

A man and a woman are shown in profile, drinking water from clear plastic bottles. They are positioned back-to-back, with the woman on the left and the man on the right. The background is a clear, light blue sky. The image has a slightly desaturated, muted color palette.

Water and the Human Health

Facilitator: Rokeish Rowe



Objectives

- Water and the Human Body
- Effects of Water crisis on Health
- Multi-dimensional factors that threaten the availability of safe water locally and globally
- Why and how different types of waterborne diseases occur, and how to treat them



Water and the Human body

Water and the Human body



Humans, like all other living organisms, need water to survive. Water constitutes 60-70% of the human body and is needed for many functions to occur. Some reasons why water is needed for human health are:

- Cells are made up of roughly 80% water
- Water makes up majority of critical bodily fluids (saliva, blood, spinal fluid)

Cells are made up of roughly 80% water



The cytoplasm of the cell which give the animal cell its structure and facilitates the movement of nutrients, essential ions and waste, is made up of salt and water. The loss of water from a cell will, therefore, cause the cell to collapse on itself, be unable to acquire nutrients and remove waste, and eventually death.

Water makes up majority of critical bodily fluids



Water is a part of all fluids in our bodies. Fluids like, saliva, mucus, digestive juices, pancreatic juices and intestinal juices have water as their main component. Without these fluids the process of digestion could not occur which would result in starvation.

Water makes up majority of critical bodily fluids



The blood, which is the mode of transportation for nutrients and oxygen is made up of 90% water. Without water the blood would lose its fluid nature and transportation of these essential products would and life would cease.

Other fluids like spinal fluid cushions the brain and enables the passage of blood into the brain.



Effects of Water crisis on Health

Effects of Water crisis on Health



- Globally, 771 million people lack access to safe water and 1.7 billion people don't have a toilet. Nearly 1 million people die each year from water, sanitation and hygiene-related diseases which could be reduced with access to safe water or sanitation. Lack of access to safe water also affects the physical well-being of women and children who have no choice but to carry heavy vessels long distances.



A health crisis

- 2.3 billion people globally – 3 out of 10 – don't have access to soap and water to wash their hands at home. Access to safe water directly helps the most vulnerable families around the world prepare and protect themselves from illness and disease. They experience improved health because with safe water they can practice good hygiene like handwashing, and they don't have to leave their homes to collect water.



A children's health crisis

- Safe drinking water is critical to the development of a healthy child. It means kids won't experience water-borne illnesses like typhoid. Diarrhea is one of the top three leading causes of child death and this is often triggered from consuming unclean water. Further, every 2 minutes a child dies from a water-borne disease. Whether they are consuming contaminated water or suffering from dehydration due to diarrhea, a lack of access to safe water is responsible.



A women's health crisis

- A lack of access to safe water and sanitation significantly affects the health of women as well. Burdened daily by water collection and finding a place to go, women and girls spend large amounts of time carrying heavy vessels and walking long distances. The physical strain of these activities impacts their health and if pregnant, the health of their unborn children. Improved water, sanitation and hygiene practices lead to improved health for women and girls. It reduces disease, undernutrition, injury from water collection, and stress.



Multi-dimensional factors that threaten the availability of safe water locally and globally

Factors that threaten the availability of safe water locally and globally



- There is a many factors that can affect the availability of water. Some of these include climate, geology, pollution of supply, over-abstraction, limited infrastructure and poverty. In Jamaica the main factors that arise are Climate change (drought), pollution, limited infrastructure and poverty.

Climate



- Climate change manifests itself primarily through changes in the water cycle. As climate changes, droughts, floods, melting glaciers, sea-level rise and storms intensify or alter, often with severe consequences.
- Climate change impacts have direct consequences for water security. The Intergovernmental Panel on Climate Change (IPCC) alerted the global community to the great vulnerability of freshwater resources as a result of climate change.

Geology



Geology or the type of bedrock in an area has a considerable influence on the availability of water. Under certain geological conditions, aquifers can form. An aquifer is a large underground storage space for water. In many parts of the world, such as the Middle East and the UK aquifers are very important sources of fresh water. Many aquifers around the world have, however, been severely depleted.

Over-abstraction

- Over-abstraction means removing more water from a source than can be replaced. This is particularly a problem where aquifers have formed during wetter conditions but are now being over-abstracted. This situation currently exists in the Middle East.
- The Orgallala is one of the worlds largest aquifers which many expert geologist expects to run out of water in 25-30 years

Pollution of supply



- Water pollution can have a significant impact on water availability. Pollutants such as pathogenic microorganisms, putrescible organic waste, fertilizers and plant nutrients, toxic chemicals, sediments, petroleum oil and radioactive waste.
- These pollutants render water undrinkable and, in some cases, unusable by humans.

Limited infrastructure



Many countries lack the ability to transport water through an infrastructure that includes pipes and canals. The cost of providing infrastructure to transport and store water, along with energy-intensive facilities such as pumping stations are very restrictive for many countries

Poverty



- The cost of fresh water may prove too much for some financially challenged individuals. These individuals will then be forced to go without water or turn to honest unsafe water to fulfil their needs.

Why and how different types of
waterborne diseases occur, and
how to treat them

Cause of waterborne diseases

- Water is the habitat to many living organisms, including pathogenic microorganisms that can prove detrimental to the health of humans. Waterborne diseases are infections caused by drinking water which is contaminated by a disease-causing pathogenic microorganism. Some examples of waterborne diseases are Bacillary Dysentery/Shigellosis, Cholera, Hepatitis A, Typhoid fever, and Campylobacteriosis.

Bacillary Dysentery/Shigellosis



How or why, it occurs: Bacillary dysentery is caused by four species of the Genus *Shigella* and is spread when water contaminated with feces is ingested.

Treatment: Oral rehydration salt solution and Antibiotic treatment

Prevention: Wash hands frequently, Maintain good sanitation and personal hygiene

Cholera



How or why, it occurs: Cholera is transmitted in by drinking water or eating food contaminated with *Vibrio cholerae*. Floodwaters can carry *V. cholerae* and contaminate drinking water supplies. Eating raw or under cooked seafood can also cause Cholera.

Treatment: Oral rehydration salt solution and Antibiotic treatment

Prevention: practicing proper hygiene, Drink treated purified water

Hepatitis A



How or why, it occurs: Transmitted by faecal-oral route due to faecal contamination of Hepatitis A virus.

Treatment: Hepatitis A virus vaccine

Prevention: Prevention of faecal contamination of water, use of immune globulin, practicing proper hygiene.

Typhoid fever



How or why, it occurs: transmitted by contaminated water containing *Salmonella typhi* and *Salmonella paratyphi*.

Treatment: Antibiotic treatments

Prevention: Prevention of faecal contamination of water

Campylobacteriosis



How or why, it occurs: Caused by *Campylobacter jejuni*.

Treatment: Oral rehydration salt solution and Antibiotic treatment

Prevention: Drink chlorinated water, perform proper sewage disposal, complete cooking, personal hygiene avoid drinking raw milk.

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