Flooding, drought, and human health in Africa

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The Water Institute at UNC
World disaster risk index – result of exposure & vulnerability

Max. risk = 100,
Classification according to the quantile method

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Flooding in Mozambique From Cyclone Idai Made an ‘Inland Ocean,’ Stalling Rescues

South Africa hit by floods and power cuts

Flooding in Africa
Deadly drought in Southern Africa leaves millions hungry

United Nations says Southern Africa is experiencing worst drought in a century, 45 million people in 14 countries are in need of urgent assistance.

by Nicolas Haque
22 Dec 2019

U.N. Aid Chief Warns of Looming ‘Horror’ as Somalia Again Faces Famine

Women lined up for food last month at a camp outside Mogadishu, Somalia, after fleeing drought-stricken areas.

By Rick Gladstone
June 5, 2019

The top humanitarian official at the United Nations sounded the alarm on Wednesday about the looming risk of famine in the Horn of Africa, where more than 10 million people—mostly farmers—are facing severe food shortages.

In Zimbabwe, the Water Taps Run Dry and Worsen ‘a Nightmare’

People lining up for water at a borehole in Epworth, in southeast Harare, Zimbabwe. Tonyage Anyana for The New York Times

By Patrick Ngwenya and Jeffrey Maya
July 31, 2019

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Flooding, drought, and human health in Africa - why am I presenting in this session?
Research, Policy, and Practice

We are problem solvers focused on the sustainable management of water for health and human development. We contribute to improving access to safe water, sanitation, and hygiene for all.

Source: Rod Shaw
Access to sufficient safe water varies widely around the world, with the poorest often being underserved.

Extreme weather events such as flooding or drought push water supply to its limits intensify water-related problems → impact on agriculture, education, health → development.

Providing water security:
- guaranteeing people access to sufficient water supply (security through water)
- protecting people from the dangers of water (security from water).

Need for action
- counteract impacts of water scarcity & abundance
- increase resilience of societies to disasters.
Flooding, drought, and disease exposure in Kenya
Water-related disease exposure in wetlands in Kenya

The water causes **diseases**. If someone **drinks the dirty water**, they can be sick. **Animals** are in the water, people dump their **waste** into the water, people use the water as **latrine** to relieve themselves and that is the same water that we use in the house. When it **rains**, **dirt** is washed into the river. **It is the same water we use**. (pa 2)
Floods, droughts, and disease exposure

Increased disease exposure

Vector-related diseases
- Increased vectors

Waterborne diseases
- Close interaction with water

Injuries and fatalities
- Water masses

Disruption of services
- Damaged infrastructure

WETTER FARMING AREAS

DRIER PASTORALISM AREAS

FLOODS

DROUGHTS

Water-washed diseases
- Limited water supply, sanitation, hygiene

User conflicts
- Water scarcity, loss of livestock

Malnutrition
- Food insecurity

Mental health effects

Increased disease exposure
Highlight: grassroots recommendations

• Improving provision of safe drinking water and sanitation coverage
• Changing hygiene behavior
• Establishing a waste management system
• Adopting simple environmental options
• Targeting most vulnerable groups
• Strengthening the role of community health workers

• Improving collaboration in view of floods and droughts between water, health, education, gender, agriculture, development, infrastructure, housing sectors

• Integration of grassroots reality and participation of target population
Flooding and health sector response in Namibia
In the process of flooding our other activities get affected. Our staff are really stressed to the limit. They are overworked and the quality of services is poor (...). And at the end of the day the quality of health care diminishes. (CMO, Ohangwena region)
Highlight: service provider recommendations

- Preactive identification, clarification of responsibilities, improved communication, and coordination of all sectors and stakeholders involved, incl. water, health, emergency management, gender, development, infrastructure
- Inclusion of detailed capacity and vulnerability assessment of flood-affected populations in disaster response plans
- Application of lessons learned from previous floods to strengthen capacity and identify potential gaps
- Reduction of flood-related risks for vulnerable groups through integrated disaster preparedness measures for future floods
Bringing the key results together
... during and after such events is often not sufficiently addressed by policy-makers.
Grassroots recommendations to inform decision-making

Different exposures, local solutions

Vector-related diseases
Increased vectors

Waterborne diseases
Close interaction with water

Injuries and fatalities
Water masses

Disruption of services
Damaged infrastructure

Double health burden

communication

information sharing

coordination

information

collaboration

commitment

water, health, climate, emergency management, agriculture, culture, education, gender, development, infrastructure

…and the community knows best
The impact of flooding and drought on human health is complex: double burden:
• Increased exposure
• Inability of health sector to respond

Implications go beyond public health, related to many other disciplines incl. engineering, infrastructure, education, culture,..

Holistic research approaches to overcome disconnect between local needs and policies:
• Mix methods from different disciplines
• Perspectives from local, regional, national, international level
• Stakeholders from different sectors

Need to integrate grassroots recommendations to inform decision-making in flood- and drought-related water and health management and risk communication
Dr. Aaron Salzberg and all colleagues at the Water Institute at UNC

Dr. Thomas Kistemann and all colleagues at the GeoHealth Centre, Institute for Hygiene and Public Health, University of Bonn, Germany

Dr. Matthias Becker and all colleagues from the GlobE Wetlands project from Germany, Kenya, Rwanda, Tanzania, Uganda

Dr. Odon Nkongolo and all colleagues at the The Ministry of Health and Social Services, Namibia

Dr. Carmen Samaniego and all colleagues at the Gesellschaft fuer Internationale Zusammenarbeit, Namibia

The Ministry of Education and Research, Germany

And all enumerators and study participants who shared their information for this study
Health risk perceptions and local knowledge of water-related infectious disease exposure among Kenyan wetland communities

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ABSTRACT

Background. Risk perceptions form the foundation of understanding and shaping health related actions, or the adoption and non-adoption of mitigation measures. While water-related infectious disease exposure is a serious health concern, people's local knowledge and awareness of the disease, its cause, and the measures to prevent and treat it is crucial. Water quality, household water treatment and sanitation, and knowledge about health risks are important factors in risk perception. The aim of this study was to investigate Kenyan wetland communities' health risk perceptions related to water-related infectious diseases. We used a qualitative methodology, involving face-to-face interviews and participant observation with a purposeful sampling strategy. All interviews were conducted in Swahili and translated into English. The study was conducted in the Lake Victoria wetlands of Kenya, where health risk perception was assessed for different water risk categories (i.e., clean water sources, mildly contaminated water sources, and highly contaminated water sources).

Methods. The study worker engaged in semi-structured interviews with local community members and health workers. The interviews were conducted in Swahili and translated into English. Interviews were recorded and transcribed verbatim. The data was analyzed using content analysis. The study was conducted in the Lake Victoria wetlands of Kenya, where health risk perception was assessed for different water risk categories (i.e., clean water sources, mildly contaminated water sources, and highly contaminated water sources).

Results. The study found that the local community members had varying levels of knowledge about water-related infectious diseases, particularly malaria, which is transmitted through mosquitoes. The community members also had varying levels of knowledge about water treatment and sanitation. Most community members believed that water treatment and sanitation were important for preventing water-related infectious diseases. However, many community members also believed that water treatment and sanitation were not feasible in their communities due to financial constraints. The study also found that community members had varying levels of trust in health workers and government officials. Community members trusted health workers and government officials more if they were seen as knowledgeable and trustworthy.

Conclusion. The study found that community members had varying levels of knowledge about water-related infectious diseases, particularly malaria, and that they had varying levels of trust in health workers and government officials. Community members trusted health workers and government officials more if they were seen as knowledgeable and trustworthy.