International Journal of Research in Medical Sciences
Tripathy RM et al. Int J Res Med Sci. 2017 Nov;5(11):4846-4851
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012
DOI: http://dx.doi.org/10.18203/2320-6012.ijrms20174931

Original Research Article

Assessment of wash practices among women in urban slums of Berhampur, Odisha: a cross sectional study

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Received: 22 August 2017
Accepted: 20 September 2017

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ABSTRACT

Background: Access to Water, Sanitation and Hygiene (WASH) is a pre- condition for people to acquire good health, well-being and benefit from economic development. WASH constitutes both provision of water and sanitation facilities and hygiene promotion. The study objective is to assess the practices and existing perceptions of water, sanitation and hygiene among women in urban slums of Berhampur.
Methods: A cross sectional study was conducted among 400 women (households) residing in urban slums of Berhampur from August2016-January 2017 by simple random sampling. Data was collected using a predesigned pretested questionnaire.
Results: Out of the total, 62.3% respondents depended on public tap as major source of drinking water , 31.5% purified water before drinking , 68.5% allowed water to stand for a day before use , 86.5% practiced hand wash before meal , 33.2% practiced open defecation, 7% and74% used soap and water for handwashing before meal and after defecation respectively, 68.3% threw liquid wastes haphazardly, 59.8% threw solid wastes haphazardly into drains, 78.5% respondents children had a history of diarrhoea in the past 6 months and 86.8% had flies menace in their houses.
Conclusions: Components such as purification of water (31.5%), open defecation (33.2%), hand washing with soap and water before meal (7%), indiscriminate disposal of waste suggest a long way to go to achieve the targets of SDG - 6. Adequate IEC activities are needed for effective WASH Strategy implementation.

Keywords: Diarrhoea, Handwashing, SDG, WASH

INTRODUCTION

WASH is the collective term for Water, Sanitation and Hygiene. Due to their interdependent nature, these three core issues are grouped together to represent a growing sector. While each is a separate field of work, each is dependent on the presence of the other. For example, without toilets, water sources become contaminated, without clean water, basic hygiene practices are not possible.[1] Access to Water, Sanitation and Hygiene (WASH) is a pre-condition for people to acquire good health, well-being and even benefit from economic development.[2]

Billions of people, most of whom live in developing countries, lack access to clean, safe drinking water, and sanitation facilities. UNICEF estimates nearly 36 percent of the world's population do not have access to a latrine to dispose of waste. The consequences are dire. The two leading causes of death globally for children under five years of age, diarrheal disease and acute respiratory infections, are linked to poor water, sanitation and

hygiene (WASH) practices. Contaminated water and poor household hygiene behavior sickens millions of children and adults, contributing to premature mortality and frequent episodes of debilitating illness. There are economic impacts as well.[3]

Today, there are around 2.4 billion people who do not use improved sanitation, and 663 million who do not have access to improved water sources. Without these basic needs, the lives of millions of children are at risk. For children under five years of age, water- and sanitation-related diseases are one of the leading causes of death. Every day, over 800 children die from preventable diseases caused by poor water, and a lack of sanitation and hygiene.[4]

As part of global health and development agenda the Millennium Development Goals (MDGs) - 7 aimed to reduce by half the proportion of population without sustainable access to safe drinking water and basic sanitation by 2015.[5] SDG goal 6 targets to achieve universal and equitable access to safe and affordable drinking water for all, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations by 2030.[6]

As per census 2011, 31.16% (377.10 million) of the total population of India is living in urban areas. If we take into account larger villages, half of India's population is already living in urban areas or in areas with similar conditions. This clearly indicates that India is urbanizing.[7] There has been major improvement in areas of Water, Sanitation and Hygiene (WASH) since 1990.Yet, 748 million people still depend on unimproved sources of drinking water, almost a quarter of which depend on untreated surface water, and nearly 2.5 billion people need to improve sanitation, including one billion who practice open defecation. Nine out of ten people who practice open defecation live in rural areas, but the number in urban areas is gradually increasing.[8]

Odisha is the worst-performing state with 48.34% of slum households defecating in the open, followed by Bihar (42.49%), Chhattisgarh (41.68%) and Jharkhand (41.88%).[9]

WHO recently released a global strategy 2015 -2020 on water, sanitation and hygiene for speeding up and supporting progress on neglected tropical disease. Yet to date, the WASH element has received minute attention and the potential to link efforts on WASH and NTDs (Neglected tropical diseases) had been mostly untouched.[10] Lack of knowledge about WASH related practices can lead to various preventable communicable diseases in the population. Thus, the study was conducted with the objective: To assess the practices and existing perceptions on drinking water, sanitation and hygiene among women residing in urban slums of Berhampur, Odisha.

METHODS

A community based cross sectional study was conducted from August 2016 and January 2017 to assess WASH perceptions and practices among women in slum areas of Ankuli, which is in the urban field practice area of UHTC, Department of Community Medicine, MKCG Medical College, Berhampur. The sampling units were the households and sample size was calculated based on the universal formula $n = Z^2pq/d^2$ where in, Z = 1.96 (at 95% confidence levels), (p=50%), q= (1-p), d=10%p fixed at a relative precision.[11] Using the above formula, the sample size finalized was 400 for households. Entire slum is under 2 wards, which has 13 streets. Of the 13 streets 7 streets were selected. From each street 57 houses having children under 5 years of age were selected consecutively starting from the center of each street.

Approval from the institutional ethical committee was obtained before the start of the study. A predesigned pretested questionnaire was used to collect data. The questionnaire was interviewer-administered to the respondent after taking informed consent. Females of the household having children less than 5year age were preferred respondents. In cases where mothers were absent for interview elderly female of the household were interviewed.

Data collected was analyzed using SPSS version 17. Variables of knowledge and practice of drinking water and sanitation were analyzed by chi square test, data was presented in percentages (%). Statistical confidence interval was set at 95% with significant level of $p<0.05$.

Inclusion criteria

All households having children under 5 years age who gave consent were included in the study.

Exclusion criteria

Locked houses and households without children under 5 years age.

RESULTS

Among the households interviewed, majority were Hindus (67.3%), followed by Muslims (11.5%), Christians (10.5%) and others (10.8%). 51.7% respondents were unemployed, 9.8% were unskilled workers, 8.3% semiskilled, 7.2% skilled and 5.2% were professionals like teacher, tuition teacher, tailor etc.48.8% respondents belonged to age group 30-40 years, 27.5% belonged to age group of 20-30 years. 13.8% respondents were illiterate, 8.5% were educated to primary level ,15.5% to middle, 29.8% to high school

level, 22% to intermediate and only 10.5% were graduates.

Table 1: Sources of drinking water.

Source of drinking water	%
Public tap	62.3
Piped water supply in their yards	12.8
Tubewell	8.3
Well	7.0
Pond	4.8
Time taken to reach the source of drinking water	
<5minutes	25
5-30 minutes	63.2
>30 minutes	11.8

Public taps were the main source of drinking water followed by wells and ponds. Majority (63.2%) spent 5-30 minutes for fetching water while 11.8% took more than 30 minutes (Table 1).

Metal containers were used by 53.5% to store drinking water and 33.5% used plastic buckets and bottles. Water was not purified by 68.5% respondents before drinking, allowing water to stand and settle down before using it. 7.5% respondents boiled water before drinking it and 14.5% used water filter with candles as a mode for filtering water before use.

Ladle was used by 16.5% to take water out from stored containers while 65.5% used directly the water, collected in bottles. Boiled water was used for dilution of baby foods in 62 % of the households, 10.5% used both boiled and filtered water for dilution while 18.5% used direct tap water for dilution. Liquid waste was disposed of into drains by 68.3%, 11.5% used liquid waste in kitchen garden, 11.8% fed it to cattle. Solid waste was thrown indiscriminately by 59.8%, 22.3% disposed wastes into municipality bins and 8.3% used composting method as a method of disposal.

Table 2: Hygiene practices.

	Yes	No
Latrine present in household	73.5%	26.5%
All members using latrine	66.8%	33.2%
Hand washing before and after meal	86.5%	13.5%
Hand washing before feeding child	78.3%	21.7%

Latrine was present in only 73.5% of the houses. Households with all members using latrines accounted for only 66.8% while 33.2% still practiced open defecation. 51.5% disposed stool of children <5years into garbage along with solid waste, 14.2% rinsed it in toilets, 14% rinsed into drains, 7.0% left it open. Children of 36.8% respondents did not use latrine. Handwashing was practiced by 86.5% respondents before and after meal and only 78.3% practiced handwashing before feeding child (Table 2).

Table 3: Handwashing practices.

Practices	Handwashing before meal	Handwashing after defecation
Only water	78%	9.5%
Soap and water	7%	74%
Ash and water	-----	12%
Don't wash hands	10%	----

Respondents washing hands before meal with only water was 78%, while only 7% used both soap and water, 10% did not wash hands. 9.5% practiced handwashing after defecation with only water while 12% used ash and water for cleaning hands after defecation. (Table 3).

Table 4: Education status and best mode of waste disposal.

	Liquid waste management				Solid waste management			
Education	**Throw haphazardly into drains**	**Use kitchen garden**	**Feed to cattle**	**Others**	**Throw haphazardly**	**Into municipal bins**	**Burn /bury/ compost**	**Others**
Illiterate (%)	15.4	6.5	10.6	14.7	15.4	11.2	3.0	25.6
Primary (%)	7	8.7	14.8	11.7	4.2	11.2	15.1	23.0
Middle (%)	16.1	15.2	14.8	11.9	16.3	13.5	12.1	17.9
High school (%)	32.6	21.7	27.6	20.5	33.9	20.2	30.3	25.6
Intermediate (%)	23.8	21.7	14.8	17.7	23.0	25.8	21.2	7.7
Graduate and above (%)	5.1	26.0	17.0	23.5	7.1	17.9	18.1	7.7
Total	273	46	47	34	239	89	33	39
Chi square value χ^2	36.56				40.56			
P value	0.001				0.000			

Disposing liquid waste into kitchen garden was considered best method while for solid waste, disposing waste into municipal bins was considered best. Respondents with education status of graduation and above (stated as best status) also largely practiced best methods of waste disposal showing significant association between education status and best method of waste disposal (Table 4).

Table 5: Education status and handwashing practices.

	Handwashing before meal				Handwashing after defecation			
Education	**Only water**	**Soap and water**	**Don't wash hands**	**Others**	**Only water**	**Soap and water**	**Ash and water**	**Others**
Illiterate (%)	12.1	7.1	30	15	31.5	8.4	31.2	16.6
Primary (%)	6.0	21.4	15	15	5.2	7.0	16.6	16.6
Middle (%)	16.9	10.7	10	10	15.7	15.8	16.	5.5
High school (%)	32.0	14.2	22.5	30	15.7	33.4	25%	11.1
Intermediate (%)	24.0	14.2	12.5	20	15.75	25.3	4.1	27.
Graduate and above (%)	8.6	32.1	10	10	15.7	9.8	6.25	22.2
Total	312	28	40	20	38	296	48	18
Chi square value χ^2	41.859				53.223			
P value	0.000				0.000			

Statistical significant association was seen between respondent's education status and handwashing practices (Table 5) ARI episodes in last six months was seen in children of 30.5% households, while children of 78.5% respondents had episodes of diarrhoea in last six months. 53% women had knowledge that diarrhoea spreads through use of unhygienic food, while 15.8% thought it was due to unsafe drinking water. Households with flies infestation in and around their houses was 86.8%.

Statistical significant association was also seen between education status and correct method of ORS preparation (χ^2=17.479, p value=0.004).[12]

DISCUSSION

The present study was conducted in 400 households of urban slums of Berhampur, Odisha to assess the WASH practices and perceptions among women residing in the slums.

Among the households interviewed, majority were Hindus (67.3%), followed by Muslims (11.5%). Similar results were seen in a study by Sharanya Kaniambady et al.[5] Most of females were homemakers mostly engaged in household activity. The literacy status of women of majority of households was matriculation and above while 13.8% of them were illiterate. which is in concurrence with NFHS 4 data Odisha Factsheet.[13]

Ensuring that water remains clean from point of collection to point of consumption can prevent illness. This is possible by storing drinking water in clean, covered vessels and by using a ladle for taking out water. The main source of drinking water among the households in the study was public tap water (62.3%) followed by piped water supply to their yards (12.8%) which is similar to data in NFHS 4 (13). 63.2% spent 5-30 minutes for fetching water while 11.8% took more than 30 minutes in fetching drinking water, which suggests majority had basic access to improved drinking water supply.[14]

Diarrhoea can be reduced significantly if water quality can be ensured up to the point-of consumption. Effective and consistent application of household water treatment and safe storage can reduce diarrhoeal disease by between 28% and 45%, depending on the type of water supply.[15]

About 53.5% of the households surveyed, used metallic drums to store water. Most of the respondents did not practice any water treatment method (68. 5%).Similar findings were also reported in a study by Venkatashiva et al done in households of Sugali Tribe of Chittoor District, and Sharanya Kaniambady et al.[5,16] Only 16.5% of households used ladle to take out drinking water from vessel. Most of the respondents interviewed used water by directly drinking water collected in bottles. Similar study findings were seen in a study by Bhattacharya et al conducted in Madhya Pradesh.[17]

It was observed that filtration of water at home at any point during the year, for the most part was seasonally or occasionally rather than year-round. Common triggers for using filtration methods were a change in appearance of water or illness in the family. Thus, water filtration was a curative, rather than preventive, health measure.

At the all-India level, 27% of all slums had no garbage disposal arrangement – the figures being about 38% for non-notified slums and about 11% for notified slums.[18] A

study by Sharanya Kaniambady et al showed (35.38%) disposed solid waste into a pit, but our study revealed 68.3% respondents disposed liquid waste haphazardly while 59.8% disposed solid waste haphazardly.[5] Best method of liquid waste disposal is use in kitchen garden while for solid waste it is composting and disposing in municipal bins. Respondents with higher education status practiced best method of waste disposal evident by statistical significant association between education status and liquid waste disposal and with solid waste disposal.

NFHS4 states households with improved sanitation facilities were 61%. Our study shows 73.5% households with sanitary latrines of which 66.8% used latrines.[13] Despite the initiatives taken by the Government, open defecation is still practiced by 33.2% households. To know the real cause of open defecation a question was asked among the respondents and most of them expressed that lack of money, refusal by owner as they lived in rented houses and do not know the importance of sanitary latrine use are the main causes. At the all-India level 31% of slums had no latrine facility.[18] In the present study improper disposal of the stool of under 5 children was observed in more than 50% of the respondents. A meta-analysis study found that unsafe child feces disposal practices such as open defecation, stool disposal in the open, stools not removed from soil, and stools seen in a household soil increased the risk of diarrheal diseases by 23%.[19]

Almost (78%) respondents washed hands before meal with water and 7% used both soap and water for washing hands before meal .74% respondents used both soap and water for handwashing after defecation. This is similar to the findings of another study conducted in Odisha.[20] Only 12% used ash and water for handwashing after defecation. Similar findings were seen in a study by Sah et al.[21] In the present study statistical significant association was seen between education status and hand washing practices before and after meal and with hand washing practices after defecation.

Approximately 19% of the world's population washes hands with soap after contact with excreta. This proportion is estimated to range between 13% and 17% in Low to Middle income countries (LMIC) regions, and from 43% to 49% in high-income regions.[15]

Handwashing is one of the most cost-effective investments in public health, and the economic benefit from handwashing is not unique to the prevention of diarrhoea and pneumonia, but also most healthcare-associated infections (HAI), which are extremely costly to individuals, healthcare systems, and countries. Handwashing halts the spread of infection and is effective in preventing the spread of some diseases.[22] Handwashing with soap at critical times - including before eating or preparing food and after using the toilet - can reduce diarrhoea rates by more than 40 per cent.[22]

Respondents have a limited knowledge on the causes of Worm infestation and Diarrhoea. They mostly identified intake of sweet product as a cause of worm infestation among children. The limitation of study was to Responder bias could not be ruled out from the study participants' responses.

CONCLUSION

The study shows that WASH practices in slums is still a big everyday challenge. Urban waste management is also drawing increasing attention, as that too much garbage lying uncollected in the streets, cause inconvenience, environmental pollution, and pose a public health risk. Health education is very important for better use of existing facilities and also to prevent the incidences of water and sanitation related diseases. The knowledge gap among the mothers regarding the benefits of handwashing in reducing diarrhoeal episodes of the children can be tackled by intensive health education activities. Emphasis needs to be given to behavioural change communication to create awareness among the households regarding the importance of water and sanitation practices by using various media for education. This study provides baseline information for future interventions in the community.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Tripathy RM, Acharya GC, Karmee N. Assessment of wash practices among women in urban slums of Berhampur, Odisha: a cross sectional study. Int J Res Med Sci 2017;5:4846-51.