

Original Research Article

A Study on Water Handling Practices in Urban Field Practice Area of Gandhi Medical College, Secunderabad, Telangana, India

Asma^{1*}, Vimala Thomas^{2*}, R L Lakshman Rao^{2**}, KVS Murty^{2*}

¹Post Graduate, ²Professor,

*Department of Community Medicine, Gandhi Medical College, Secunderabad, Telangana, India.

**Department of Community Medicine, Osmania Medical College, Hyderabad, Telangana, India.

Corresponding Author: Asma

Received: 18/10/2016

Revised: 05/11/2016

Accepted: 11/11/2016

ABSTRACT

Background: Water handling affects water quality & health and is normally targeted with hygiene interventions. Improved public water supply does not necessarily improve water quality at point of use &/or health outcomes. Most of the water is contaminated due to improper water handling practices owing to human activity.

Objective:

1. This study was conducted to assess the Practices, attitude and knowledge, about water handling and storage.
2. To assess the knowledge of study population about diarrheal diseases.

Methods: The study was carried out in the urban field practice area of Gandhi medical college. A total of 250 households, were selected. The information was collected by questioning the mothers of children <5 years of age through structured questionnaire.

Results: All the households, (100%) had an access to safe drinking water. Around 66.8% of study group used clay containers as storage containers. Almost 22% of study population consumed untreated water. Almost 39.2% of mothers/care takers of children <5 years of age had no knowledge about water and its association with diarrhea.

Conclusions: Existing knowledge, regarding safe water in community was low in the study area. Health education about safe drinking water storage and handling methods is required to prevent contamination of drinking water.

Keywords: water handling, safe drinking water, diarrheal diseases.

INTRODUCTION

Water intended for drinking should be both safe and wholesome. Safe water is that which is free from:1) pathogenic organisms;2) harmful chemicals;3) free from odor and color4) usable for domestic purposes. ^[1] Lack of safe water leads to waterborne illnesses, such as diarrheal diseases, cholera, typhoid etc. Diarrhea and water borne diseases are one of the major killers of infants and under-fives in developing countries. ^[2]

According to World Health Organization (WHO) almost 88% of diarrheal diseases are because of unsafe water supply, inadequate sanitation and lack of personal hygiene. ^[3] Improved public water supply does not necessarily improve water quality at point of use &/or health outcomes. Water safety largely depends on storage and handling in the domestic setting. Most of the houses in developing countries lack infrastructure and hence store water in the home in unhygienic conditions/

environment owing to contamination. Inadequate knowledge about safe drinking water and water borne diseases in the community often leads to outbreak of diarrheal episodes.

The current estimates in under-5 year age group suggest that there are about 1.4 billion episodes of diarrhea per year globally and for children aged less than 5 years, a median of 3 episodes of diarrhea occurred per child-year. [4]

In India, acute diarrheal diseases account for about 8% of deaths in under-5 year age group. During the year 2011, 10.6 million cases with 1293 deaths were reported in India. [5] Although provisions were made from time to time to ensure supply of safe drinking water in community, cases of diarrhea increased attributing to other causes. Hence, a study was conducted to assess the water handling and storage practices

Objectives:

1. To assess the Practices, attitude and knowledge, about water handling and storage.
2. To assess the knowledge of study population about diarrheal diseases.

MATERIALS AND METHODS

Study design: Cross sectional study

Study duration: 3 months (October-December 2014).

Study area: Musheerabad-Urban field practice area of Gandhi Medical College. Musheerabad is located within Hyderabad district. As per 2011 census, total population is 3.5 lakh and about 11% of total population is less than 6 years old. [6]

Study tools: Pre designed, semi structured questionnaire was used. Questionnaire included information on water collection containers, types of containers, frequency of washing collection containers, containers for water storage, types of storage containers, frequency of washing storage containers and the methods used to treat water before drinking. Basic socio demographic data was collected. Questions

pertaining to diarrheal disease were also asked.

Sample Size: A convenient sample of 250 households was taken.

Sampling method & Study population selection:

Urban field practice area of Gandhi Medical College has a health center at Bholakpur. One Anganwadi center was selected randomly and all the households with an under five child in that Anganwadi center were numbered serially. A total of 250 households were then selected through computer generated random numbers.

Data analysis: Data was analyzed using MS excel and epi info [7] software.

Ethical considerations: Informed consent was taken from all the study participants before administering questionnaire.

RESULTS

Among the total study population, 76% were Hindus, 18% were Muslims and 6% were Christians. Almost 64% of study population belonged to Upper lower (Class IV) and 24% belonged to lower (Class V) Socio economic classes. Around 12% belonged to class III socio economic classification according to modified Kuppuswamy's classification. The Mean age of children (less than 5 years) who were part of study was 3.2 years. Around 52% of mothers were illiterate and 31.3% had primary education. Around 11% of mothers had education till secondary level and only 5.7% of mothers were educated beyond secondary level.

Main source of water supply for drinking purposes was through municipal tap (100%).

Table I: Type of Collection and storage containers

Type of collection container	Number	%
Metallic Containers	152	60.8
Plastic Containers	98	39.2
Total	250	100
Type of Storage Containers	Number	%
Clay Containers	167	66.8
Metallic Containers	51	20.4
Plastic Containers	32	12.8
Total	250	100
Duration of Water Storage	Number	%
≤ 2 days	193	77.2
> 2 days	57	22.8
Total	250	100

Majority (60.8%) of study population used metallic containers for collection of drinking water and 39.2% of them used plastic containers. Almost 72% of study population washed their hands (with water/ water & soap) and 28% of them did not wash their hands before collection of drinking water.

Around 90% of study population washed collection container before collecting water, while 10% did not wash. Among those who washed their collection containers, 85% used soap and water, 9.5% used ash and water and 5.5% used only water for rinsing or washing the container.

More than half (66.8%) of the study population used clay containers for storing drinking water in the houses. Around 20.4% of them used metallic containers for storage and 12.8% used plastic containers for storing drinking water. It was observed that 87% of study population covered the storage containers with lid completely. Around 13% of study population did not cover the storage containers with lid or the containers were partially covered.

Almost 77.2% of study population changed drinking water in less than 2 days duration and around 22.8% of study group used drinking water beyond 2 days of collection.

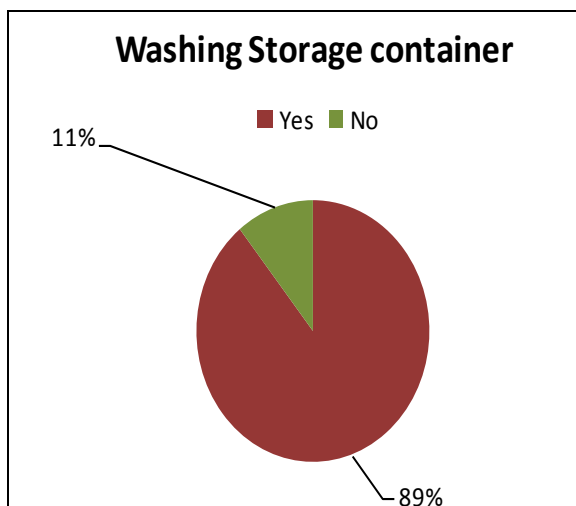


Figure I: Washing storage container

Majority (92%) of study population washed their storage containers before refilling water and around 8% of them did

not wash their container before refilling. Among those who washed storage containers most of them (94%) washed with plain water while a very few washed it with soap and water (6%).

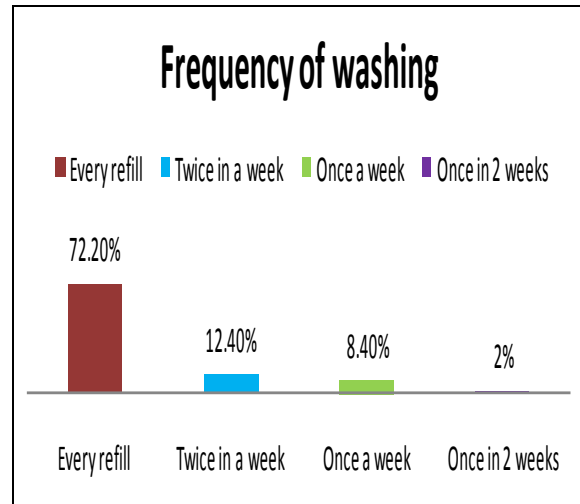


Figure II: Frequency of cleaning Storage container

Almost 72.2% of study population washed/rinsed storage container during every refill (thrice in a week) and 12.4% twice in a week. Two percent of study population washed the storage utensils once in two weeks.

Around 45% of study population placed the storage containers filled with water on the floor where it was accessible to an under five child. Fifty percent of them placed storage containers at an elevation (table/ kitchen floor) such that it is not accessible to children.

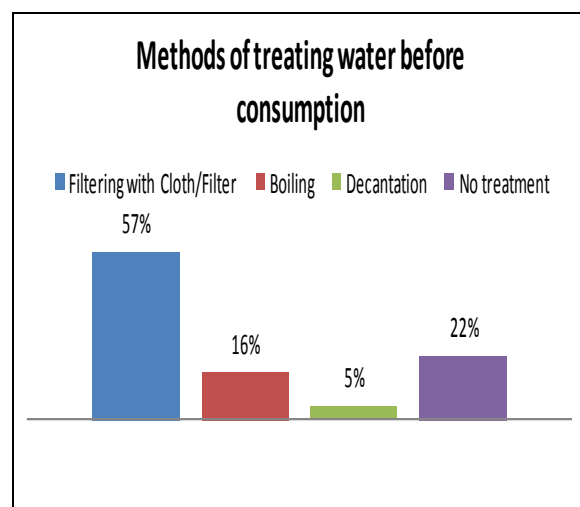


Figure III: Methods of treating water before drinking

Majority (74%) of the study population dipped glasses held in hand for drawing drinking water out of storage container. Around 26% of them used ladles to draw water from container for drinking purpose.

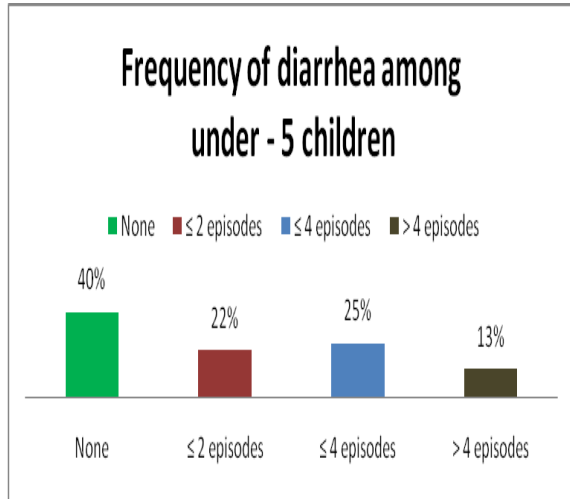


Figure IV: Frequency of episodes of diarrhea among under-5 children

Majority (57%) of study population used cloth to strain water during collection. Around 16% of them boiled water before consumption and 5% of them practiced decantation of water. Almost 22% of them did not treat water before consumption.

Majority of the children (40%) had no episodes of diarrhea in the last 3 months and 47% had ≤ 4 episodes of diarrhea. Around 13% of children less than 5 years of age had > 4 episodes of diarrhea.

Table II: Believed causes of diarrhea (multiple answers may be present)

Causes	Number	%
Drinking contaminated water	68	27.2
Eating contaminated food	45	18
Parasites	13	5.2
Flies	20	8
Poor personal hygiene	7	2.8
Don't know	98	39.2

Table III: Relationship between Education of the mother and diarrhea

Education	Diarrhea		Total	Chi Square value
	Present (%)	Absent (%)		
Illiterate	92 (70.8)	38 (29.2)	130 (100)	13.09**
Literate	58 (48.3)	62 (51.6)	120 (100)	
Total	150 (60)	100 (40)	250 (100)	
Technique of drawing water	Diarrhea		Total	Chi Square value
	Present (%)	Absent (%)		
Dipping glasses held in hand	132 (71.3)	53 (28.7)	185 (100)	38.2**
Using ladles	18 (27.6)	47 (72.4)	65 (100)	
Total	150 (100)	100 (100)	250 (100)	
Drinking water storage vessel	Diarrhea		Total	Chi Square value
	Present (%)	Absent (%)		
Clay containers	132 (79.1)	35 (20.9)	167 (100)	76**
others	18 (21.7)	65 (78.3)	83 (100)	
Total	150 (100)	100 (100)	250 (100)	

** p statistically significant at <0.0001

It was observed that 70.8% of children whose mothers were illiterate had diarrhea and only 48.3% of children had diarrhea whose mothers were literate. The difference of 22.5% was found to be statistically significant.

It was found that 71.3% of children in whose homes water was taken out with glasses held in hand had diarrhea and only 27.6% of the children suffered from diarrhea where ladles were used. The difference of 43.7% was found to be statistically significant.

Strong significant relationship was observed between usage of clay containers and diarrhea.

DISCUSSION

In the present study the literacy rate among the respondents was found to be 48%, which was almost similar to a study conducted in Madhya Pradesh where literacy rate was found to be 40%.⁷In the present study the main source of drinking water was municipal tap water, which was different to a study conducted in Haryana, where major source of drinking water was well water.^[8]

In the present study it was found that majority of the respondents washed their hands and cleaned the container before filling water. This finding was similar to a study conducted by Sherry Holt.^[9]

In the present study it was found that clay containers were used mainly for storing water, which was different when compared to a study conducted by Sharma et al, where jerry cans were mainly used for storing water. [10]

Washing, rinsing and covering (with lid) of the collection and storage containers practices were found high in the present study which was similar to a study conducted by Sharma et al. [10]

In the present study it was found that 72.2% of respondents washed storage containers during every refill, which was different when compared to a study conducted in Bonao [9] where only 49% washed the vessel during every refill.

Only 26% of respondents used ladles to draw water from the container. This practice decreases microbial contamination of water and this finding was similar to a study conducted by Bharati et al. [8]

Around 73% of study population either used a strainer or boiled water before drinking which differed with a study conducted by M. Bhattacharya et al. [7]

In the present study around 27.2% of study group were aware about relation between contaminated water and diarrhea. This finding was similar to a study conducted in rural area of Haryana [8] and study conducted in Madhya Pradesh. [7] This finding differed with a study conducted in Bonao where 48% were aware of relation between unsafe water and diarrhea. [9]

CONCLUSIONS

- Although Government has ensured provision of safe drinking water, episodes of diarrhea among under five children were still high in study area.
- Washing of hands before collecting water, washing of collection containers and washing/rinsing of storage containers were found to be satisfactory among the respondents.
- Clay containers were mainly used for storing drinking water and episodes of diarrhea were also

higher among study population who used clay containers for storing drinking water.

- Significant associations were found between literacy status of mother and techniques used to draw water with diarrhea.
- Knowledge about diarrhea and unsafe water consumption was very low among the respondents of children less than 5 years.

Recommendations:

- Efforts are required to increase awareness among study population regarding proper water handling and storage techniques to reduce the burden of diarrheal diseases.
- Health workers should educate the community about different techniques like tilting the vessel and drawing or using containers which have tap inbuilt for drawing water from storage containers so as to reduce contamination of water and maintain proper hygiene.
- Knowledge about water borne diseases should be enhanced through print and electronic media, lectures and emphasis should be laid on personal hygiene and measures like boiling of water among care takers/mothers of under – 5 year old children to decrease diarrheal episodes.

REFERENCES

1. Park K. Park's Textbook of Preventive and Social Medicine - 22nd edition. 2013. 655 p.
2. WHO/UNICEF Joint Monitoring Program me for Water Supply and Sanitation, Global water supply and sanitation assessment, report, 2000. WHO, Geneva. http://www.who.int/water_sanitation_health/monitoring/jmp2000.pdf [last accessed 25 August 2016]
3. World Health Organization. Water Sanitation and Hygiene, Facts and Figures, March 2004. WHO, Geneva. http://www.who.int/water_sanitation

- health/publications /factsfigures04/en/ [last accessed 25 August 2016]
4. WHO (2008), Health situation in the South-East Asia Region, 2001-2007. [last accessed on 5 August 2016]
 5. Govt. of India (2011), National Health Profile 2011 (Jan-Dec), DGHS, Central Bureau of Health Intelligence, Ministry of Health and Family Welfare, New Delhi.
 6. Mushheerabad Mandal. Available from :<http://indikosh.com/subd/608841/mushheerabad> [last accessed on 25 August 2016]
 7. M. Bhattacharya, V Joon, V Jaiswal. Water handling and sanitation practices in rural community of Madhya Pradesh: A Knowledge, Attitude and Practice study. Indian J of Preventive and social medicine.2011. Vol 42 (1); p 94-97.
 8. Bharti, Manish Malik, Vijay Kumar, Ramesh Verma, SumitChawla and SandeepSachdeva. Knowledge Attitude and practices regarding water handling and water quality assessment in a rural block of Haryana. International journal of basic and applied medical sciences. 2013. Vol 3 (2). Pp 243-247.
 9. Holt, Shelley, "A Survey of Water Storage Practices and Beliefs in Households in Bona, Dominican Republic in 2005." Thesis, Georgia State University, 2009. Available at http://scholarworks.gsu.edu/iph_theses/116. [last accessed on 16 June 2016]
 10. Sharma et al. Water Handling Practices and Level of Contamination between Source and Point-of-Use in Kolladiba Town, Ethiopia. Environ. We Int. J. Sci. Tech. 8 (2013) 25-35.

How to cite this article: Asma, Thomas V, Lakshman Rao RL et al. A study on water handling practices in urban field practice area of Gandhi medical college, Secunderabad, Telangana, India. Int J Health Sci Res. 2016; 6(12):9-14.
