

## An Overview for Research Need in Health Impacts of Climate Change

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### Abstract

Climate change is very soon going to challenge the reliability of water supplies in various areas. Changes in patterns of precipitation and reduced snowpack are some of the changes which constantly affect the quality as well as quantity of water available to Peoples of United States.

Water cycles constantly provide a complete setup to run various life activities on our planet or setting the stage for all life to exist. The water cycle is dynamic and naturally variable, and societies and ecosystems are accustomed to functioning within this variability. Climate change alters the water cycle in multiple ways over different time scales and geographic areas, presenting unfamiliar risks and opportunities.

The most common risk is towards water borne diseases. According to some survey in United State, Contaminated water can cause many types of diarrheal diseases, including Cholera, and other serious illnesses such as Guinea worm disease, Typhoid, and Dysentery. Water related diseases cause 3.4 million deaths each year.

**Keywords:** Climate change; Water borne diseases; Drought tolerance; Bioinformatics techniques; Diarrhoeal diseases; Sanitation

### Introduction

A comparatively warmer climate could cause water-borne diseases to become more frequent, including cholera and other diseases such as giardiasis, salmonellosis, and cryptosporidiosis. Diarrhoeal diseases are already a major cause of morbidity and mortality in South Asia [1]. These can be mostly seen in case of small children. Reductions in transmission intensity in endemic areas might lead to greater proportions of the population losing immunity, resulting in epidemics in later years.

### Transmission of water-borne diseases

Water-borne diseases spread by contaminating drinking water systems with feces and urine of infected animals or people. The transmission of contaminated water generally gets affected where private and public drinking systems get their water such as surface waters - rivers, lakes, and sometimes due to rain. These sources of water may be contaminated by infected animals or people. These water systems may get contaminations from effluents of

- Landfills
- Sewer pipes
- Septic fields
- Industrial or residential developments

These can majorly spread contamination, which has been the cause of a number of dramatic and sudden spread of fecal-oral diseases such as typhoid or cholera. There are a number of additional ways in which fecal material may reach a person's mouth such as in food that is

contaminated, or the person's hands. Generally, contaminated food is the one most common way by which people become infected. The germs in feces may cause the diseases by even slight contact and transfer.

The most suitable way to break continued transmission of water-borne diseases is to improve the hygienic behavior of people and provide them proper information and awareness about:

- Sanitation
- Drinking water
- Bathing facilities
- Washing facilities

### Preventing water-borne diseases

Clean water is the prime prerequisite for reducing the spread of water-borne diseases. It is well recognized that the prevalence of water-borne diseases may be greatly reduced by providing people with safe, sanitary disposal of fecal materials and provision of clean drinking water. Water should be disinfected to kill any pathogens that might be present in the water supply in order to prevent them from growing again in next distribution systems [2-4].

Disinfection is then used in order to prevent the growth of pathogenic organisms and to protect people's health. People need clean water and water supply systems. Without disinfection, the risk of water-borne disease increases. Normally these disinfection methods can be utilized in our home, or in municipal water system. Regular monitoring of water and its contamination level also is a must. There are many water purifier systems available in India as well as other country, we must check their efficiency and then use it. The most common methods of killing microorganisms in the water supply are

irradiation with ultra-violet radiation, or oxidation with chemicals like chlorine dioxide or ozone, or chlorine.

### Water borne disease in United States

The United States experiences a variety of extreme weather changes, including hurricanes, flood, blizzards, and droughts. These events are not only capable of severe infrastructure damage and high rates of morbidity and mortality, climate change is expected to increase the frequency and intensity of these events, including floods, droughts, and heat waves. The health impacts of these events can be severe, and include direct impacts such as physical and mental health impacts, as well as indirect, such as population displacement and outbreaks of waterborne diseases [5-7].

### Conclusion and Research Needs

The area of study of climate change is vast and one needs to move carefully to gather and monitor these changes. With the help of various bioinformatics techniques, these studies can be made simpler. Available data can be monitor as well as statistically analyzed with help of tools and packages available. SPSS can be one of the useful techniques for that. Overall there are some of the needs of research in area of:

- Evaluating and monitoring exposures and health risks of chemical contaminants in water distribution and other system due to climate change.
- Improving understanding of harmful algal blooms in constant source of water system, as well as the exact nature of the toxins associated with them.

- Understanding how toxins, pathogens, and chemicals in land-based runoff and water overflow interact synergistically and with marine species, especially which is edible for human, and the potential health risks of changing water quality.

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