▪ ***Original Article***

Study on knowledge and practice of water and sanitation application in Chandragadhi VDC of Jhapa District

R B Sah, D D Baral, A Ghimire, P K Pokharel
School of Public Health and Community Medicine, BPKIHS, Dharan

Abstract

Background: Poor hygiene practices and inadequate sanitary conditions play major roles in the increased burden of communicable diseases within developing countries. **Objectives:** To know the knowledge and practice of the people about the diseases related to water and sanitation and to know the pattern of water related diseases in last one year in that area. **Methods:** The cross-sectional study was conducted from 16th March to 30th March 2008 in Chandragadhi VDC where 203 households were taken as subjects. Convenient purposive sampling technique was applied. Semi-structured questionnaire was used and face to face interview was conducted. Chi-square test was applied to find out the significant difference between various diseases and related to water and sanitation system of the study areas. **Results:** People drinking untreated water suffered from diarrhea (38.46%) followed by dysentery (9.89%) respectively. People who devoid of latrine facilities suffered from diarrhea (40.74%) followed by dysentery (12.03%) respectively. Almost (38%) of the population under study gets rid of the excreta of their children in the river nearby and (32.5%) throw in the same latrine they use. Almost (66%) people wash their hands with soap water after defecation. **Conclusion:** A majority of people with knowledge of safe water and sanitation used soap and water for hand washing before meal and after defecation. People drinking untreated water showed significant with water related diseases ie diarrhoea followed by dysentery.

Keywords: knowledge, practice, water, sanitation

Introduction

A large fraction of the world's illness and death are attributable to communicable diseases.[1] Almost (62%) and (31%) of all deaths in Africa and Southeast Asia, respectively, are caused by infectious disease.[2] Hand washing with soap has been reported to reduce diarrhoeal morbidity by (44%) and respiratory infections by (23%).[2,3]

Safe water is one of the most important felt needs in public health in developing countries in the twenty first century.[4] The year 2005 marked the beginning of the "International Decade for Action: Water for Life" and renewed effort to achieve the Millennium Development Goal (MDG) to reduce by half the proportion of the world's population without sustainable access to safe drinking water and sanitation by 2015.[5] It is estimated by World Health Organization (WHO) and United Nations International Children's Emergency Fund (UNICEF) that 1.1 billion people lack access to improved water supplies and 2.6 billion people lack adequate sanitation.[6]

Open air defecation, a common practice among villagers, may lead to contamination of the water supply system and result in outbreaks of diarrhoeal disease.[7,8] The practice of tethering animals close to human dwellings and the consequent proximity to animal faecal matter further enhances the risk of contamination of drinking water.[9,10] The key to providing microbiologically safe drinking water lies in understanding the various mechanisms by which water gets contaminated, and formulating interventions at critical points to decrease and prevent contamination of drinking water.[11]

Address for Correspondence
Dr Ram Bilakshan Sah
Assistant Professor
School of Public Health & Community Medicine
B P Koirala Institute of Health Sciences
Dharan, Nepal
Email: bilaksah@Yahoo.com

This study was designed to know the knowledge and practice of the people about the diseases related to water and sanitation and to know the pattern of water related diseases in that area.

Methods

The cross-sectional study was conducted from 16th March to 30th March 2008 in Chandragadhi VDC, Ward No.1 where 203 households were taken as subjects. Verbal consent was taken from the respondents. Those families which were not available in their homes and who didn't give consent are excluded. Convenient purposive sampling technique was applied because the sampling frame of the population of that area was not available. Semi-structured questionnaire was used and face to face interview was conducted. Study subjects were enrolled till the required sample size was full filled.

The collected data was entered in MS Excel 2000. The analysis was done by using statistical software SPSS (Statistical package for Social Science) 17.0 version. Chi-square test was applied to find out the significant difference between various diseases and related to water and sanitation system of the study areas. The probability of occurrence by chance is significant if P< 0.05 with 95% Confidence Interval.

Results

Table 1: Distribution of water related diseases with different source of water

	Water related diseases in last one year					Total
Source of water	**diarrhoea**	**dysentery**	**typhoid**	**jaundice**	**Others**	
Piped	31 (19.74%)	8 (5.09%)	0 (0%)	4 (2.54%)	8 (5.09%)	157
Well water	8 (22.22%)	0 (0%)	0 (0%)	0 (0%)	4 (11.11%)	36
Hand pump	4 (40%)	1 (10%)	1 (10%)	0 (0%)	1 (10%)	10
P-value	0.162	0.763	---	----	0.202	203

Significant if P<0.05 and Confidence interval 95%

The households using hand pump had a higher incidence of water related diseases ie diarrhoea (40%) followed by dysentery (10%) which is not significantly associated. The households drinking well water suffered from diarrhoea (22.22%) which is not significantly associated.

Table 2: Distribution of water related diseases with different modes of water treatment

	Water related diseases in last one year					Total
Water treatment	**diarrhoea**	**dysentery**	**typhoid**	**jaundice**	**Others**	
Untreated	35 (38.46%)	9 (9.89%)	5 (5.49%)	4 (4.39%)	6(6.59%)	**91**
Boiling	15 (24.59%)	3 (4.91%)	6 (9.83%)	0 (0%)	0 (0%)	61
Filtration	10 (19.60%)	0 (0%)	0 (0%)	0 (0%)	10 (19.60%)	51
_P-Value	0.008	0.016	0.281	-----	0.267	203

Significant if P<0.05 and Confidence interval 95%

People drinking untreated water showed significant with water related diseases i.e. diarrhea and dysentery where p=0.008 and p=0.016 respectively.

Table 3: Distribution of water related diseases with contamination of stored water

	Water related diseases in last one year					Total
Contamination of stored water	**diarrhoea**	**dysentery**	**Typhoid**	**jaundice**	**Others**	
Yes	65 (45.13%)	16 (11.11%)	8 (5.55%)	6 (4.16%)	10(6.94%)	144
No	15 (25.42%)	4 (6.77%)	3 (5.08%)	2 (3.38%)	2 (3.38%)	59
P-Value	0.074	0.347	0.892	0.796	0.329	203

Significant if P<0.05 and Confidence interval 95%

Households with exposure to contamination of stored water suffered more from water related diseases ie diarrhoea (45.13%), dysentery (11.11%) than those with no exposure to contamination, diarrhea (25.42%), dysentery (6.77%).

Table 4: Distribution of water related diseases with latrine facilities

	Water related diseases in last one year					Total
Latrine	Diarrhoea	dysentery	Typhoid	jaundice	Others	
Absent	44 (40.74%)	13 (12.03%)	5 (4.62%)	5 (4.62%)	5 (4.62%)	108
Pits	18 (35.29%)	2 (3.92%)	6 (11.76%)	1 (1.96%)	4 (7.84%)	51
Water seal	15 (34.09%)	4 (9.09%)	0 (0.00%)	1 (2.27%)	3 (6.81%)	44
P-Value	0.689	0.369	0.556	0.393	0.511	203

Significant if P<0.05 and Confidence interval 95%

The households who devoid of latrine facilities suffered more from water related diseases ie diarrhea (40.74%) followed by dysentery (12.03%) and typhoid (4.62%) which is not significant.

Table 5: Hand washing practices before meal with knowledge about safe water and sanitation

	Hand washing practices				Total
Knowledge	**soap water**	**ash water**	**mud water**	**water only**	
Yes	120 (76.92%)	5 (3.20%)	19 (12.17%)	12 (7.69%)	156
No	14 (29.78%)	4 (8.51%)	15 (31.91%)	14 (29.78%)	47
P-Value	<0.001	0.121	0.001	<0.001	203

Significant if P<0.05 and Confidence interval 95%

A majority of people (76.92%) with knowledge of safe water and sanitation used soap water for hand washing before meal which is highly significant (P<0.001). This shows that majority of the population under study applied their knowledge in daily life.

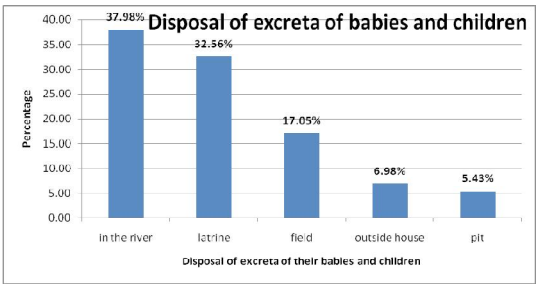

Figure 1: Disposal of excreta of babies and children

Almost (38%) of the population under study gets rid of the excreta of their children in the river nearby and (32.5%) throw the excreta of their children in the same latrine they use.

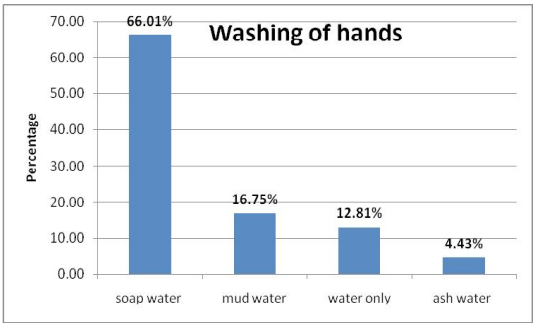

Figure 2: Practice on washing of hands after defecation

Almost (66%) populations wash their hands after defecation with soap water followed by small fraction (16.8%) use mud water and (12.8%) population washing with water only.

Discussion

Despite its huge potential in Nepal, inefficient management of water resources has caused scarcity. However, the percentage of population with access to drinking water has almost doubled from 38% to 68% during the past ten years (UNICEF, WHO, DWSS, 2002). The most positive assessment indicates that 81% of the population has access to safe water. In the urban areas the coverage is assessed to 85% and in the rural areas 80% (SEARO, 2001).The state of sanitation is poor and no significant statistical improvements are identifiable during the previous decade. Where as 27% of the population has access to adequate sanitation. In the urban areas the coverage is 75% and in the rural areas 20% (SEARO, 2001).

In Tamil Nadu, there are guidelines for provision of potable drinking water in villages and to ensure segregation of sewage and drinking water.[12] These guidelines state that water pipes should not go through sewage or should not be submerged in sewage at any point. The guidelines also specify the maximum permissible taps per tank (depending on its capacity) and prohibit people from lowering taps into pits (referred to as subterranean taps). At the distal end of 'Harijan colony' a cluster of subterranean taps was seen inside dug pits, which was an indirect evidence of lower water pressure. This also resulted in sewage channels being

at a higher level than the taps. After rain, entry of sewage through these taps was a distinct possibility. But in our study, Most of the households using hand pump as a main source of drinking water had a higher incidence of water related diseases.

Provision of safe drinking water has been of primary concern in rural India.[13,14] Studies done in and around Vellore town, both in epidemic and endemic settings have found drinking water to be microbiologically contaminated and unfit for human consumption.[8,14-17] The prevalence of E histolytica has been observed as common findings in tropical and subtropical countries and is responsible for diarrhoea in several studies.[18] These intestinal parasites are commonly transmitted by infected drinking water and food. In Nepal, water supply poses a big due to faecal contamination of the same. In this study also, Households with exposure to contamination of stored water suffered more from water related diseases than those with no exposure to contamination.

In our study, almost (77%) respondents wash hands before meal with soap water. The considerably higher frequency of hand washing before meals among Ethiopian children may be due, in part, to the Ethiopian cultural tradition and ceremonial practice of washing hands before meals[19] or the desire for clean, fresh hands before eating.[20] However, only (36.2%) of students who washed their hands reported using soap. This is similar to the Philippines and Turkey studies where an average of 37.7% and 42.4% of children, respectively, washed their hands with soap.[21,22]

In our study, 38% of the population under study gets rid of the excreta of their children in the river nearby, (32.5%) throw the excreta of their children in the same latrine they use, about (17%) throw to open field and (7%) outside of house. These 'faecal fields' potentially put the village at risk of flooding with faecal material from surrounding areas during rains. In an adjoining village, a suspected outbreak of cholera was reported after heavy rain because of poorly maintained water supply pipes that ran through a faecal field.[8] Existing Tamil Nadu Water Supply and Drainage (TWAD) Board guidelines specify that the public should not defecate around the tanks and the taps, but is non-specific when it comes to defecation in other places, not accounting for the fact that common defecation areas are usually in the public land where the water supply pipes are laid.[12]

In our study, almost (66%) wash their hands with soap water after defecation followed by a small fraction (16.8%) use mud water and (12.8%) population washing with water only. Washing hands after defecation is one of the most effective ways to prevent gastrointestinal parasitic infections.[2,3] In contrast, studies conducted in Colombia and India reported that (82.5% and 86.4%, respectively) wash their hands after using the toilet.[23,24] The low frequencies of hand washing with soap (36.2%) may be attributed to the lack of soap at home. Soap, water, and latrines are essential for proper hygiene practice.[25] Even if knowledge of hygiene exists, lack of appropriate resources may negatively affect proper hand washing practices.

Conclusion

A majority of people with knowledge of safe water and sanitation used soap water for hand washing before meal and after defecation. People drinking untreated water and people whose house do not have sanitary latrine suffered more from soil & water transmitted diseases.

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