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KNOWLEDGE AND PRACTICES OF HOUSEHOLDS REGARDING QUALITY OF DRINKING WATER AMONG RESIDENTS OF DISTRICT AMRITSAR

Community Medicine

Dr. Kritika Bansal* Senior Resident, Department of Community Medicine, FMHS, SGT University, Bhudera, Gurugram. *Corresponding Author

Er. Tenish Kansal Manager, Training Academy, Maruti Suzuki India Limited, Gurugram

ABSTRACT

Introduction: Safe drinking water, sanitation and good hygiene are fundamental to health, survival, growth and development. Water quantity is as important as water quality. Much of ill-health which affects humanity, especially in the developing countries can be attributed to lack of safe and wholesome water supply. 2.6 billion people have gained access to an improved drinking-water source since 1990. 663 million people rely on unimproved sources, including 159 million dependent on surface water. Globally, in 2015 at least 1.8 billion people use a drinking-water source contaminated with feces.

Aims & Objective: To study knowledge and practice regarding quality of drinking water.

Material and Methods: It was cross sectional study and study area was the field practice area of the department of Community Medicine, Sri Guru Ram Das Institute of Medical Sciences and Research, Amritsar. Residents who were willing to participate in study and present were included in the study.

Results: Majority of participants were female and Sikh by religion. Most of the participants knew that water has no smell, taste and color and maximum participants had knowledge regarding usage of safe drinking water.

KEYWORDS

Drinking water, Sanitation, Knowledge, Hygiene

INTRODUCTION

Safe drinking water, sanitation and good hygiene are fundamental to health, survival, growth and development. Water quantity is as important as water quality. Much of ill-health which affects humanity, especially in the developing countries can be attributed to lack of safe and wholesome water supply. Safe and wholesome water has been defined as water that is free from pathogenic agents and harmful chemical substances, pleasant to taste, usable for domestic purposes.[1]

Safe water is one of the most important felt needs in public health in developing countries in the twenty first century.[2] There can be no state of positive health and well-being without safe water. Water is not only a vital environmental factor to all forms of life but it has also a great role to play in socio-economic development of human population.[1]

Billions of people have gained access to clean and safe drinking water since 1990, but data show that huge inequalities remain. In 2015, 91% of the world's population had access to an improved drinking water source, compared with 76% in 1990. 2.6 billion people have gained access to an improved drinking-water source since 1990. 663 million people rely on unimproved sources, including 159 million dependent on surface water. Globally, in 2015 at least 1.8 billion people use a drinking-water source contaminated with faeces.[3]

India has the highest number of people in the world without access to safe water. The country has 75.8 million people, at least 5% of its 1.25 billion populations, without access to clean water. India has more people in rural areas, 63.4 million living without access to clean water than any other country, according to *Wild Water, State of the World's Water 2017,* new report by WaterAid.[4] Punjab has made great strides in making drinking water available to its population according to the study conducted in 2015 by department of science & technology. However, accessibility of safe drinking water is still an issue. Water pollution due to discharge of industrial waste water, untreated discharge of municipal waste water in some towns and leaching of chemicals from synthetic fertilizers and pesticides into the soil, causes both surface water and ground water pollution.[5]

MATERIAL AND METHODS

It was cross sectional study conducted in the field practice area of the Department of Community Medicine, Sri Guru Ram Das Institute of Medical Sciences and Research, Amritsar. Sample size was calculated as per last quarterly report (May- August2016)**;** total 7508 households were situated in rural and urban areas. As per CAWST (Center for Affordable Water and Sanitation Technology) training manual for large projects (>100 households) 5% of total sample should be taken.[6] It came out to be 375 which were rounded of to 400. Simple random sampling was done to select the number of households. Participants who were above 18 year, available and willing to participate were included in the study. Time period of study was 1 April 2017 to October 2018. The information was collected by holding the interview of households using the structured and pretested questionnaire. Informed consent was taken from the people who were willing to participate in the study and they were informed about the purpose of study and were also ensured about the confidentiality of their interview. Socio-economic status was estimated according to their Standard of living (SLI) as per NFHS-2.[7]

Statistical Analysis: Data were entered into a computerized Excel (Microsoft Excel 2010) spread sheet and subsequently descriptive analysis was analyzed in SPSS software version 25.0.

Ethical Consideration: Research protocol was approved by the ethical committee of SGRD medical college, Amritsar.

RESULTS

Table1. Sociodemographic charatersitics

Socio-demographic Characteristics		No.(n=400)	%
Age	<20	6	1.5
	21-30	69	17.2
	31-40	112	28
	41-50	97	24.3
	51-60	76	19
	61-70	40	10
Sex	Male	24	6
	Female	376	94
Area	Urban	200	50
	Rural	200	50
Religion	Sikh	366	91.5
	Hindu	33	8.2
	Christian	0	0
	Muslim	1	0.3
	Others	0	0
Caste	ST	0	0
	SC	101	25.3
	OBC	66	16.4
	General	233	58.3
	Others	0	0
Socioeconomic staus (SLI)	Low	29	7.2
	Medium	116	29
	High	255	63.7

Table 1 shows socio-demographic characteristics of 400 households among 400. It shows that among the 400 households, majority 209 (52.3%) belonged to middle age group i.e. (31-50 years), followed by 76 (19%) in age group of 51-60 and the least 6 (1.5%) in age group of <

20 years. In sex wise distribution, among the 400 households, 376 (94%) were females and 24 (6%) males. Equal numbers of households were taken from the rural and urban areas i.e. 200 from urban areas and 200 from rural areas. 366 (91.5%) were Sikhs, 33 (8.2%) Hindus and 1 (0.3%) Muslim. Majority, 233 (58.3%) were from General category, 101 (25.3%) from SC category and 66 (16.3%) from OBC category. In socioeconomic status majority, 255 (63.7%) belonged to high socioeconomic status, 116 (29%) belonged to medium socioeconomic status and 29 (7.2%) belonged to low socioeconomic status. Socioeconomic status was calculated as per SLI (Standard of living index).

Table 2. Knowledge regarding physical characteristics of clean drinking water

Physical characteristics of water	Yes		No		Don't Know		Total	
	No.	%	No.	%	No.	%	No.	%
Smell	3	0.75	348	87.0	49	12.25	400	100
Taste	179	44.75	197	49.25	24	6.0	400	100
Color	8	2.0	339	84.75	53	13.25	400	100

Table 2 is showing the knowledge regarding physical characteristics of water. All the 400 households were enquired regarding physical characteristics of water, among them 348 (87%), 197 (49.5%) and 339 (84.75%) responded that water has no smell, taste and; color respectively.

Table 3. Knowledge regarding drinking water

Meaning of safe and wholesome drinking water (n=400)	No.	%
Colorless	4	1.0
Odorless	13	3.3
No Turbidity	2	0.5
All of the above	271	67.8
None of the above	0	0.0
Don't Know	110	27.5
One should purify drinking water (n=400)	**No.**	**%**
Yes	368	92
No	16	4
Don't know	16	4
Reasons of purification of drinking water (n=368)	**No.**	**%**
Kill pathogens	147	39.9
Kill insects	0	0.00
Remove bad smell	2	0.54
Make it good for health	218	59.2
Don't know	1	0.3

Table 3 shows the knowledge of meaning of safe and wholesome drinking water. It shows that among 400 households, 271 (67.8%) responded that safe and wholesome water is devoid of color, odor and turbidity; and 110 (27.5%) did not know regarding the above characteristics. Most of the respondents, 368 (92%) responded that purification of water should be done. Majority 218 (59.2%) responded that water purification is done to make drinking water good for health.

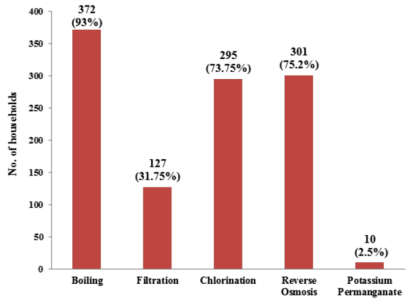

Figure1. Bar diagram showing the knowledge of households regarding methods of purification of drinking water

Figure 1 shows knowledge regarding different methods of purification of drinking water. It was multiple response answer. Among the 400 households, most of them i.e. 372 (93%) knew about boiling, and the least 10 (2.5%) about potassium permanganate as methods of purification of drinking water. Nobody knew about ultraviolet and iodine as purification methods.

Table 4. Practice of purification of drinking water

Purify the water (n=400)	No.	%
Yes	296	74
No	104	26
Methods of purification (n=296)	**No.**	**%**
Boiling	22	7.4
Filtration	65	22.05
Reverse Osmosis(R.O)	174	58.7
Ultraviolet(U.V)	28	9.55
Potassium permanganate(KMno4)	1	0.3
Iodine	0	0.0
Chlorination	6	2.0

Table 4 shows practice regarding purification of drinking water. Among 400 households, 296 (74%) purify drinking water and among 296 respondents, majority 174 (58.7%) of them were using reverse osmosis followed by filtration, 65(22.05%).

Table 5. Distribution of households regarding practice of purification methods of drinking water in relation their socioeconomic status

Socio-economic Status	Practice of methods of purification						Total
	Boiling	Filtration	R.O.	U.V.	KMnO4	Chlorination	
Low SLI	0 (0%) [0.0%]	0 (0%) [0.0%]	9 (90.0%) [5.2%]	1 (10.0%) [3.6%]	0 (0.0%) [0.0%]	0 (0.0%) [0.0%]	10 (100%) [3.4%]
Medium SLI	14 (18.2%) [63.6%]	29 (37.7%) [44.6%]	26 (33.8%) [14.9%]	5 (6.5%) [17.9%]	0 (0.0%) [0.0%]	3 (3.9%) [50.0%]	77 (100%) 26.0%
High SLI	8 (3.8%) [36.4%]	36 (17.2%) [55.4%]	139 (66.5%) [79.9%]	22 (10.5%) [78.6%]	1 (0.5%) [100%]	3 (1.4%) [50.0%]	209 (100%) [70.6%]
Total	22 (7.4%) [100%]	65 (22.0%) [100%]	174 (58.8%) [100%]	28 (9.5%) [100%]	1 (0.3%) [100%]	6 (2.0%) [100%]	296 (100%) [100%]

***R.O= Reverse Osmosis, U.V= Ultraviolet, KMnO4= Potassium permanganate**
X^2= 44.59 df= 10 p = 0.000

Above table shows distribution of households regarding practice of purification methods of drinking water in relation to their socioeconomic status. Among the 400 households, 296 (74%) households were purifying drinking water. Among high SLI almost, 139 (66.5%) were using reverse osmosis followed by filtration, 36 (17.2%). Among medium SLI, 29 (37.7%) were using filtration and the least 3 (3.9%) were using chlorination. Among low SLI most of them, 9 (90%) were using reverse osmosis and 1 (10%) was using ultraviolet as method of purification of drinking water. Higher the SLI more is the practice of purification methods of drinking water. Socioeconomic status wise difference in different methods of purification of drinking water was highly significant statistically.

DISCUSSION

Similar study conducted among 480 households in a rural block of Haryana by Bharti et al. showed the similar results i.e. most of participants were adult females (96.4%). [8]

As per NFHS-4, a large majority of households in Punjab have household heads who were Sikhs (60%).[7]

Our study shows that 219 (59.5%) knew that water purification should be done to make it good for health Similar study was conducted by Ibrahim JM at Kaduna state where more than half of the respondents said the reason for treating water was to kill germs, another three of ten respondents mentioned to prevent diarrhea, very little proportion do not even know why people treat their water.[9]

Most of the households i.e. 372 (93%) knew boiling, 301 (75.25%)

reverse osmosis, 295 (73.75%) chlorination and 127 (31.75%) filtration as methods of purification of drinking water. Similar study conducted by Bharti et al. in rural block of Haryana showed that 309 (64.3%) knew regarding boiling or filtering methods for purification of drinking water. High awareness of methods of purification of drinking water was found in our study as compared to above stated studied. [8]

A similar study which was conducted in rural area of Salem district, by Pachori R, showed that among 300 households, 254 (84.6%) were purifying drinking water and in our study it was 74%. of participants.[10] In our study participants belonged to high SLI were using more purification drinking water methods. This might be because the households having high SLI could afford to spend more on methods of purification of drinking water.

CONCLUSION

Maximum number of participants had knowledge regarding clean drinking water and most of them had knowledge regarding methods of purification of drinking water. Awareness campaign by SGRD medical college and mass media has played its role in creating awareness about importance of clean drinking water. Although people had lack of understanding about clean drinking water in their mind but most of them are using one or other purification method for cleaning drinking water.

REFERENCES:

1. Park K. Environment and health. In: Park's textbook of preventive and social medicine. 24th ed. Jabalpur, India: M/s Banarsidas Bhanot; 2017: p. 743
2. Gopal S, Sarkar R, Banda K, Govindarajan J, Harijan BB, Jeyakumar MB, et al. Study of water supply & sanitation practices in India using geographic information systems: some design & other considerations in a village setting. Indian J Med Res. 2009 Mar;129(3):233-41. PubMed PMID:19491414.
3. World Health Organization. Key facts from JMP 2015 report. Water sanitation hygiene.2018;1.
4. Water Aid. The State of the World's Water 2016. Water: At What Cost? 2016:7-14.
5. Bharat GK, Green Growth Chapter in Punjab. In: Department of Science Technology and Environment Punjab. Punjab; 2015:46-9.
6. Center for Affordable Water and Sanitation Technology. A CAWST training manual. Introduction to drinking water quality testing. 2009:26
7. National family health survey-2. Background characteristics of households and villages. 1988:40
8. Bharti, Malik M, Kumar V, R Verma, S Chawla, Sachdeva S. Knowledge attitude practices regarding water handling and quality assessment in rural block of Haryana. International Journal of Basic and Applied Medical Sciences.2013 May;3(2): 3-4.
9. . Ibrahim J M,. Sufiyan BM, Abdulhakeem A. Olorukooba, Adam A H, Amadu L. Knowledge, attitudes, and practices of household water purification among caregivers of under five Children in Biye community, Kaduna State. Archives of Medicine and Surgery. 2016 July;2(1):37- 39.
10. Pachori R .Drinking water and sanitation: household survey for knowledge and practice in rural area, Magudanchavadi, Salem district. IJCMPH. 2016 Jul;3(7):1820-1828 .