

Safe Drinking Water in Pakistan

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Water is a basic need for human life but consumption of water that is not safe can pose severe health risks to human endangering life. Though provision of safe drinking water is a concern throughout the world but it has been a challenge particularly in developing countries. According to WHO, each year almost 3.4 million people die due to water related diseases, 2.2 million people die including 90% children particularly from developing countries due to diarrheal diseases like cholera, typhoid, dysentery which are associated with ingestion of unsafe water.¹

Water that is safe for human consumption must be free of microorganisms, toxic chemicals and radiological hazards. Microbial contamination i.e. presence of viral, bacterial or protozoan agents leads to outbreaks of diarrheal diseases.² Similarly, water contaminated with toxic substances like arsenic, cyanide, lead etc. has been shown to have serious health consequences on consumers.^{3,4}

In Pakistan, a variety of drinking water sources are utilized by citizens including surface water (open wells or ponds), underground water (hand pumps), municipally supplied water (taps) etc. However water contamination both microbiological and chemical (particularly of arsenic) is a major concern in the country.^{5,6} Among 122 nations, Pakistan stand at number 80 in terms of drinking water quality.⁷ Only 20% population of Pakistan is reported to have access to safe drinking water. Contaminated water is estimated to account for 20-40% of all diseases and 33% deaths in Pakistan resulting in a national income loss of PKR 25000-58000 million that constitutes approximately 0.6-1.44 percent of GDP.⁸

Pakistan Council for Research on Water resources (PCRWR) in March 2001 launched a five years project entitled "National water quality

Monitoring Program (NWQMP) 2002-2006" for monitoring the quality of water in 23 major cities (357 samples) from all over Pakistan.⁹ Findings of NWQMP 2001-2006 showed that 84% water samples tested were contaminated and hence unsafe for drinking. This led to the development of national program on provision of safe drinking water under which almost 25 safe drinking water projects have been completed by PCRWR to improve access to safe water.¹⁰ WHO replicated this study at the same sites (369 samples) with few exceptions in 2015-2016 and reported that 69% of people still don't have access to safe drinking.¹¹

Increased awareness among people regarding importance of safe drinking and concerns regarding poor quality of drinking water especially among urban population has also promoted the use of bottled water that led to the development of mushroom industry for bottled water supply.⁷ However, the quality and safety of bottled drinking water is also questionable as microbiological and chemical evaluation of many mineral water brands has been shown to fall below WHO and PSQCA standards.¹² Owing to the concerns regarding bottle water quality, Ministry of Science and Technology, Pakistan has designated PCRWR to continuously monitor the quality of bottled water brands being sold in Pakistan on quarterly basis. PCRWR quarterly publishes its evaluation report. A recent report by PCRWR suggested that 91% of brands supply safe drinking water while rest of the companies do not meet PSQCA standards for bottled water.¹³

Water pollution throughout the world particularly in Pakistan may be attributed to multiples reasons including rapidly growing population, increased urbanization, increased use of chemical fertilizers and pesticides in agriculture and increased industrialization. Main source of microbiological contamination in Pakistan is improper disposal of municipal wastes, while chemical pollution is mainly due to improper disposal of industrial waste, rapidly increasing use of fertilizers and pesticides.^{5,8} Poor water supply infrastructure, cross-contamination due to old and leaking pipes and lack of water filtration and

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disinfection facilities further aggravate the problem. Only a fraction of total waste water produced in the country is treated while the rest is disposed off into water bodies without any treatment that causes contamination of rivers and ground water. Annually, around 2 million tons of urban excrement is produced with 50% ending up in water.¹⁴

Impacts of unsafe water on health and economy of a country are very dangerous. Improved access to safe drinking water, besides being a development oriented strategy can have tangible improvements in socioeconomic status of a country in terms of better health of its citizens that will lead to increased availability of labor force and reduced disease burden. Further stringent and collaborative efforts are needed in terms of continuous monitoring of water resources, better water treatment and supply infrastructure, improved sanitation facilities and improved awareness among citizens regarding safe water and hygiene to meet the sustainable developmental goal for 2030 that targets provision of safe water to 100% of population in the country.

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