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Impacts of Flood Effect on Public Health and Environmental

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Abstract

The concept of "flood" is formulated with regard to human health and environmental impacts. flood that occurred at the end of that year. Heavy rains fell beginning vast flooding in most areas of Kerala , Karnataka to great destruction of livelihood of local societies. Natural hazard such as floods are not only caused by ordinary progressions but also by social activities. The flood recorded severe fatalities, injuries and exposed many susceptible to diseases. This paper study through considered the long-term impact of floods on human's health as the special effects could meaningfully contribute to the universal burden of disease. Also, its outcomes are persistent hence need to be adequately realized and addressed through environmental. This study revealed susceptibility to flood tending disorders as spiritual suffering in the fighters is liable for a quota of all physical diseases.

keywords; **flood, , health; environmental, disease, death**

Introduction

Recent extreme flooding in the United States, Mississippi River basin, 1993, Flint River basin, 1994, Sacramento and San Joaquin River Basins, 1997, and the Red River basin, 1997, has demonstrated the limitations of current flood protection measures and heightened interest in non-structural flood control. Floods are defined as Tropical rivers share features with both river groupings. In steamy and large low incline systems, rainwater is the dominant impetus for flooding and complex floodplain interactions are typical for both types of river. All floods are unique in that the regions affected have different social, demographic, economic, and population health characteristics. Yet, many similarities exist, and knowledge of the causes of death and types of injuries and illnesses from floods is essential to help to guarantee that health and substitute medicinal relief is well-managed.¹ The aim of the impacts of floods on the health of the human community and to propose a renewed framework for future analysis and evaluation. The specific research ideas are: (a) to pronounce reasons of floods and their individual impacts on health outcomes; (b) to define the aspects that influence human health as a effect of floods; (c) to describe the health impacts of floods; and (d) to develop a theoretical context to aid in the administration and estimation of flood health management

Causes and Types of Floods

The nature and consequences of floods vary according to the cause of the flood and the nature of the natural and human environment. Floods may be caused by a range of factors or combinations of those factors. A summary classification of the causes of floods in Different types of floods have different impacts on the human public, and therefore, different health effects. Precipitation

Precipitation

, including rain, snow, hail, etc. can have both immediate and longer-term effects. Heavy rainfall can cause localized flash flooding or downstream inundation. Snow falls cause immediate effects associated with hypothermia, ice-associated injuries, and infrastructure or building failures. Delayed floods may result from the melting of snow and ice. Hail can cause immediate injury to people and block drainage systems precipitating building inundation. Global warming increases the overall temperature of the oceans, which in turn increases torrential downpours, tropical storms, and hurricanes/cyclones.²

Rising water levels,

both fresh water and sea water, may occur suddenly or gradually. Sudden rises of sea water are caused by tsunamis, storm surges, or by breaches in sea defences. Longer-term increases in sea levels are anticipated with global warming, melting of polar ice caps, and thermal expansion of sea masses.³ Rising fresh water may occur as a result of planned or unplanned damming of water drainage or by release of subterranean water sources to the surface.

Release of Stored Water

Floods may be caused by release of stored water associated with failure of retaining walls or structures or by the displacement of stored water as may occur with landslides into the water. For example, the landslide in the Vajont Dam in 1963, during which rocks, mud, earth, and uprooted trees tumbled into the lake resulting in the overflow of the dam, thus flooding nearby villages.⁵

Failure of Natural Drainage

Floods also may be caused or exacerbated by failure of natural drainage. Reduced absorption of water occurs when the natural landscape is replaced with non-absorbent infrastructure, e.g., urban expansion or the replacement of wetlands. Reduced drainage may be associated with poorly planned or inadequate drainage systems in new constructions or drainage systems which become blocked with debris or trash.⁶ the timing of the flood also may affect its impact. Heavy rain in coastal areas at high tide may have a greater impact because of the difficulty for the water to clear to sea.

Factors Affecting the Health Conclusion

Apart from the quantity of water, there are many other factors that affect the severity and scale of floods, and thus, their impacts on human health.

- Flood Type
- Geography
- Demography
- Community Infrastructure

Immediate Health Effects

Drowning

The leading cause of death from floods is drowning, and most of these deaths are due to flash flooding rather than the slower riverine flooding. Drowning often occurs as a result of individuals underestimating the power of the current or depth of the water during late evacuation, attempted salvage, or inappropriate conduct. Many flood deaths can be attributed to motor vehicles and are caused by driving on flooded roads or causeways, or from the trauma associated with crashes occurring on wet roadways. More than 57% of all flood fatalities in the United States are associated with motor vehicles. Drowning also occurs when people are swept away from their home or campsite while attempting to cross a bridge, rafting or sailing in storm water drains, or during evacuation or rescue. **Injuries Flood-**

Related injuries may occur as individuals attempt to escape from danger or as a result of the collapse of buildings or other structures. Orthopaedic injuries and lacerations may be caused by fast moving water containing debris. Injuries also occur when people return to their flooded homes and businesses and begin to clean and electrical power cables). Falls from ladders, sprains, strains, and wounds may occur as individuals repair homes or use chainsaws to clean up fallen trees and other debris

Electrical Injuries

Electrical injuries may occur with flooding. Standing water anywhere close to electrical lines, circuits, or equipment represents a potential electrical hazard. Additionally, rescue boats may come into contact with overhead

power lines. Burns and Explosions

Burns and explosions may be caused as floodwaters disrupt propane and natural gas lines, tanks, power lines, and chemical storage tanks. Oil and other flammable, non-polar, low density liquids may allow fires to spread along the surface of floodwaters.

Hypothermia

Hypothermia with or without submersion occurs in some floods and may occur in any season.¹³ Ice dam breakage elevates the risk, but water does not have to be ice cold for hypothermia to occur. Most flood water is well below human core body temperature

Disruption of Health Services

Floods can have a significant impact on the provision of health services. Potential damage to health facilities from the flood may require displacement of patients and staff. Flooding may impair access to health resources or the ability of health personnel to provide their services. A flood can limit access to primary health care, and result in changes in the demand for services .

Water Contamination Contact with floodwaters without drowning, by itself, does not pose a serious health risk. However, floodwaters may contaminate the local water and food supply and damage the sewage system resulting in contamination and increase the potential for communicable diseases. Contaminated water sources result in waterborne disease transmission, including *Escherichia coli*, *Shigella*, *Salmonella*, and hepatitis A virus. Faecal contamination of livestock and crops also may lead to the spread of infectious diseases. The flood or irrigation with contaminated water represents a risk to farm and other outdoor workers.

Chemical Contamination Flooding can cause nutrient runoff from agriculture, and thus, cause algal band threaten human health.¹¹ Floodwaters may result in the spread of chemicals. Industrial sites may become flooded, unleashing chemicals and other contaminants into the floodwaters. Floods also can lead to release of hazardous materials causing fires and/or explosions, toxic gas emissions, spills, damage to equipment, damage to pipes and connections, short circuits and/or power failures, punctured tanks and vessels, and structural damage to buildings and facilities in refineries, etc.¹²

Breathing Infection

Breathing problems account for a significant proportion of morbidity associated with floods. Mould is a particular hazard for persons with impaired host defences or mould allergies. Microbial growth can cause potentially harmful inhalation exposures for persons entering or cleaning affected structures

Physical Displacement

Physical displacement commonly occurs during periods of flooding. Displaced domesticated animals, rats, insects, snakes, and reptiles often result in an increased incidence of bites.^{15, 16} Diseases transmitted by rodents also may increase during substantial rainfall and flooding because of different patterns of contact.^{17,18} Finally, diseases among sick animals may spread to the human population, such as rabies, tuberculosis, and avian influenza

Effects on people exposed to flood water comprise:

- heart spells and other acute outcomes of cardiovascular disease; drowning from walking or driving through flood water wounds from: o contact with debris and flooded objects in flood water; o falling into hidden manholes; o trying to move properties during floods; o building breakdown and damage; o electrocution;
- Diarrhoeal, vector- and rodent-borne diseases breathing, skin and eye contagions;
- chemical poisoning contamination, including carbon monoxide poisoning from generators used for pumping and dehumidifying;
- Pressure, and short and longer-term mental health syndromes, including the impacts of translation;
- Negative health effects linked with overcrowding.

Dead bodies

- ❖ Protect the handlers of dead bodies. Basic hygiene is essential:
- ❖ use of handbags, personal defensive clothes and apparatus;
- ❖ washing of hands with a disinfectant soap and water after handling dead bodies, and avoiding wiping face or mouth with hands;
- ❖ regularly cleaning and disinfecting of all equipment, clothes and vehicles used in transportation and storage of dead bodies;
- ❖ ensuring availability of first aid and provision of therapeutic services in case of injury, and taking necessary deterrent measures to address exposure to environmental hazards (for example, vaccinating employees against tetanus)
- ❖ Organize long-term storage for unidentified bodies. Burial in individual graves is a means for long-term storage of dead bodies. In situations where a local cemetery is not accessible, liaise with the local authority to ensure adequate siting, away from drinking-water sources) of the burial place
- ❖ Provide mental health support. The psychological trauma of losing loved ones and witnessing death on a large scale is the greatest concern. Anyone involved in handling dead bodies should be aware of the stress and trauma of family members, and should provide support to the greatest extent possible

Toxic snake bites

Snake bites during floods are common. Bites by venomous snakes can cause severe consequences. Victims of snake bites may suffer any or all of the following:

- ❖ local envenoming, confined to the part of the body that has been bitten – these effects may be incapacitating, sometimes permanently;
- ❖ systemic envenoming, involving organs and tissues away from the part of the body that has been bitten – these effects may be life-threatening and debilitating, sometimes permanently;
- ❖ effects of anxiety prompted by the terrifying experience of being bitten and by exaggerated beliefs about the potency and speed of action of snake venoms – these symptoms can be misleading for medical personnel

Food safety during or after flood events

Food can become contaminated at any point before its consumption, including during preparation if not properly handled, prepared and stored. Food safety is particularly important for infants, pregnant women and elderly people, who are most susceptible to foodborne disease.

Food safety concerns include:

- ☐ increased risk of outbreaks of foodborne disease, including diarrhoea, dysentery, hepatitis A and typhoid fever;
- ☐ increased likelihood of using contaminated water for food handling and preparation; ☐ population displacement forcing people to have fewer food choices and use more risky food handling practices; ☐ contaminated fruit and vegetables; ☐ poor sanitation, including lack of safe water and toilet facilities;
- ☐ impairment of the cold chain and proper heat-treatment of foods because of problems with the electricity supply.

Vector-borne diseases during or after flood events

- ☐ Ensure sustainable vector control to prevent transmission. Use a combination of top-down and bottom-up approaches that integrate chemical, mechanical and biological vector control methods and personal protection methods, with the active participation of communities and involvement of relevant sectors and agencies.
- ☐ Prevent outbreaks. Plans for hospitalization, emergency vector control, advocacy, community mobilization, logistics, and monitoring and evaluation in the case of increased risk or presence of vector-borne diseases are advisable

Disease surveillance during and after flood events

- ☐ During and after a flood event: ☐ assess the needs of the affected population; ☐ match available resources to those needs; ☐ prevent exacerbation of adverse effects;

- ☐ protect the population from further health effects by implementing disease control strategies where appropriate and well defined;
- ☐ monitor and evaluate the effectiveness of emergency health plans and activities; ☐ improve contingency planning from the experience gained.

SHRUBBERY AND GEOMORPHIC PROPERTIES

Vegetation plays several diverse roles during extreme events. Vegetation usually mollifies damage by dissipating energy of the flow, and by stabilizing banks and steep slopes against the erosive forces of overland flow (Shroba et al., 1979). In the most extreme events, like the Big Thompson River flood of 1976, vegetation cannot withstand the power of the floodwaters and is broken or uprooted. Ironically, the same vegetation instrumental in weakening the flood then becomes destructive debris capable of inflicting more damage to inundated structures than the floodwater itself (Soule, 1979). Geomorphologic effects of extreme events are closely tied to vegetation dynamics in a number of ways. Through geomorphic change, extreme events reset the successional state of plant communities. In high-gradient systems, many shade intolerant tree species rely on geomorphic processes to open canopy space and clear moist areas of land to serve as seedling establishment sites (Friedman et al., 1996; Scott et al., 1997). Scott et al. (1997) found that 72 percent of cottonwood tree establishment occurred within two years after a flooding event that exceeded a 9.3-year return period).

EFFECTS OF FLOOD ORGANIZER ARRANGEMENTS

Human nature pushes mankind to confront and attack natural challenges. There is a greater, but often unwarranted, confidence associated with constructing an impressive, visible defence. As man constructs flood control levees and develops settlements in the natural flood plain, a dangerous and often unwinnable game of hydrologic roulette begins. Structural flood controls, as is typical of engineering projects, maintain a specified degree of protection. Once operational conditions exceed this limit, the constructed protection is not designed to withstand the onslaught of floodwaters. It is a probabilistic reality that the level of protection will eventually be exceeded. At this point, cities that have developed dangerously close to rivers under the limited security of structural flood control are jeopardized and extreme economic losses are experienced.

ANTHROPOGENIC CONTRIBUTIONS TO ENVIRONMENTAL EFFECT

Today, anthropogenic influences are recognized to extend beyond the realm of flood control structures. In many instances, man creates hazards that rival the most dangerous and bizarre of natural flood conditions. Often man's influences on natural systems are long-term and go unrecognized until conditions gradually deteriorate to critical levels. Examples of this include the transport of chemicals in floodwaters, creation or aggravation of extreme events, and dangers associated with social works that are not related to aquatic systems. Water quality is of key importance to man and nature. Flooding tends to reduce water quality by introducing large amounts of eroded materials. By transforming low lying areas to farm lands, man has removed much of the floodplain vegetation and wetland areas that act as natural stilling ponds, sediment intercepts, hydraulic sponges, and erosion protection. Compounding the problem, large quantities of chemicals are flushed into the surface water by overland flows

Conclusions

Reported flood-related impacts on human health are dominant and complex. Floods continue to impact communities unequally and in different ways, with effects ranging from short to longer term. The risk for disease outbreaks increases with population transformation and poor hygiene. Emotional distress in survivors is well documented and accounts for a share of all bodily illness. Contaminants also have reduced the risks associated with disruption during major floods. Long-term mental health problems have been identified more clearly as a problem and responses must be more corresponding. Ultimately, it is the responsibility. The health impacts of a precise flood event are context specific, and are very different between established and developing countries consequences of floods in a way that may aid the development of avoidance, justification, and response strategies. The health consequences of floods depend upon the vulnerability of the environment

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