

Knowledge Attitude and Practice about Safe Drinking Water among High School Teachers of Rawalpindi, Pakistan.

Gul Shaikh^{1*}, Asif Maqsood Butt², Muhammad Shafiq³

¹Assistant Prof. of Public Health and Education, CMH, Lahore.

²Medical Officer, District Health Authority, Rawalpindi

³Public Health Specialist, Abdul Qadeer Khan Research Laboratories, Islamabad

Correspondence to

Dr. Gul Muhammad Shaikh Professor, Assistant Prof. of Public Health and Education, CMH, Lahore.

E-mail: shaikhgul25@gmail.com

Received: 08 December 2021

Accepted: 26 December 2021

OPEN
ACCESS



This is an open access article distributed in accordance with the Creative Commons Attribution (CC BY 4.0) license: <https://creativecommons.org/licenses/by/4.0/> which permits any use, Share — copy and redistribute the material in any medium or format, Adapt — remix, transform, and build upon the material for any purpose, as long as the authors and the original source are properly cited. © The Author(s) 2021

Abstract

Objective: The objective of the study was to evaluate the knowledge attitude and practice about safe drinking water among high school teachers of Rawalpindi city.

Methods: This descriptive study was conducted in Rawalpindi city among high school teachers of some private institutions between September to November in 2021. A total 200 teachers, 151 (75%) females and 49 (25%) males participated in the study. Sample selection was done with the help of convenient sampling. Data collection was done with the help of a self-structured questionnaire. Data entry and analysis was done with the help of SPSS version-23. Quantitative variables were presented with the help of mean±SD and qualitative variables were presented with the help of frequency and percentages.

Results: Only 67% male and 61% female participants could successfully define perception of safe drinking water. Among male and female participants >80% had knowledge about water borne diseases, less than 50% were able to successfully define water contamination; knowledge about water chlorination was good among participants for both male and female participants as >70% knew about it, perception regarding boiling of water was also high among participants and >80% of male and female participants had perception regarding government role for safe drinking water and vaccination against water born diseases. In an attempt to name water borne diseases, 23% males & 38% females failed to do so and about 98% males and 99% females had no perception about the nutrients essential in drinking water.

Conclusion: Perception about safe drinking water among teachers of high school is unsatisfactory and this is alarming as they are the main source of knowledge for their students and others.

Keywords: knowledge, attitude, practice, safe drinking water, high school teachers

Introduction

Clean and safe drinking water is a basic need for life and household activities like cooking food, drinking and personal hygiene. If water is free from hazardous material and have no health risk

is considered as safe. Lamentably, many individuals are denied of this basic need throughout the world. The circumstances in civilized nations are not bad as 94.9 % of the population has access to clean drinking water.¹

Water borne diseases are the second major cause of mortality in developing countries under 5 year of age and kills about 760, 000 children in a year.² There are 24 million children in Pakistan which can have 120 million episodes of diarrhea per year.² Water borne diseases are caused by polluted water which have been contaminated by fecal matter, mostly by human fecal matter which is infected by pathogens. By drinking of this water acute illness can occur and the water which have chemical substance can cause chronic illnesses, even cancer in human. It is necessary to evaluate the water quality by laboratory test.¹

Pakistan signed the Millennium Declaration Goals (MDGs) in the year 2000, to address the issue of extreme poverty and to provide the basic human rights of health, education and security. MDGs and committed to achieve the targets which were set at the World summit on sustainable development. By 2015, MDGs aimed to decrease by fifty percent the proportion of community which don't have facility of safe drinking water and basic sanitation.³ However, this target was not achieved by its allotted time.

It has been noted that most of water supplies in Pakistan are infected in tube wells, springs, steel pipes and pounds from sewage and dirty water canals.^{4,5} The distance of safe water source from residential areas in cities should be atleast one km,⁶ which is not the case in big cities of Pakistan, including Rawalpindi- a densely populated city of Punjab.

We Pakistanis as a nation need to develop awareness about the steps taken to ensure safe drinking water in our localities, but unfortunately, this is not the case and nobody is bothered to educate themselves about the requirements. A few nations have made it possible; according to Global water supply and sanitation assessment report 2000.⁷ According to a national statistics conducted in 2011,⁸ about 55.9% of the inhabitants in Pakistan had access to safe drinking water⁹ but only 25.60% of the individuals were aware of this fact.⁹ Most of the water supplied to the general popula-

Original Article

tion is not safe and clean and is contaminated which is harmful for ones' health.¹⁰

The basic aim of conducting this study was to evaluate the knowledge attitude and practice about safe drinking water among high school teachers of Rawalpindi city. As teachers are labelled as the most knowledgeable community of any society, the objective of the study was to evaluate the knowledge, attitude and practice about safe drinking water among high school teachers of Rawalpindi city.

Methods

This descriptive study was conducted between September to November, in 2021, in Rawalpindi city of Punjab, among high school teachers. A sample of 200 teachers was included in this study. The teachers were approached through their institutions, including different private sector schools across the city and the proportion of female teachers was higher than male. The participants were requested to fill in a questionnaire. Sample selection was done with the help of convenient sampling.

The study was carried out after approval by Ethical Review Board of Sarhad University of Peshawar. Complete confidentiality of subjects was maintained and data was collected after informed written consent. Data collection was done with the help of a self-structured questionnaire. Data entry and analysis was done with the help of SPSS version-23. Quantitative variables were presented with the help of mean ± SD and qualitative variables were evaluated with the help of frequency and percentages.

Results

After applying convenient sampling technique, there were 151 (75%) females and 49 (25%) male teachers who participated in this study. Only 67% male and 61% female participants had successfully defined perception of safe drinking water; Among male and female participants >80% had knowledge about water borne diseases; for both male and female participants <50% were able to successfully define water contamination, knowledge about water chlorination was good among participants for both male and female participants and >70% knew about it; perception regarding boiling of water was also high among participants; More than 80% of male and female participants had perception regarding government role for safe drinking water and vaccination against water born diseases.

While defining safe drinking water, a total 48 (98%) and 149 (99%) females defined it right. In assessment of knowledge about water borne diseases, there were 45(92%) males and 131(87%) females who knew about water borne diseases and 04(8%) male and 20(13%) female had no clue. In an attempt to name water borne diseases, 11(23%) male and 56(38%) female could not name different water borne diseases, while 10(20%) male 17 (11%) female named cholera, 10 (20%) male and 27(18%) female named diarrhea, about 2(4%) male and 2(1%) female named dysentery as a water borne disease, about 01(2%) male and 06(4%) female chose food poisoning. About 11(23%) male and 20(13%) chose hepatitis, about 04(8%) male and 23(15%) female chose typhoid fever as water borne diseases.

Table-1: Response regarding knowledge & Perception of study participants

	Male (n=49)	Female (n=151)
Knowledge of safe drinking water		
Yes	48 (98%)	149 (99%)
No	01 (02%)	2(1%)
Perception about safe drinking water		
Don't Know	6(12%)	46(30%)
Not Clear	10(20%)	19(13%)
Successfully Defined	33(67%)	92(61%)
Knowledge about water borne diseases		
Yes	45 (92%)	131 (87%)
No	04 (08%)	20 (13%)
Perception about water borne diseases		
Cholera	10(20%)	17(11%)
Diarrhea	10(20%)	27(18%)
Dysentery	2(4%)	2(1%)
Food Poisoning	1(2%)	6(4%)
Hepatitis	11(22%)	20(13%)
Typhoid	4(8%)	23(15%)
Knowledge about water contamination		
Don't Know	2(4%)	68(45%)
Not Clear	7(14%)	14(9%)
Successfully Defined	22(45%)	69(46%)
Knowledge about water chlorination		
Yes	36 (73%)	109 (72%)
No	13 (27%)	42 (28%)
Perception about water boiling		
Yes	47 (96%)	146 (97%)
No	02 (04%)	05 (03%)
Perception about role of government in safe drinking water supply		
Yes	47 (96%)	141 (93%)
No	02 (04%)	10 (07%)
Perception about vaccination against water borne diseases		
Yes	42 (86)	126 (83)
No	07 (14)	25 (17)
Traditional concept water in river flow is always safe for drinking		
Yes	03 (06%)	12 (08%)
No	46 (94%)	139 (92%)
Water filtration data		
Yes	36 (73%)	114 (75%)
No	13(27%)	37(25%)
Interval of replacement of water filter		
Changing with in standard time	16(33%)	44(29%)
Not using filter	17(35%)	47(31%)
Using filter but inadequately	16(33%)	60(40%)
Water Boiling Data		
Yes	39 (80%)	117 (77%)
No	10 (20%)	34 (23%)
Water laboratory testing data		
Yes	12 (24%)	32 (21%)
No	37 (76%)	119 (79%)
Perception about drinking water nutrients		
Don't Know	48(98%)	149(99%)
Not clear	0(0%)	1(1%)
Successfully defined	1(2%)	1(1%)
Water tank cleaning data		
Yes	40 (82%)	110 (73%)
No	09 (18%)	41 (27%)
Water tank cleaning time interval		
Good	16(33%)	49(32%)
Poor	2(4%)	4(3%)
Very Poor	31(63%)	98(65%)
Vaccination against water borne diseases		
Yes	16 (33%)	51 (34%)
No	33 (67%)	100 (66%)
Distribution of vaccination against water borne diseases		
Cholera	2(4%)	6(4%)
Diarrhea	1(2%)	6(4%)
Hepatitis	5(10%)	16(11%)
Typhoid	5(10%)	28(19%)

Discussion

Sustainable approaches to water management require broad community acceptance of changes in policy, practice and technology, which in turn, requires an engaged community. A crit-

Original Article

ical first step in building an engaged community is to identify community knowledge about water management, an issue rarely examined in research. To address this, a survey was conducted in 2016 amongst 5172 Australian adults.¹¹ Knowledge was assessed using 15 questions about impact of household activities on waterways, the urban water cycle, and water management. This survey also examined demographics, psychosocial characteristics, exposure to water-related information. Most respondents knew that household actions can reduce water use and influence waterway health, unlike our findings in which less participants were aware of this fact.

In a similar study, an examination of the nature of drinking water utilized by the group of Bungamati, a provincial town of Kathmandu Valley, Nepal was studied through a survey in the year 2007.¹² The study was undertaken to study the content of drinking water utilized by the groups and after that evaluated their insight about the quality water and water borne contaminants. It was observed that the inhabitants of that area were unaware about the composition of their drinking water and its contaminants. Similarly in our study, 41% of males and 45% of females were not able to define water contamination.

In comparison to our study, a similar study was conducted in Kaduna state in Nigeria to assess the level of knowledge, attitude and practices of household water purification among 142 caregivers of under-five children who were randomly selected.¹³ Majority of the respondents had poor knowledge and practice of household water purification. Likewise, in the current study among the school teachers, majority of the participants were not educated about the methods of household water purification.

It was important to test the knowledge and practices of school teacher regarding their perception of safe level of nutrients in drinking water & the results obtained in this study were alarming, as 98-99% of the participants were unaware of the essential nutrients found in drinking water.

A lot of studies in past have indicated that water in community supply in developing countries is not up to standard and there are no testing facilities about nutrients level. A study conducted by Kuberan et al in 2015 in India revealed the lack of resources and knowledge about safe drinking water in the low socio-economic population of India.¹⁴ In Pakistan, although this category did not belong to low socio economic status, even then they were unaware of water quality, basically water is short for the large population and people especially women spend their extra time to collect water and they are unaware of water pollutants. This is worst in urban settings where water is shorter and more polluted and contaminated and actual problem of access.

In assessment of preventive vaccination against water borne diseases, data showed that only 33-34% of participants were using vaccines against water borne diseases. This calls for intervention at government level to implement the administration of vaccines and encourage the public to opt for vaccination. A similar study was conducted in Haiti in which the government was called for intervention at a massive scale when many people were suffering from cholera due to lack of knowledge and awareness about vaccination.¹⁵

In last session of this questionnaire filling, the respondents were asked to write down their suggestion to improve safe drinking water knowledge, attitude and practices. It turned out that majority of the participants put this responsibility on the shoulders of the government rather than showing any willingness to take an initiative at the community level by the community itself. Very few opted to take up the initiative themselves at the community level.

Teachers are most educated community of society and have better access to knowledge, but in household settings, when their level of knowledge and awareness about how they use and treat water for themselves and for their family was studied, the data was alarming, as their knowledge about water borne diseases, about essential water nutrients, their knowledge about purifying water, water chlorination and sanitation of water tank and protection from sewage was alarmingly low.

Conclusion

Perception about safe drinking water among teachers of high school is unsatisfactory and this is alarming as they are the main source of knowledge for their students and others. If community has better knowledge attitude and practices about safe drinking water we can save thousands of lives per year.

Limitations of this study

The smaller sample size and exclusion of educational institutions of the government sector in rawalpindi are the main limitations of the study.

References

1. Nabeela F, Azizullah A, Bibi R, Uzma S, Murad W, Shakir SK et al. Microbial contamination of drinking water in Pakistan—a review. 2014;21(24):13929-42.
2. Divasha, Pasi R, Ravi KS. Level of knowledge of mothers (18-35 years of age) of under 5 children regarding ORS therapy. *J Family Med Prim Care*. 2020;9(9):4747-4750. Published 2020 Sep 30. doi:10.4103/jfmpc.jfmpc_853_20
3. Aziz F, Tahir F, Quresh NA. Millennium development goals (MDGs-2000-2015) to sustainable development goals (SDGs-2030). *J Pak Med Assoc*. 2021; 71: 596-601. DOI: <https://doi.org/10.47391/JPMA.394>.
4. Chalchisa D, Megersa M and Beyene A. Assessment of the quality of drinking water in storage tanks and its implication on the safety of urban water supply in developing countries. *Environ Syst Res*. 2017; 6:12. DOI 10.1186/s40068-017-0089-2
5. Jamison DT, Breman JG, Measham AR, editors. *Disease Control Priorities in Developing Countries*. 2nd edition. Washington (DC): The International Bank for Reconstruction and Development / The World Bank; 2006. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK11728/> Co-published by Oxford University Press, New York.
6. Lawson JA, Mistry P, editors. How to test water quality? Chemical tests for limited budgets. Second piece of the blog series on low-tech water quality monitoring options. July 13, 2017.

Original Article

7. World Health Organization, UNICEF. Global Water Supply and Sanitation Assessment report: WHO, 2000.
8. Azizullah A, Khattak MN, Richter P, Häder DP. Water pollution in Pakistan and its impact on public health--a review. *Environ Int.* 2011 Feb;37(2):479-97. doi: 10.1016/j.envint.2010.10.007. Epub 2010 Nov 18. PMID: 21087795.
9. Haq M, Mustafa U, Ahmad, I. Household's Willingness to Pay for Safe Drinking Water: A Case Study of Abbottabad District. *The Pakistan Development Review*, 2007; vol. 46, no. 4 pp. 1137-53. <http://www.jstor.org/stable/41261218>.
11. Dean AJ, Fielding KS, Newton FJ. Community Knowledge about Water: Who Has Better Knowledge and Is This Associated with Water-Related Behaviors and Support for Water-Related Policies? *PLoS ONE.* 2016; 11(7): e0159063. doi:10.1371/journal.pone.0159063.
12. Pradhan B, Gruendlinger R, Fuerhapper I. Knowledge of water quality and water borne disease in rural Kathmandu Valley, Nepal, *Aquatic Ecosystem Health & Management*, 2005; 8(3): 277-284, DOI: 10.1080/14634980500208176.
13. Ibrahim JM, Sufiyan MB, Olorukooba AA, Gobir AA, Adam H, Amadu LJAoM, et al. Knowledge, attitudes, and practices of household water purification among caregivers of under-five children in biye community, Kaduna State. 2016;1(2):35
14. Kuberan A, Singh AK, Kasav JB, Prasad S, Surapaneni KM, Upadhyay V, et al. Water and sanitation hygiene knowledge, attitude, and practices among household members living in rural setting of India. 2015;6(Suppl 1):S69.
15. Aibana O, Franke M, Teng J, Hilaire J, Raymond M, Ivers LC-JPntd. Cholera vaccination campaign contributes to improved knowledge regarding cholera and improved practice relevant to waterborne disease in rural Haiti. 2013;7(11):e2576.