



Perception of Drinking Water and its Associated Diseases in the Residents of Hyderabad Sindh Pakistan

N. M. BAIG, Z. A. LAGHARI⁺⁺ F. PANHWAR* M. R. QAMBARANI** Z. A. PALH***

Department of Physiology, University of Sindh, Jamshoro, Pakistan

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Abstract Increasing evidence suggest the public concern over drinking tap water from distribution system. Majority of people in Pakistan rely on drinking tap water. Poor quality of tap water might cause number of water borne diseases. However, whether people are aware about the quality of tap water and its associated diseases has not been sufficiently studied in Pakistan. To determine the perception of residents living in the urbanized localities of Hyderabad about the quality of drinking water. A survey based cross sectional study was carried out using interview based structured questionnaire. Questionnaire consisted of information on socio-demographic distribution, type of drinking water, health risk associated with drinking poor quality of water and the level of awareness amongst the respondents. Out of 276, the vast majority of respondents (42.8%) were using treated water, 34% were using untreated drinking water, only 9% of the respondents were using the ground water and the rest of them (14.2%) using bottled water as the source of drinking water. Water if contaminated can cause number of diseases. Only 34.8% reported as not having any diseases due to drinking water, however, 65.2% reported various types of diseases due to use of poor quality drinking water. The highest reported disease 29.7% was diarrhea. Nearly half of the subjects (51.5%) studied were aware about water borne diseases. This study puts an insight into quality of drinking water and the perception of respondents about water related diseases. This will help in making public health policies.

Keywords: Perception, drinking water, water related diseases, Hyderabad.

1. INTRODUCTION

Drinking water, also known as potable water is essential for life. Although 3% of the total water is fresh water on earth, yet only 0.01% water is approachable for the use of human (Hinrichsen and Tacio 2002). Due to an increase in urbanization and industries, the water is getting more contaminated with chemicals (Khan, Hussain *et al.* 2013), moreover, the poor management in sanitation is causing the water contamination with pathogen (Ashbolt 2004), and this is posing a serious health risk. Number of studies have been carried out relating with quality of water not only in developed countries but also in under developed countries (Fawell and Nieuwenhuijsen 2003, Ashbolt 2004, Turgeon, Rodriguez *et al.* 2004, Jones, Dewey *et al.* 2005). Drinking water in under developed countries is not fit to drink due to the lack of true management, unavailability of well equipped laboratories, financial restriction, absence of legal framework for drinking water (Ashbolt 2004, Arziz 2005). In developing countries the situation is worse where over 90% of raw sewage and 70% of untreated industrial wastes are dumped into surface water sources (Goel 2006, Montgomery and Elimelech 2007, Verbyla, and Oakley *et al.* 2013). Water contamination is one of the main concerns of human beings health and according to estimates 2.3 billion peoples are suffering from water related diseases worldwide (Ashbolt 2004, Organization 2004).

Furthermore, water related infectious and parasitic diseases account for 60% of infant mortality in the world (Al-Weshah 2003, Sullivan, *et al.* 2003, Ullah, Malik *et al.* 2009). More than 2.2 million people die every year due to drinking of unclean water and inadequate sanitation only in developing countries (Al-Weshah 2003, Organization 2004).

In Pakistan, the problem of water pollution is growing at an alarming rate. Dumping of Industrial wastes and municipal sewage are the contributing factors in water contamination. Rapid urbanization in Pakistan has brought unprecedented pressure on safe drinking water not only in cities but also in villages. Drinking contaminated water can cause number of water related diseases such as diarrhea, food poisoning, vomiting, typhoid, hepatitis, Gastroenteritis, Urinary infections and skin infections are very common which account to higher mortality rate (Ahmed, *et al.* 1995, Ashbolt 2004, Mahmood *et al.* 2011). Although number of reports has been published on drinking water, however, very few studies have been carried out regarding the water quality and diseases.

The purpose of this study was to evaluate the use of drinking water in Hyderabad city. Hyderabad has the population of nearly 2 millions, this City is located at the south of country, and recent years have witnessed increased in urbanization. This study aims at

⁺⁺Corresponding Author's E-mail: zulfiqar.laghari@usindh.edu.pk

*Department of Pharmacology (Faculty of Pharmacy), University of Sindh, Jamshoro

** University of Sindh, Jamshoro

***Department of Fresh Water Biology and Fisheries, University of Sindh, Jamshoro

investigating the types of diseases people suffer due to drinking water; moreover, this study also investigates the level of awareness in the population of Hyderabad city about disease caused by drinking contaminated or poor quality water.

1. METHODOLOGY

This survey based cross-sectional study was carried out in various urban areas of Hyderabad City from January 2016 to December 2016. Total 276 participants participated in the study; all of these participants were randomly selected from different areas of Hyderabad City. The Data was obtained through interview based questionnaire. Verbal consent was obtained before collection of data. Questionnaire contained three main sections and different elements of each section. These sections were information about socio-demographic distribution of respondents, the perception and the use of drinking water and finally the diseases these respondents experienced in the last 12 months.

Health Risk Assessment

All the respondents were interviewed for the diseases they experienced during the last 12 months, they were also interviewed about their perception if they had suffered the disease due to drinking water, they were also asked about the episodes of the diseases respondents suffered during the last 12 months. The respondents were also interviewed for the level of awareness they had about drinking water quality and its associated diseases. The data was analyzed using statistical software, SPSS 16.

2. RESULTS

Total 300 respondents were approached for the participation in study, out of 300, 276 returned the questionnaire and participated in study giving the response rate of 92%. (**Table 1**) shows the distribution of respondents according to socio-demographic characteristics. Out of 276, 195 (70.7%) were female subjects and 81 (29.3%) were male subjects. The highest number of participants was from the 19 to 29 (50%), and the lowest were from ≥ 60 years (2.5%). Majority of the respondents had formal matriculation education (34.8%), and most of these have education above matriculation level (47.1%).

Table 2 shows the perception of respondents to the quality of water; this perception was based on taste, smell and purity of water. This table shows that majority of respondent use treated water either by filtering it, or boiling it or adding chlorine in the water. 34% of the respondents use tap water as drinking source, this tap water is untreated. 9% use ground water and only 14.2% use bottled water for drinking.

Table.1. Distribution of respondents according to basic characteristics

Characteristics	Frequency (n=276)	Percentage
Gender		
Male	81	29.3
Female	195	70.7
Age (years)		
≤ 18	66	24
19-29	138	50
30-39	29	10.5
40-49	23	8.3
50-59	13	4.7
≥ 60	7	2.5
Education		
Illiterate	8	2.9
Primary	42	15.2
Matriculation	96	34.8
Above Matriculation	130	47.1

Table 2. Use of the water for drinking purpose by the respondents

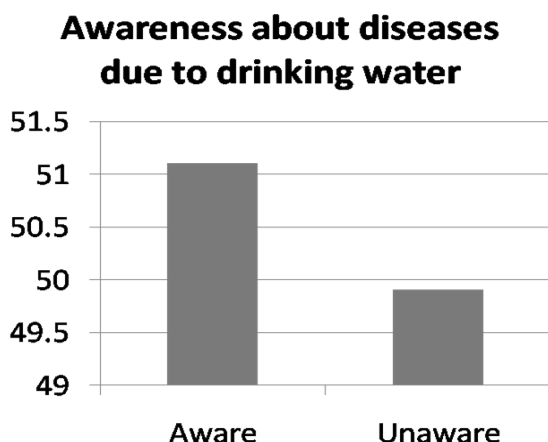
Type of water	Frequency (n=276)	Percentage
Ground water	25	9
Tap water	94	34
Bottled Water	39	14.2
Treated Water	118	42.8

Contamination of water is health risk and it can cause number of diseases. (**Table 3**) .indicate Diarrhea was highly reported (29.7%) by the respondents, which they perceive was due to intake of poor quality water. Respondents also reported about food poisoning (6.1%) and vomiting (9.1%) due to drinking contaminated water. 9.8% reported that they had urinary infection and 5.8%reported to have respiratory infection. Respondents also reported hepatitis (3.3%) and typhoid (1.4%) and perceived that it was due to drinkingcontaminated water. However, 34.8% of the respondents did not report any disease during the last 12 months.

Table 3 shows the diseases reported by the respondents

Diseases	Frequency (n=276)	Percentage
Diarrhea	82	29.7
Food Poising	17	6.1
Vomiting	25	9.1
Urinary infections	27	9.8
Respiratory infections	16	5.8
Hepatitis	09	3.3
Typhoid	04	1.4
No Disease	96	34.8

In order to find out the level of awareness, respondents were asked if they believe water can causes, 51% responded that that they were fully aware about the disease caused by drinking water, where 49% were not aware about the diseases caused by drinking poor quality water (Graph.1.).



Graph.1. Level of awareness about diseases in the respondents

4. DISCUSSION

Perception of water is generally studied to assess the level of satisfaction in the population so that the quality of water is improved with taste, smell and purity (Turgeon, *et al.* 2004, de França 2010). The data we have collected indicate that contaminated water is largely perceived as the health risk, this is consistent with already published data (Fawell and Nieuwenhuijsen 2003, Ashbolt 2004, Kalita, Algoazany *et al.* 2006, Khan, *et al.* 2013). Tap water was the largest source of drinking water, where people believed that tap water was not safe to drink, this might be due to the fact that chlorination does not stop the episodes of diarrhea (Jensen, *et al.* 2003, Chaudhry *et al.* 2004); therefore, they often use the treated tap water using various filtration methods. Very few people used the

ground water, since ground water in Hyderabad is salty and does not taste well, however, respondents were of the view that ground water is safer than tap water, which is consistent with study carried out at the villages of Charsada (Khan, Shahnaz *et al.* 2013). Very few people in Hyderabad were drinking ground water, this might be due to the reason that ground water in Hyderabad's salty and does not taste well, the bottled water was considered the safest, and 14.2% percent were using it for drinking; however, it was limited due to affordability of the people.

Previous studies carried out at different areas of Pakistan suggest that drinking water is contaminated with chemicals and micro organism (Haque *et al.* 2009, Hassan *et al.* 2014). Other studies from various regions of Sindh confirm the presence of heavy metals and microbes which make it unsafe for drinking (Soomro *et al.* 2011), Vomiting and diarrhea are usually due to drinking contaminated water (Memon, Soomro *et al.* 2011, Shah, *et al.* 2012, Khan, Shahnaz *et al.* 2013, Azizullah *et al.* 2014), our data suggest highest prevalence of diarrhea as the highest perceived diseases caused by drinking poor quality water, followed by the vomiting and food poisoning, our results are consistent with previously published study carried out in three districts, Thar, Thatta and Badin (Soomro *et al.* 2011), Our study indicate that the comparatively lower prevalence of diarrhea, vomiting and food poisoning this might be due to the fact that the respondents in our study have also used bottled drinking water and treated drinking water (table 2). We have overall found the lesser perceived incidence of diseases due to drinking water than already published study (Other interpretation might be due to the level of awareness in respondents about the drinking water and health risk associated with drinking unsafe water (graph.1).

3. CONCLUSION

Overall our data suggest that majority of people use tap water, which is widely considered unsafe to drink, the respondents suffered from various diseases which they perceived was due to drinking water, this study will help in making public health policy related to quality drinking water.

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