and mostly occurred those whose age were less than 24 months.¹⁴ and same thing was found in eastern Ethiopia.¹⁷ Prevalence of diarrhoeal episodes seemed higher as those areas were prone to be flooded during monsoon. Natural disasters such as flooding have been shown to increase the risk of diarrheal disease.¹⁸ In diarrhoeal events, 75.2% episodes were simply watery, 24.8% were mucoid in type which can play a significant role for stunting the growth of babies found in a similar study.¹⁹

Almost every mothers practice breast feeding to their children, they offered only cow milk additional to breast feeding. This findings agree with another study in Bangladesh, where investigation found over 80% babies consumed breast milk.²⁰ In a hospital based surveillance in rural and urban Bangladesh, investigators found, breastfeeding halved the risk in both rural settings.⁹ Only 6% children experienced measles and 28 percent children found suffered from chronic diseases. About 78% mothers fed manufactured oral rehydration saline which was satisfactory and better scenario in comparison to other study where many rural families find hard to afford ORS packets²¹ and better than the study conducted in India where found 12.7% children fed ORS in response to diarrhoea.²² Zinc plays a vital role in controlling diarrhea but in chars condition babies were not found to have had zinc during diarrhea, only 21.7 percent children supplemented zinc during diarrhoeal episodes. In chars area, 61% babies had vitamin A supplementation and 43% percent babies were found immunized regarding their age which is less than national EPI coverage, 20% babies grown up without having all the vaccines and 40% were found not immunized. In chars area, there had no graduate physician. Traditional healers were found prominent among health care providers, drug sellers and different development workers mainly treated the inhabitants.

Limitations

We relied on the history given by the respondent mother at the time of their home visit. So, the occurrences of diarrhoea, type of diarrhoea, and ORS use and other information solely depend on their conversation. Regardless this, the study had a small sample size which may not be representative picture for the total population in chars area.

Conclusion

It has been clearly evident that there is an urgent need for special attention to the health services for the inhabitants of island chars especially for children. Our health policy applicable for the whole country may not work for vulnerable areas like islands. Therefore, special health policy needs to be designed for islands in the national health policy.. Provision of basic water and sanitation services across the whole chars area, have to ensure safe drinking water and educate them to use safe water and its valuable importance. Change behaviors through community involvement, education and health-promotion activities. A pregnancy allowance can be provisioned for island char mothers most of whom cannot afford sufficient and quality reproductive health care due to poverty. To address the scarcity of qualified medical professionals in island chars, local young people having some minimum level of education can be trained as rural medical practitioners. The local administration (health authorities working at the upazila level) has to ensure that the services supposed to be provided to any citizen of the country reach the island char dwellers.

Acknowledgement

The authors would like to extend thanks to Dr. Monowara Begum, District livelihood co-coordinator, Gaibandha, Chars Livelihood Programme and Prof. Neaz Ahmed, AIUB for their invaluable support and guidance to accomplish the study.

Conflict of interest: We have no conflict of interest.

References

1. Thomas JC WD. Epidemiologic methods for the study of infectious disease. *Oxford University Press* 2001.
2. You D, Jones G, Hill K, *et al.* Levels and trends in child mortality, 1990-2009. *The Lancet* 2010; **376(9745)**: 931-3.

3. Boschi-Pinto C, Velebit L, Shibuya K. Estimating child mortality due to diarrhoea in developing countries. *Bulletin of the World Health Organization* 2008; **86(9)**: 710-7.
4. Baqui AH, Black RE, Sack RB, *et al.* Epidemiological and clinical characteristics of acute and persistent diarrhoea in rural Bangladeshi children. *Acta paediatrica* 1992; **81(s383)**: 15-21.
5. D. Rogers JM, R. Beaglehole and H. Tanaka. The practice of public health. *Oxford text book of Public Health* 2002.
6. Zwane AP KM. What works in fighting diarrheal diseases in developing countries? A critical review. *World Bank Res Observ* 2007.
7. JJ G. reducing risks, promoting healthy life. The world health report 2002.
8. Kosek M, Bern C, Guerrant RL. The global burden of diarrhoeal disease, as estimated from studies published between 1992 and 2000. *Bulletin of the World Health Organization* 2003; **81(3)**: 197-204.
9. Colombara DV, Cowgill KD, Faruque AS. Risk factors for severe cholera among children under five in rural and urban Bangladesh, 2000-2008: a hospital-based surveillance study. *PloS one* 2013; **8(1)**: e54395.
10. Nahar B, Ahmed T, Brown KH, Hossain MI. Risk factors associated with severe underweight among young children reporting to a diarrhoea treatment facility in Bangladesh. *Journal of health, population, and nutrition* 2010; **28(5)**: 476.
11. Mahalanabis D, Faruque AS, Islam A, *et al.* Maternal education and family income as determinants of severe disease following acute diarrhoea in children: a case control study. *Journal of biosocial science* 1996; **28(02)**: 129-39.
12. Alaa H, Shah SA, Khan AR. Prevalence of diarrhoea and its associated factors in children under five years of age in Baghdad, Iraq. *Open Journal of Preventive Medicine* 2014; **2014**.
13. Vu Nguyen T, Le Van P, Le Huy C, *et al.* Etiology and epidemiology of diarrhea in children in Hanoi, Vietnam. *International Journal of Infectious Diseases* 2006; **10(4)**: 298-308.
14. Nakawesi JS, Wobudeya E, Ndeezi G, *et al.* Prevalence and factors associated with rotavirus infection among children admitted with acute diarrhea in Uganda. *BMC pediatrics* 2010; **10(1)**: 69.
15. Khatun A, Rahman SS, Rahman H, *et al.* A cross sectional study on prevalence of diarrhoeal disease and nutritional status among children under 5-years of age in Kushtia, Bangladesh. *Science* 2013; **1(2)**: 56-61.
16. Gebru T, Taha M, Kassahun W. Risk factors of diarrhoeal disease in under-five children among health extension model and non-model families in Sheko district rural community, Southwest Ethiopia: comparative cross-sectional study. *BMC public health* 2014; **14(1)**: 395.
17. Mengistie B, Berhane Y, Worku A. Prevalence of diarrhea and associated risk factors among children under-five years of age in Eastern Ethiopia: A cross-sectional study. *Open Journal of Preventive Medicine* 2013; **3(07)**: 446.
18. Ivers LC, Ryan ET. Infectious diseases of severe weather-related and flood-related natural disasters. *Current Opinion in Infectious Diseases* 2006; **19(5)**: 408-14.
19. Alam DS, Marks GC, Baqui AH, *et al.* Association between clinical type of diarrhoea and growth of children under 5 years in rural Bangladesh. *International journal of epidemiology* 2000; **29(5)**: 916-21.
20. Black R, Huq I, Merson M, *et al.* Incidence and severity of rotavirus and Escherichia coli diarrhoea in rural Bangladesh: implications for vaccine development. *The Lancet* 1981; **317(8212)**: 141-3.
21. Ali M, Atkinson D, Underwood P. Determinants of use rate of oral rehydration therapy for management of childhood diarrhoea in rural Bangladesh. *Journal of Health, Population and Nutrition* 2000: 103-8.
22. Sudarshan M, Parasuramalu B. An epidemiological survey of diarrhoea among children in the Karnataka region of kaveri basin. *Indian Journal of Community Medicine* 1995; **20(2)**: 41.