



ORIGINAL RESEARCH ARTICLE

KNOWLEDGE AND PRACTICES OF WATER SANITATION AND HYGIENE AMONG SLUM DWELLERS OF BHARATPUR METROPOLITAN CITY

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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. Slum dwellers are likely to be among the most deprived people for WASH in developing countries like Nepal.

Methods: A cross sectional study was conducted to find the level of knowledge and existing practices among slum dwellers of Bharatpur Metropolis Ward no 5. A total of 173 female household head were identified through census method and interviewed with semi structured interview schedule and analyzed with descriptive statistics by using SPSS 20.

Results: Nearly around two third of the respondents (65.3%) had good knowledge of WASH. Regarding the practices, the study showed that only 42 percent of respondents had access to piped drinking water in their premises and almost all households (94.8%) didn't use any purification method for drinking water. In total 59 percent had latrine in their household and half of total respondents (52%) washed their hands with water and soap after defecation. Around 24.2 percent washed their hands regularly after touching garbage. In total 60 percent or respondents disposed solid waste properly in manure pit (8.7%) and government vehicle (30.6%) and 15 percent disposed liquid waste in a pit. On bivariate analysis, age, marital status, and education was found to have significant association with knowledge of WASH ($p < 0.05$).

Conclusions: Mass and family centered behavioral change educational programs at slum settings are urgently needed to raise knowledge and good practices regarding WASH.



INTRODUCTION

Safe water, sanitation and hygiene, collectively known as WASH, are crucial for human health and well-being. Yet, millions of people lack adequate WASH services and consequently suffer from or are exposed to a multitude of preventable illnesses.¹ WHO estimates that WASH attributable disease burden amounts to 4.6% of global disability-adjusted life-years (DALYs) and 3.3% of global deaths.²

Approximately 33% of the developing world population live in urban slums³ and around half of these population suffers from the diseases associated with inadequate provision of water and sanitation.⁴

In Nepal only sixty-two percent of the population have access to sanitation and sixty-nine percent of the households have drinking water facilities in their premises.⁵ The situation is worse in slum areas as reported in different researches conducted in slum settings of Nepal.^{6,7,8} One of the few surveys of slum in Kathmandu found 98 percent people lived in semi-permanent or temporary accommodation; 15% practiced open

defecation and 48% used latrines that discharge directly into a river.⁹ According to a smaller survey of Kathmandu slums gastro-intestinal disease and respiratory disease are the main causes of health illness.¹⁰

The data on WASH in slum living conditions in Nepal is limited to our knowledge and national household surveys rarely contain sufficient information of the urban poorest. This study aims to find out the WASH knowledge and practice among slum dwellers and may help to inform and guide health managers, health service providers and policy makers for making appropriate policy and packaging WASH program in district.

METHODS

A descriptive, community based cross-sectional study was conducted on 173 households of slum area of Bharatpur Metropolis, ward no.5 using a census method. Bharatpur ward 5 was chosen purposefully and a completed list of the households of ward no. 5 receiving token for slum by District Coordination Committee, Chitwan was prepared as per the information provided by the ward office and the female head

of the family of each listed household was interviewed face to face using self-constructed interview schedule. There were altogether 9 questions related to knowledge of water, sanitation, and hygiene. The level knowledge was graded on scale of 0-9. The graded was assigned as 1 for correct answer and 0 for incorrect answer. The total obtained score was done for normality test. As score was not normally distributed so median was the cut off value. Any score more or equal than cut off point was considered as satisfactory level of knowledge (5 and above point) and less than cutoff point was considered as unsatisfactory level of knowledge. The tool was pre-tested among 10% of the total sample in similar setting in Aaptari village of Bharatpur ward No 2. Ethical clearance was obtained from Institutional Review Committee, Chitwan Medical College (Ref: CMC-IRC/075/076-131). Approval was also taken from both municipality and ward office. Informed consent was taken from respondents verbally. Study participants had the right to decide whether to participate or not in the study. Collected data was manually checked and entered in Epi-data 3.1 and exported to IBM SPSS 20.0 version software for further analysis. The knowledge of WASH among was assessed by descriptive analysis of collected information and collected data was manually checked and entered in Epi-data 3.1 and exported to IBM SPSS 20.0 version software for further analysis. The knowledge of WASH among women household head was assessed by descriptive analysis of collected information. Kolmogorov -Smirnov (K-S) test was used to assess normality of data. The significant factors associated with knowledge of WASH were identified by using Pearson chi-square or Fisher exact test at 5% level of significance.

RESULTS

Table 1: Socio-demographic characteristics of the respondents (N=173)

Variables	Frequency (%)
Age (years)	
16-35	102 (58.4%)
36-59	53(30.6%)
60 and above	18 (11%)
<i>Median = 34 Max: 80 Min: 15 Inter quartile range: 21</i>	
Marital status	
Married	157 (90.8%)
Religion	
Hindu	140 (80.9%)
Buddhists	10 (5.8%)
Christian	18 (10.4%)
Islam	5 (2.9%)
Occupation	
Agriculture	33 (19.0%)
Housewife	13 (7.5%)
Business	10 (5.8%)
Labor	115 (66.5%)
Others	2(1.2%)
Family type	
Nuclear	117 (67.6%)
Joint	56 (32.4%)

Educational Status	
Illiterate	53 (30.6%)
Basic	110 (63.6%)
Secondary	8 (4.6%)
Above secondary	2 (1.2%)
Housing	
Kutcha	27 (15.6%)
Tin and Semi-pucca	143 (82.7%)
Pucca	3 (1.7%)

Others than married includes unmarried, divorced, and widowed

Others contains service and foreign employment

Table 1 illustrates the information about socio-demographic information of the respondents. Majority of respondents (58.4%) were of age group 15-36 with median age 34. Most of them were married (90.8%), belonged to Hindu religion (80.9%) had nuclear family (67.6%) and reside in tin and semi-pucca house (82.7%). Regarding the educational status and occupation, around one third (30.6%) of the respondents were illiterate and nearly two-third of the respondents (66.5%) were labor.

Among 173 respondents, 113(65.3%) of them had good knowledge about WASH while 60 (34.7%) had poor knowledge. (Table 2)

Table 2: Respondents' knowledge regarding WASH (N=173)

Knowledge on	Frequency (%)
Technique of hand washing (6 steps)	18 (10.4%)
Poor water can cause water borne illness	136(78%)
Illness due to unsafe food	112(64.7%)
Safe drinking water	40 (23.1%)
Presence of germs in children feces	68(39.3%)
Proper disposal of household waste	97(56.1%)
Critical timing of hand washing *	136 (78.6%)
Purified water is safe drinking water	57 (32.9%)
Type of container for water storage	97(56.1%)
Level of Knowledge	
Poor (0-4)	60 (34.7%)
Good (5-9)	113 (65.3%)
<i>Median=4 min=0max =9</i>	

*Critical timing of hand washing *= after defecation, before eating and/or feeding baby, after touching garbage, before cooking food*

Table 3 illustrates the information regarding practice of slum dwellers on WASH which includes accessibility and purification of water, availability and use of latrine, personal hygiene like bathing, brushing, and disposal of solid and liquid waste. For majority of respondents (42.2%) the main source of water was piped water available on their premises. About 95 percent households did not use any method of water purification before drinking. Regarding sanitation 59 percent had latrine in their home, more than half of those being of unimproved type (32.3%). One in every five respondents (19.7%) used neighbor's toilet and in every six of them (17%) used public

toilet for defecation. Regarding personal hygiene, more than half (52.1%) respondents washed their hand with soap and water after defecation and only one-fourth of them (24.3%) had habit of washing hand regularly after touching garbage. Only one-fourth (24.5%) had habit of brushing teeth at least once a day and only 20 of them (11.6%) bathe daily. Twenty seven percent of respondents disposed through burning, 31 percent disposed in municipal waste collection vehicle and only around 9 percent disposed their waste in garbage pit. Likewise, only 15 percent of respondents disposed their liquid waste on pit.

Table 3: Practices of WASH among respondents (N=173)

Variable	Frequency (%)
Source of water	
Dug well water	46 (26.6%)
Piped water on premises	73 (42.2%)
Tube well	54 (31.2%)
Water purification prior to drinking	
Yes	9 (5.2%)
No	164 (94.8%)
Latrine	
Improved	46 (26.5%)
Non improved	56 (32.3%)
No any	71 (41.2%)
Place of defecation	
Neighborhood toilet	34 (19.7%)
Own latrine	102 (59.0%)
Relatives	8 (4.6%)
Public latrine	29 (16.8%)
Wash hand with soap and water after defecation	
Yes	90 (52.1%)
No	83 (47.9%)
Wash hand regularly after touching garbage	
Yes	42 (24.3%)
No	130 (75.7%)
Brushing teeth at least a day	
Yes	43 (24.5%)
No	129 (74.5%)
Bathing	
Daily	20 (11.6%)
Alternate days	51 (29.5%)
Weekly	23 (13.3%)
Sometimes (< 2 week)	74 (42.8%)
Rarely (>2 weeks)	5 (2.9%)
Solid waste disposal	
Dumping	57 (32.9%)
Manure pit	15 (8.7%)
Municipal waste vehicle	53 (30.6%)
Burning	46 (26.6%)
Not specified	2 (1.2%)
Liquid Waste disposal	
Road	18 (10.4%)
Pit	26 (15.0%)
Irrigation Canal	30 (17.3%)
Open area	48 (27.7%)
Not specified	51 (29.5%)

Table 4: Association of knowledge of respondents with some Socio-Demographic variable (N=173)

Variables	Knowledge of WASH		p-value
	Poor	Good	
Age			
15- 36	17	84	<0.001*
37-59	27	26	
> 60	16	2	
<i>Median=34, IQR=21Max=80, Min=15</i>			
Marital status			
Married	50	107	0.014*
Others	10	6	
Religion			
Hindu	48	92	0.822
Other than Hindu	12	21	
Education			
Literate	58	54	<0.001*
Illiterate	2	59	
Occupation			
Agriculture	11	21	0.96
Non Agriculture	49	92	
House type			
Kutcha	15	12	0.124
Semi-Pucca	23	61	
Pucca	1	2	
Tin	21	38	
Family type			
Joint	43	74	0.408
Nuclear	17	39	

Others than Hindu denotes Buddhist, Islam, Christian

Others than agriculture denotes Business, Labor, Service, Foreign Employed

Table 4 shows that on bi-variate analysis, knowledge about WASH was found to significantly associated with age of the respondents, marital status, and educational status of the respondents ($p < 0.05$). However, no significant association was found between knowledge of respondents and occupation, family type, type of house, religion of the respondents.

DISCUSSION

This study assessed knowledge and practices of slum households on WASH. Our findings showed that 65.3 percent of participants had good knowledge about water sanitation and hygiene. This finding is higher than that in the study conducted in Udipi district of India¹¹ but lower than the studies conducted in Morang¹² and Sapatari¹³ of Nepal, which showed adequate knowledge regarding water and sanitation in about 70-90 percent of the participants. It might be due to differences on setting of the study.

Regarding WASH practices, the study found that piped water on premises was the main source of drinking water for 42 percent of the households. The finding is close to the data provided by

Ministry of Urban Development (2015) which states that only 49.3 percent of urban households have access to piped water.¹⁴ NDHS 2016 also shows piped water on premises as the major source of drinking water in urban areas of Nepal

Similarly, the findings in comparable to study done in slum setting in Balkhu area of Kathmandu, Nepal.⁷ The study found that most of the households (94.8%) didn't use any method for treatment of drinking water which was slightly higher than the finding of NDHS, 2016 which found that 86 percent of rural household do not use any method for treatment of drinking water.

The study showed that only 59% had latrine in their home (improved and unimproved) which was quite comparable to the study conducted in slums of Balkhu,⁷ and Morang in Nepal¹² but lower than the study conducted in Pokhara, Nepal¹⁵ and Udupi district in India.¹¹ The data shows that 41 percent of the respondents either use shared toilet such as neighbor's toilet (19.7%) and public toilet (16.8%). It might be due to poverty and semi urban areas.

Only 52.1 percent of the respondents practiced hand washing with soap and water in this study which was lower than the study conducted in slum setting of Pokhara district¹⁵ and Balkhu in Nepal⁷; but similar to the study conducted in Morang district in Nepal¹².

In this study, only 31 percent disposed their solid waste in municipal waste collection vehicle. It might be due to high irregularity of municipal vehicle to pick up the waste as found in study done in Bharatpur by Rai et al.¹⁶ This study also found out that only 24.9 percent respondents brushed their teeth at least once daily which was much lower than other studies conducted in Nepal.^{7,12,16}

This study also showed that there is association between the age of the respondents and level of knowledge which is contrasted by the study conducted in Bangalore by Mohd R et.al¹⁷ but supported by the study conducted in Udupi by Resma et.al¹¹. This study also found out that there is significant association between educational status and level of knowledge which is supported by the study by Resma et.al¹¹

There are certain limitations of this study. First, this study was done in only one slum area of Bharatpur using purposive technique. Hence it cannot be generalized to all the slums of the country. Secondly, the practices regarding WASH were self-reported and could have been subject to social desirability bias. However, the study makes a significant contribution regarding WASH knowledge and practices in an urban slum which has rarely been researched.

CONCLUSION

Sanitation and hygiene practices in urban slums are still the public health concerns of Bharatpur Metropolitan. Various family-centered educational programs on sanitation and personal hygiene with direct involvement of respondents should be conducted to raise awareness on WASH in slum setting.

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