Practices and attitudinal behavior about drinking water in an urban slum of district Rohtak, Haryana: A community-based study

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ABSTRACT

Background: Globally, approximately, one billion people lack access to safe drinking water and 1.59 million deaths per year are because of contaminated water, primarily in children age <5 years. WHO reported that more than 90% of diarrhea cases can be prevented by enhancing the availability of clean water and improving hygiene measures. Methodology: The study was conducted in an urban slum of Rohtak district. Investigator interviewed the mothers at their home having children age less than 5 years using study tools in their vernacular language. Study Design: The study was a community based epidemiological study with cross-sectional design. Study Participants: 400 mothers having children less than 5 years. Results: Most of subjects (59%) were in the age group of 15-25 years followed by in 25-35 years. One third of subjects belonged to upper caste and 29% of subjects from backward class. The study found that 80% of mother store water in earthen pitcher followed by plastic jug (14%). 78% of mothers said that their source of drinking water was tap while 12% had Hand pump. 83.5% of subjects said that they drink water as such ie without filtering, boiling or chlorination. Conclusion and Recommendations: The study concluded that the prevalence of diarrhea is more among children < 5 years this is because of poor knowledge, poor attitude and inadequate storage water practices of water. The study recommends creating awareness how to diminish contamination of water at household level, creating community groups for women to learn about treatment of water at household level.

Keywords: Contamination, mortality, tap water, water, water-borne diseases

Introduction

Water is a most important and essential component of life on earth. Safe drinking water is required for maintaining the good public health of human being. Globally, approximately, one billion people lack access to safe drinking water and 1.59 million deaths per year are because of contaminated water, primarily in children age <5 years.[1] The WHO reported that more than 90% of diarrhea cases can be prevented by enhancing the availability of clean water and improving hygiene measures. According to the Global WASH-Related Diseases Survey 2012, 88% of diarrheal diseases are the result of unclean water and poor sanitation. Urban population is increasing day by day, an estimated two person every second are shifting to urban area and 141 million urban populations do not have access to safe drinking water.[2] In a report published by the UNICEF and the WHO, only 33% of Indian households treat their drinking water even though it could be bacterially contaminated. This is the most important concern because only one-fourth of Indian population has drinking water on their premises.[3] Many infectious diseases such as bacterial, viral, and protozoal are result of drinking unclean water. Major etiological agents

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responsible for more than a million diarrheal deaths are *Escherichia coli*, *Rotavirus*, *Vibrio cholerae*, *Shigella*, etc., which spread through unsafe drinking water. Worldwide, diarrhea is the second leading cause of mortality among children <5 years. In India, pneumonia and diarrhea are responsible for 50% of deaths of children <5 years and this is because of drinking contaminated water; however, the recent studies from India reported even higher prevalence of water-borne diarrheal disease. In diarrhea, cholera is one of the most virulent and if left untreated, it will lead to fatality rate 25%–50%. National Family Health Survey (NFHS-3) reported the mortality rate in <5 years among the urban slum was 72/1000 live births, which was higher than the urban (52/1000 live births). Partners for Urban Knowledge, Action, and Research, a Mumbai-based research collected the water from households in Kaula Bandar (Mumbai) and found that nearly 76% of household water was contaminated with coliform bacteria and up to 43% water sample had *E. coli*. The study also noticed that almost all water contamination happens within the household from people’s hands and houseflies because water is stored in unsafe, open-mouthed containers.

Poor practices, poor attitudes, and inadequate knowledge of storing, cleaning, and drinking habits of water can cause harmful effects on the health of the population. Hence, to reduce the water-borne diseases and mortality, especially among children <5 years, there is a need to understand the recent trend of practices and attitudes of population living in urban slums that why this study was planned with an objective to know practices and attitude of drinking water storage in an urban slum of district Rohtak.

Materials and Methods

The study was conducted in Gandhi camp which is an urban slum of Rohtak district and also the urban field practice area of the Community Medicine Department, Pt. B.D. Sharma PGIMS, Rohtak, Haryana. This field practice area is used for the purpose of teaching, training, and research activities for undergraduate medical students, interns, and postgraduate students of the department. The study was a community-based epidemiological study with cross-sectional design and carried out over 3 months (February to April) in the year 2016 by visiting house to house. The sample size of this study was 400 houses having children <5 years, calculated by 4pq/L. Considering the prevalence of diarrhea 20%, q is 1-p, allowable error 20% (L), and 95% confidence interval. Four hundred houses were selected randomly from six anganwadis of urban slum.

Data were collected through a semi-structured interview schedule by house to house visit by the investigators and MBBS students. Investigator interviewed the mothers having children age <5 years using study tools in their vernacular language. Interview was started with general discussion to build up rapport with respondents and to gain confidence. All the study individuals were fully informed about the purpose of the study. Informed verbal consent was taken from the individuals before conducting the interview. The questionnaire schedule based mainly on three domains such as demographic characteristics, water facility and its uses, and water treatment. The schedule included age, education, caste, occupation, socioeconomic status, water storage, and drinking practices. To ensure the quality of the data, each completed per forma was checked by investigator himself before it could be coded on MS Excel 2010. The data were analyzed using the Statistical Package for Social Science Version 13 (softonic).

Observations

The Table 1 shows that most of the individuals (59%) were in the age group of 15–25 years followed by in 25–35 years. The study found that 35% of individuals were either illiterate or literate up to primary class while 21% and 20% individuals were educated up to middle and matric, respectively. One-third of individuals belonged to upper caste and 29% of individuals from backward class. Occupation wise, 69% of mothers were housemaker, 21% were doing jobs in private and government sectors while 10% mothers were housemaid.

The present study evaluates the water storage attitude and practices among mothers having children <5 years in an urban slum of district Rohtak and found that 80% of mother store water in earthen pitcher followed by plastic jug (14%). Seventy-eight percent of mothers said that their source of drinking water was tap while 12% had hand pump. 83.5% of individuals said that they drink water as such, i.e. without filtering, boiling, or chlorination. Only 14% and 2.5% family were using filters and boiling, respectively, before consumption. Surprisingly, majority of mothers (82%) said that they stopped the breastfeeding during diarrhea. When asked about the type of management during diarrhea, 42% mothers told that they used oral rehydration salt (ORS) followed by 31% mothers who used home available fluid (HAF) (Lassi, Shikanjvi, Dal ka Paani, Coconut Water, etc.) during diarrhea. Nearly two-third (64%) of family members drink water with hand while one-third (32%) of individuals said that they drink water with glass. Nearly half (56%) of mothers knew

| Demographic features | Variables       | n (%) |
|----------------------|-----------------|-------|
| **Age**              | 15-25           | 235 (59) |
|                      | 25-35           | 125 (31) |
|                      | 35-45           | 40 (10) |
| **Education**        | Illiterate      | 25 (6)  |
|                      | Primary         | 115 (29) |
|                      | Secondary       | 85 (21)  |
|                      | Matric          | 80 (20)  |
|                      | Higher education| 75 (19)  |
|                      | Graduation      | 20 (5)   |
| **Caste**            | Upper caste     | 265 (66) |
|                      | Backward caste  | 115 (29) |
|                      | Schedule caste  | 20 (5)   |
| **Occupation**       | Homemaker       | 275 (69) |
|                      | Jobs            | 85 (21)  |
|                      | Housemaid       | 40 (10)  |
that the ORS is available in the anganwadi while one-fifth (21%) of mother did not know where the ORS is available [Table 2].

**Discussion**

Everybody knew that water is essential for life. In India, 17.4% of urban population lives in slums. In India, with rapid urbanization, the provision of safe drinking water is a serious challenge. The water supply of this urban slum of district Rohtak is intermittent and is available only for 2 h in a day that is why the quality of water is questionable. Continuous water supply plays a vital role in ensuring water quality. Intermittent water supply has poor quality of water because of low supply pressure and as a result of this, there is the risk of in-pipe recontamination while in continuous water supply, the risk of contamination is negligible, thereby reducing the risk of water-borne diseases. With understanding of the attitudes, practices, and knowledge of drinking water in urban slums, communities can be educated toward safe storage and drinking of safe water so that morbidity and mortality due to diarrhea may decrease in the future.

The present study interviewed 400 mothers having children <5 years and found that most of the participants (59%) were in the age group of 15–25 years followed by in 25–35 years. One-third of participants belonged to upper caste and 29% of participants in backward class. Occupation wise, 69% of mothers were homemakers, 21% were doing jobs in private and government sectors while 10% mothers were housemaid.

The present study evaluated the water storage attitude and practices among mothers in an urban slum of district Rohtak and revealed that 80% of mother store water in earthen pitcher followed by plastic jug (14%). Seventy-eight percent of mothers said that their source of drinking water was tap while 12% had hand pump. Similar observation was also reported by Sah et al. [7] 83.5% of participants said that they drink water as such, i.e. without filtering, boiling, or chlorination. Only 14% and 2.5% family were using filters and boiling, respectively, before consumption. In India, approximately 72.7% of the rural population does not use any method of water disinfection (NFHS-3, 2005–2006). [9] Beistline in Kolkata [8] and Joshi et al. [9] in Delhi, also reported the similar findings.

Surprisingly, majority of mothers (82%) said that they stopped the breastfeeding during diarrhea. Sood and Kapil demonstrated that 88% of mothers restricted their children from breastfeeding during diarrhea. [10] When asked about the type of management during diarrhea from mothers, then 42% mothers told that they used ORS during diarrhea followed by 31% used HAF (Lassi, Shikanjvi, Dal ka Paani, Coconut Water, etc.) during diarrhea. Nearly two-third (64%) of family members drink water with hand while one-third (32%) participants said that they drink water with glass. Nearly half (56%) of mothers knew that the ORS is available in anganwadi while one-fifth (21%) mother did not know where the ORS is available. NFHS-3 (2005–2006) reported that 43% of women knew about ORS packets, but only 26% had ever used it. [8] Rasania et al. revealed that approximately half of the mothers (46.7%) had a knowledge of starting ORS at the onset of diarrhea. [11] A comprehensive study conducted in India, demonstrated that 63% of Indian mothers were aware of ORS, whereas only 27% of them took advantage of it for their children. [12] Health-care functionaries must emphasize and impart health education to mothers about the role of ORS in prevention of dehydration so that mothers start ORS at right time to their child.

**Conclusion and Recommendation**

The study concluded that the prevalence of diarrhea is more among children <5 years this is because of poor knowledge, poor attitude, and inadequate storage water practices of water. Hence, the safe drinking water is only the solutions that can make significant strides in combating both morbidity and mortality. Based on the information collected, the study recommends creating awareness how to diminish contamination of water at household level, creating community groups for women to learn about treatment of water at household level, and mobilizing communities to work toward sustainable clean water systems. In Haryana, if child mortality has to reduce than behaviors, practices for storage of water and barriers of clean water access in urban slums must be understood. The planning and policy maker should focus on improving the awareness, changing their attitudes and perceived susceptibility to disease from water within slum communities. This is very small study which was conducted in an urban slum of Haryana, but more research should be done on water storage practices in India, so that...
both morbidity and mortality due to diarrhea, especially among children <5 years can be reduced significantly.

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**Conflicts of interest**
There are no conflicts of interest.

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