Biological Times

Volume No. 2 | Issue No. 11 | Pages 44

Role of public health policies in combating the spread of waterborne diseases

Khizra Naeem[1*], Farzana Rizvi[1], Haleema Sadia[1]

1. University of Agriculture, Faisalabad, Pakistan.

*Corresponding author: **2018ag8010@uaf.edu.pk**

ABSTRACT

Waterborne diseases are rapidly spreading across the globe. They pose a significant health threat to human health causing diseases like cholera, diarrhea, giardiasis, typhoid fever and dysentery. Improper sanitation and hygiene coupled with lack of awareness and limited access to safe water contribute to the crisis. This article aims to report some common waterborne pathogens and the risk they cause to human populations. Besides, the article describes public health strategies to combat waterborne diseases. Adopting these measures worldwide is essential to protect people from the dangers of waterborne diseases.

Introduction:

Water-borne diseases (WBDs) are contagious illnesses that spread to people by polluted water including cholera, shigella, typhoid, hepatitis A and E and poliomyelitis. These illnesses can be caused by a wide variety of bacterial, viral and parasitic species due to lack of access to clean water for drinking, cooking and cleaning. Improper sanitation and hygiene also lead to various waterborne infections. WBDs are extremely common in tropical and subtropical low- and middle-income nations (1).

Common Waterborne Pathogens

Vibrio cholerae: Cholera is spread through the consumption of V. cholerae bacteria, which can occur either directly through fecal contamination of food, drink or fomites or indirectly through the consumption of seafood. Infections with cholera can result in vomiting, diarrhea and in the worst cases, severe dehydration, metabolic acidosis and even death (2).

Escherichia coli: E. coli is considered an important group of waterborne pathogens. Shiga toxin-producing E. coli and E. coli O157:H7 (enterohaemorrhagic E. coli) lead to severe bloody diarrhea and hemolytic uremia syndrome which can be fatal. This pathogen causes both food and waterborne diseases (3).

Cryptosporidium: A parasite, that causes persistent diarrhea (cryptosporidiosis) in immunocompromised (particularly AIDS) individuals. The organism can be spread by consuming water contaminated with Cryptosporidium or by direct contact with an infected person or animal. It can cause life threatening infections (3).

Campylobacter: Campylobacters are getting more significant in both developed and developing nations. They are the main cause of acute gastroenteritis and have caused large waterborne outbreaks. 1992-1996, six outbreaks of campylobacteriosis in Sweden and two in Central Norway have been reported (3).

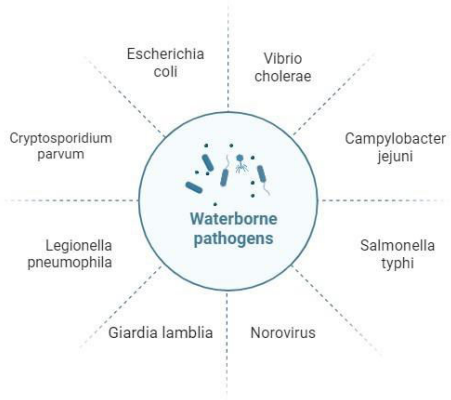

Fig 1: Common waterborne pathogens

Public health policies

To prevent waterborne diseases, the following public health policies need to be considered:

Hygiene promotion: Water, sanitation and hygiene (WASH) can effectively reduce waterborne diseases. Proper management of animal and human feces, effective disposal of diapers, washing hands after using latrines and before eating a meal are important preventive measures (4).

Household water purification: Boiling or heating water to 60°C for ten minutes (pasteurization) is the best way to get rid of waterborne pathogens like Cryptosporidium, Giardia lamblia and Entamoeba histolytica. It is a cheap and effective method of water purification (5).

Water filtration systems: Most paper filters have pore sizes greater than the size of viruses and bacteria so they are not highly effective. But some membrane filters have small pore sizes which can effectively remove pathogens from water. Porous ceramic filters are now widely used by developed countries for water filtration (5).

Safe water storage: Water treatment should be accompanied by safe water storage to ensure its safe consumption. Water should be stored in disinfected, clean and closed containers to avoid contact with flies and other insects (6).

Public awareness: Public should be guided about waterborne diseases and its prevention strategies. Behavior changes interventions such as motivational awareness campaigns, policy changes, self-monitoring and incentives for adopting healthy practices can lead to positive changes in the community (4).

References

[1] Ying E, Chan Y, Hor K, Tong Y, Dubois C, Donnell KM. Narrative Review of Primary Preventive Interventions against Water-Borne Diseases: Scientific Evidence of Health-EDRM in Contexts with Inadequate Safe Drinking Water. 2021;1–20.

[2] Azman AS, Rudolph KE, Cummings DA, Lessler J. The incubation period of cholera: a systematic review. Journal of Infection. 2013 May 1;66(5):432-8.

[3] Sharma MS. Emerging water-borne pathogens. 2003;424–8.

[4] Id AO, Tussupova K, Berndtsson R, Kalishev M. Protozoan Parasites in Drinking Water: A System Approach for Improved Water, Sanitation and Hygiene in Developing Countries. 2018;15:1–18.

[5] Agrawal VK, Bhalwar R. Household water purification: low-cost interventions. Medical Journal Armed Forces India. 2009 Jul 1;65(3):260-3.

[6] Manetu WM, Karanja AM. Waterborne Disease Risk Factors and Intervention Practices: A Review. 2021;8:1–11.

To cite this article: Naeem K, F Rizvi & H Sadia. 2023. Role of public health policies in combating the spread of waterborne diseases. Biological times, 2(11): 44