

Original Article

Relationship of Drinking water with water related diseases in Rawalpindi and Islamabad

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ABSTRACT

Objective

To study the association of drinking water with water related diseases in Rawalpindi and Islamabad area.

Methods

A cross-sectional descriptive study was conducted among residents of Rawalpindi and Islamabad over a period of two months from July 2007 to August 2007. A total of 55 individuals were included in the study by convenience sampling. Of these 55 study participants, 30 were from Rawalpindi and 25 from Islamabad. Data was collected by means of a structured questionnaire.

Results

Of the total respondents, 42% used tap water, 33% boiled water, 16% filtered water, 5% well water and 4% mineral water while none of them used chlorinated water. 69.8% respondents suffered from water related diseases. 38.18% people were post-graduate while 8.63% people were illiterate. 75% respondents belonged to middle socio-economic class. 59% used domestic water disinfection techniques due to health education or awareness while the disinfection techniques used by 10% following information attained from campaigns. 94% people were healthy with the type of drinking water consumed while only 6% were dissatisfied. Dysentery was found to be the commonest water related disease among 70% respondents. People consuming mineral water did not suffer from any water related diseases.

Conclusion

Use of tap water without disinfection lead to development of water related diseases. (Rawal Med J 2010;35:242-244).

Keywords

Chlorinated water, Disinfection techniques, Dysentery.

INTRODUCTION

The amount of water in the world is fixed, some 1500 million km³. Only about 0.2% of this is fresh water.¹ Much of the ill health which affects humanity, especially in the developing countries can be traced to lack of safe and wholesome water supply.² Water related diseases include those due to micro-organisms and chemicals in water people drink; diseases like schistosomiasis which have part of their life cycle in water; diseases like malaria with water related vectors, drowning and some injuries and others such as legionellosis carried by aerosol containing certain micro-organisms.³ These water related diseases have been classified as faeco-oral, water borne, water washed, water based, water related insect vector and water dispersed diseases.¹ Developing countries carry a heavy burden of water related diseases, especially the diarrheal diseases.²

Main topics discussed in training programme on surveillance of water related disease have been precedence in decreasing the burden of water related diseases in the Central Asian Republics, strategies for monitoring water for chemical and microbial pollution and evaluation of surveillance system for water related diseases.⁴ The present study was carried to evaluate the connection of water related diseases with type of drinking water consumed by the residents of Rawalpindi and Islamabad having different educational status.

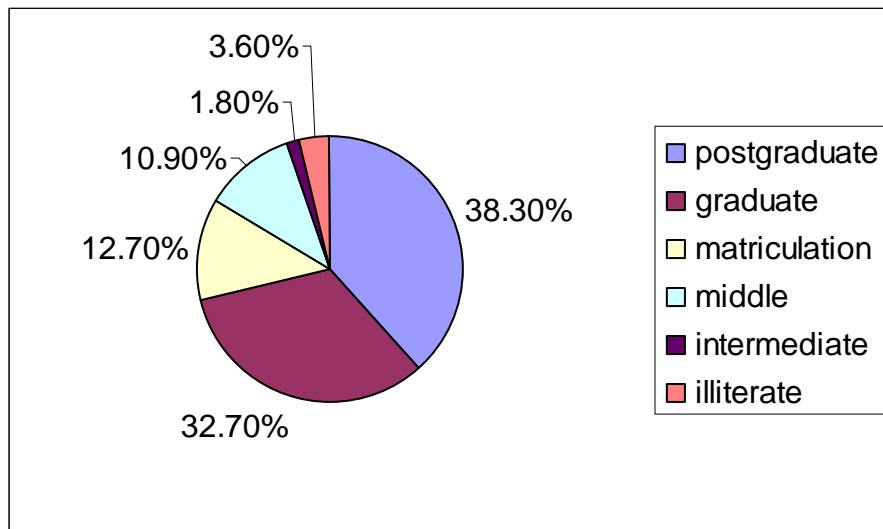
SUBJECTS AND METHODS

A cross-sectional descriptive study was conducted among 55 residents of Rawalpindi city (Tehmasapabad, Dhoke Khabba, Dhoke Hukamdad and Dhoke Farman Elahi) and Islamabad city (sector I-8, I-9, G-8, G-9, G-10). Study subjects were enrolled by convenience sampling. The study was carried over a period of two months in July and August 2007. For the purpose of this study, water related diseases were defined as diseases due to consumption of drinking water from various sources and including dysentery, cholera, hepatitis A, hepatitis E and typhoid. Data was collected by using structured questionnaire which asked information regarding education, socio-economic status, number of family members, form of drinking water used, reason for initiation of domestic water disinfection techniques, time period since use of disinfected water and its impact on health. Moreover, study participants were inquired of the use of disinfected water by their children and number of their families affected by water related diseases. Data was analyzed using Microsoft Excel 2003.

RESULTS

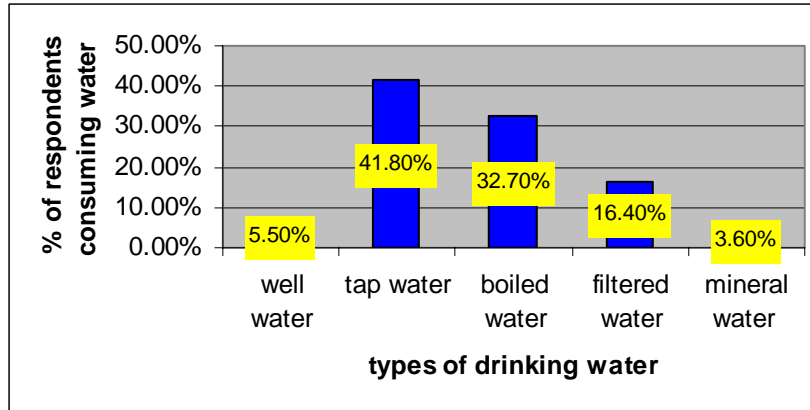
Educational status of 55 study participants is depicted in figure1.

Fig.1. Educational status of Respondents.



Of the total respondents, 23, 18, 9 and 3 were consuming tap water, boiled, filtered and well water respectively. Only 2 persons were using mineral water while none of the respondents used chlorinated water (Fig 2).

Fig 2. Type of water consumed.



Majority of the people who consumed tap water suffered from dysentery while those consuming mineral water did not suffer from any of the water related diseases (Table 1).

Table1. Relationship of type of drinking water with water related diseases.

Type of water consumed	No. and % of people consuming various types of water	Commonest water related diseases among consumers	Frequency of water related diseases
Well water	03 (5.5%)	Cholera	01 (1.8%)
Tap water	23 (41.8%)	Dysentery	22 (40%)
Boiled water	18 (32.7%)	Typhoid	04 (7.3%)
Filtered water	09 (16.4%)	Hepatitis A / E	04 (7.3%)
Mineral water	02 (3.6%)	-----	-----

Forty-one respondents belonged from middle social class. 32 claimed of using domestic water disinfection techniques due to awareness while 9, 8 and 6 respondents started water disinfection techniques on suffering from water related diseases, advertisements and campaigns respectively. Duration for consumption of respective drinking water by study participants is depicted in Table 2.

Table 2. Duration for consumption of different types of water.

Type of water consumed	Duration for consumption of water
Well water	>2 years
Tap water	2 years
Boiled water	<2 years

Filtered water	<1 year
Mineral water	<6 months

DISCUSSION

In the tropics about 5%-10% of deaths are due to water-related diseases, particularly among young children where malnutrition and infection are the two main contributing factors.¹ In present study, dysentery was the commonest water related disease (40%) while typhoid, hepatitis A/E and cholera were present in 7.3%, 7.3% and 1.8% respondents respectively. People consuming mineral water did not suffer from any water related disease. In addition, most of the people who had dysentery were consuming tap water. Tap water is usually full of impurities and needs purification before consumption. Although people using boiled water also suffered from typhoid but to lesser extent. However, it does not mean that boiled water has no protective effect on health as innumerable reasons apart from drinking water contribute to typhoid, like unhygienic food, rotten fruits etc.

A study by Herbst S et al to analyze the risk factors for diarrheal diseases revealed that visible contamination of drinking water during storage was significantly associated with number of diarrheal episodes per household, emphasizing the need for urgent tackling of unsafe drinking water storage practices in order to break the fecal-oral transmission route.⁵ In current study, most of the respondents (58.2%) were using water disinfection techniques due to awareness by their own knowledge while 16.4% people started disinfection of drinking water following occurrence of water related diseases among family members. On the other hand, rest of our study participants gained relevant information through advertisements and campaigns. No doubt electronic media is playing a tremendous role in improving the public understanding pertaining to health maintenance and avoidance of risk factors for various ailments. This is a cost-effective strategy and must be appreciated.

Discussion on water-related diseases outbreaks statistics in Italy from 1998 to 2005 showed that most of the cases in North were related to drinking water and 49% of Districts notified water related diseases. Pathogenic micro-organisms identified were enteric viruses, Norwalk viruses, Salmonella, Shigella, Giardia and Campylobacter.⁶ A case study from rural areas of Northern Rajasthan suggested that drinking water quality deterioration in rural habitations of this region was due to poor sanitation and unawareness about personal hygienic practices.⁷ In our study, we have not identified various pathogenic organisms that lead to the onset of water related diseases. Such studies must be carried out so that public awareness regarding those pathogens and sources of those pathogens could be enhanced and policy makers could formulate effective strategies for the control of water-borne out breaks attributable to those pathogens.

CONCLUSION AND RECOMMENDATIONS

Consumption of tap water was associated with increased incidence of diseases particularly dysentery. Water related diseases also occurred in those who consumed boiled or filtered water, suggesting the chances of other factors as well. People consuming mineral water did not suffer from any water related disease. Awareness

should be amplified pertaining to the use of disinfection methods. Home filters and water storage tanks should be regularly cleaned.

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REFERENCES

1. Ilyas M. Community Water Supply. Community Medicine & Public Health. 5th ed. Karachi: Time Publishers; 2000:565.
2. Park K. Environment and Health. Park's Textbook of Preventive and Social Medicine. 18th ed. India: Banarsidas Bhanot; 2007:520,524.
3. Water-related diseases. retrieved from http://www.who.int/water_sanitation_health/diseases/en..
4. Training Programme on Surveillance of Water-related Diseases. Bonn, Germany, 23-27 June 2003 available at http://www.euro.who.int/InformationSources/MtgSums/2003/20030923_1.
5. Herbst S, Fayzieva D, Kistemann T. Risk factor analysis of diarrhoeal diseases in the Aral Sea area (Khorezm, Uzbekistan). Int J Environ Health Res 2008;18:305-21.
6. Blasi MF, Carere M, Pompa MG, Rizzuto E, Funari E. Water-related diseases outbreaks reported in Italy. J Water Health 2008;6:423-32.
7. Suthar S, Chhimpa V, Singh S. Bacterial contamination in drinking water: a case study in rural areas of northern Rajasthan, India. Environ Monit Assess 2009;159:43-50.