
**ASSESSING CLIMATE CHANGE AND HEALTH VULNERABILITIES:
A CASE STUDY OF PAKISTAN'S FLOODS- INTEGRATING SOLUTIONS**

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ABSTRACT

Pakistan has been facing multiple repercussions owing to severe climate changes. The most significant consequences of climate change have been manifested in various forms in Pakistan ranging from heat waves to floods, droughts, and forest fires. Heat waves are the outcome of temperature rise, while floods are attributable to variations in precipitation patterns. According to Global Climate Risk Index, Pakistan has been ranked as the fifth most vulnerable country due to climate-induced disasters. These events, predominantly floods, certainly have a havoc-wreaking impact on different security sectors. This research aims to highlight the existing gaps in the healthcare sector of Pakistan and explore the direct and indirect effects of floods on an important determinant of human security, health. Lives are lost in the aftermath of these devastating floods. This especially takes the shape of displacement, injuries, snake bites and lack of timely service. The paper discusses the physical impacts of floods that result in the spreading of different infections (skin, eye, respiratory, urinary tract infections) and diseases (water and vector-borne diseases). Likewise, this paper also draws attention to the psychological effects, particularly on children, and the gendered impacts of these floods which unfortunately are neglected aspects in the case of Pakistan. The impacts vary from short to long-term, depending on the adaptive capacity of the affected state. The research will also highlight possible pragmatic recommendations and propose an appropriate way forward.

Keywords: Diseases, Floods, Gender, Human Health, Infections, Malnourishment Pakistan, Resilience.

INTRODUCTION

Climate change is becoming an existential threat to the world. Article 01 of the (United Nations Framework on Climate Change, 1992), defines climate change as a “variation directly or indirectly linked with the activities of human beings which result in the alteration of our natural atmospheric layers”. Rise in temperature and shift in precipitation patterns are major indicators of climate change. In Pakistan, there have been different and consecutive episodes of climate-induced disasters due to the change in climate patterns. Different parts of Pakistan have been affected due to these cataclysmic events like droughts, forest fires, heat waves, and floods. These disasters have impacted the economic, agricultural, societal, educational, and healthcare sectors of Pakistan. Unprecedented rainfalls and hill torrents due to three times increases in the precipitation pattern across the country have resulted in the forms of urban, riverine, and flash floods in Pakistan for example in 2010 and 2022, and recently in 2024 (Otto, et al., 2023).

This research paper examines an interrelationship between floods and their ramifications on health which is an important element of the Human Development Index. Undoubtedly, these floods in Pakistan have devastating impacts on other sectors of security by damaging homes, bridges, roads, and dams, and killing livestock, but as mentioned earlier, this research is centered on the impact of floods on human health. Floods have the potential to impact human health from short-term infections to long-term illnesses. The existing healthcare system of Pakistan is unsatisfactory and such natural catastrophes further push marginalized communities below the poverty line. The research will highlight the casualties and focus on the diseases spread due to water stagnation. In addition, research will also focus on the various kinds of infections including respiratory, skin, and urinary tract infections. Furthermore, the paper also emphasizes maternal health-related issues along with psychological impacts on the victims which are neglected aspects. Lastly, research also suggests some practical measures to build resilience and adaptive capacities of the victims by working on the existing gaps.

RESEARCH METHODOLOGY

This research is qualitative and exploratory in nature. The research design is based on a case study focusing on Pakistan. The data collected for this research study is from secondary sources like reports from the National Disaster Management Authority (NDMA), Provincial Disaster Management Authority (PDMA), Post Disaster Need Assessment (PDNA), World Health Organization (WHO) and the Intergovernmental Panel on Climate Change (IPCC). Additionally, this study has also benefited from relevant journal articles, books, and editorial opinions. Moreover, the aforementioned sources have been analyzed through content analysis.

LITERATURE REVIEW

Anthropological activities have had drastic effects on precipitation patterns, and rise in global temperatures and led to rapid climate change over this century. A steady increase in CO₂ levels, sea levels, and flooding has been observed throughout the world (Sen, 2017). Climate change has severely affected the economic and health sectors across the globe, especially in developing countries. For example, in Afghanistan, increased cases of waterborne diseases such as cholera, typhoid, and diarrhea have been observed due to global warming. Ascending poor air quality is also anticipated shortly — recurring smog seasons in North-Eastern India and Punjab province of Pakistan, during winters, have led to an increase in asthma and other respiratory diseases (Sen, 2017).

The crisis of climate change has been subjected to observation since the 19th Century. It began with the exploration of the relationship between the concentration of atmospheric carbon dioxide and the temperature of the earth's surface by Arrhenius in 1896. (Mciver & Hanna, 2017). In the 20th century, the World Meteorological Organization (WMO) and the c convened a working group to assess the health impacts of climate change. The resulting 1987 World Health Organization report, titled “Potential Health Effects of Climatic Change”, concluded both direct and indirect impacts on the health sector due to climate change. Direct impacts included heat-related mortality (Onzivu, 2009) and risks due to flash floods. Indirect impacts include effects on crops and nutrition, and water-borne and as well as vector-borne diseases (Mciver & Hanna, 2017).

The South Pacific is another example of the adverse effects of climate change. In the Cook Islands, the main sensitive climate-induced issue is the drastic rise in dengue fever and diarrhoeal disease. In the Federated States of Micronesia, a steady rise in cases of water and vector-borne diseases has been observed. Water-vector-borne and respiratory diseases have intensified the burden on health services in the Republic of the Marshall Islands and the same is true for the Solomon Islands. These small Pacific States are struggling to manage their affairs with the rapid global climate change (Mciver & Hanna, 2017).

Different scientific research studies on the impacts of climate change on individual health have led to shocking results. In China, a study was conducted on the relationship between flooding and Acute Hemorrhagic Conjunctivitis (AHC) between 2005 and 2012 in Mengshan (Liu et al, 2020). In the 'June 2000' floods in North-Eastern England, people were diagnosed with anxiety and many of the residents admitted to feeling extremely stressed due to the flooding. Most were showing symptoms of mental disorders which usually appear after experiencing a traumatic event (Tapsell et al, 2002).

The 2016 Paris Agreement calls upon countries to minimize their CO₂ emission levels and implement mitigation and adaptation strategies to tackle climate change. Nepal, a South Asian state, has devised policies to keep tackling climate change as a priority. Nepal's national climate change policy considers public health as the most vulnerable sector and has prioritized integrating climate change in all policy sectors (Sen, 2017).

CONCEPTUAL FRAMEWORK

This research is analyzed through the climate change vulnerability assessment framework by the Intergovernmental Panel on Climate Change (IPCC). This framework is best suited to the case of developing countries by analyzing its three key components: Exposure, Sensitivity, and Adaptive capacity.

Exposure

"It is defined as the frequency and degree to which a nation is exposed to climate variations" (IPCC, 2001). Pakistan is highly exposed to disaster risk as per (World Index Report, 2024).

Sensitivity

It is defined as the vulnerability a nation faces due to change in climate (IPCC, 2001). Pakistan's sensitivities in the case of the health care system are highly exposed as the existing health infrastructure is fragile.

Adaptive capacity

The capacity to mitigate or cope with the impacts of disasters through capacity building, and coordination. Pakistan lacks adaptive capacity due to various socio-economic issues.

HEALTH AT CROSSROADS: CHALLENGES IN PAKISTAN

"Health is defined as a complete physical, mental, and social well-being" (World Health Organization, 1948).

The healthcare system of Pakistan has been ranked 124th out of 169 countries (World Health Organization, 2023). Since its inception, Pakistan never had its health policy, and the system was inherited from the British healthcare system which is composed of three tiers primary, secondary, and tertiary healthcare systems (Hashmi, March 2020). The low ranking of Pakistan in the healthcare system is due to multiple factors: Firstly, it is due to a lack of allocation of the desired budget for the development of health infrastructure; secondly, it is also because of limited access to healthcare facilities in rural areas due to transportation and infrastructure issues. Delayed access to services in government hospitals is the reason people still, in the 21st century, rely on outdated, dangerous, and cheap methods: for example, the preference of quacks for child delivery in rural areas. Reliance on midwives and unprofessional staff in hospitals without expert/proper supervision is the primary reason for the second-highest neonatal mortality rate in Pakistan (Dawn, 2023). There are some other factors such as over population also held responsible for the high maternal mortality and high infant-child mortality (Punjani, Shams, Bhanji, 2014). Thirdly, research and technological development in the medical field is not a priority and it remains a neglected area. Fourthly, the Doctor-to-Patient ratio is not balanced. There are more patients as compared to doctors, so there is a discrepancy in the healthcare workforce. (Punjani, Shams, Bhanji, 2014). Doctor to the doctor-to-patient ratio in Pakistan is 1:1,300 while as per WHO in developing

nations it should be 1:1,000 (Mohtasim, 2024). Additionally, there is a nexus between private and government hospitals. The patients are found complaining that doctors refer them to their private clinics instead of treating them there because doctors argue that government institutions lack proper equipment, and screening technologies (Ghani, 2018).

EXPLORING THE HEALTH AND FLOODS- NEXUS IN PAKISTAN

As per the report by Post Disaster Need Assessment, the 2022 floods caused US\$109 million in damage and a loss of US\$34 million which makes up 13% of the health facilities, which have resultantly increased the sufferings of the victims (Government of Pakistan, 2022). This part of the research will explain and explore the impacts of floods on the victim's physical and psychological well-being in different main and subheadings.

1) Human Casualties

The catastrophic floods of 2022 have affected 33 million people and caused the deaths of more than 1700 people (National Disaster Management Authority, 2022). In 2024 massive flooding again in different provinces of Pakistan due to hill torrents caused human loss and infrastructural damage. Different causes of death during floods are explained below:

- a) **Unsecured Drainage System of Water 'Nullahs':** Floods not only put the lives of people in danger but also heavy rainfalls too, if there is no proper pre-planning and drainage system which risks the precious lives of citizens. In Karachi, in the year 2022, a mother and her two months old lost their lives because they fell into the 'nullah' (stream of sewerage water) of 'Shadman town'. The body of the infant went missing due to the high flow of the water (Khan, 2022). People of Karachi have been facing this serious problem and many people have lost their lives due to these unprotected and unsafe 'nullahs'.
- b) **Delayed/Inefficient Rescue Services:** Most of the deaths are caused due to drowning in the water of flash floods. People trying to rescue them either by passing the flood water or by swimming is the major cause of drowning. "Massive migration and displacement is accelerated during the climate-induced

disasters” (IPCC). Floods damage the infrastructure, modes of communication, and transportation which cuts the connection between victims and the rescue teams. Resultantly, delay in the arrival of rescue teams causes deaths of people due to drowning and injuries for example in Kohistan, five friends got stuck in a flash flood for three hours. The rescue teams could not arrive on time because the bridge was broken, and a helicopter rescue was not possible due to strong winds, resultantly four precious lives were lost as they swept away (Bangash, 2022).

- c) **Injuries:** There are different kinds of injuries during floods ranging from minor to major. According to the (World Health Organization, n.d.) electrical and chemical injuries are commonly caused during floods and the presence of debris and pieces of rocks in the water also causes direct injuries to the victims. According to the (Centers for Disease Control and Prevention, 2022), highlights that during floods if a person slips or falls, the injury causes tetanus due to its exposure.
- d) **Venomous snake bites:** Additionally, bites and stings from the insects, and snakes in the flood water have been reported by numerous victims. During the floods of 2022, the health department warned people about the presence of venomous snakes. Reptiles like snakes also lose their habitat, so they are in search of new homes and are present in water bringing them in direct contact with the flood victims (Department of Health and Human Services, 2024). More than 3000 cases were reported in Balochistan from 2022- 2023 and 262 cases of snake bites in Dadu, Sindh in a very short period of just two months: September and October of 2022 (Gavi, 2024).
- e) **Hypothermia:** Hypothermia is a condition when normal body temperature drops. It is caused by exposure to extremely low temperatures and in the case of floods, and due to the constant contact with flood water. This drop in body temperature gradually affects the respiratory and circulatory system, resulting in death. A tragic episode happened in 2022 in Murree, Pakistan when 22 tourists died. Although, it was not due to floods, but an example of how hypothermia affects. Cases of hypothermia are identified by symptoms and checking the temperature using thermometers. Experts claim that cases of hypothermia do happen but remain

unreported due to a lack of awareness and most of the victims took the symptoms of hypothermia as a normal fever.

2) Diseases:

Almost all flood victims suffer from different kinds of diseases. Most common diseases are spread due to contact with disease-ridden polluted water which has the presence of viruses and bacteria.

- a) **Vector-borne Diseases:** Vector-borne diseases are caused by viruses, bacteria, and parasites as they can transmit their vectors. There are different kinds of vector-borne diseases cases of malaria and dengue have been reported frequently in flood-affected areas (World Health Organization, 2020). Moreover, yellow fever, Chikungunya, and Schistosomiasis are also listed as vector-borne diseases (WHO, 2022). In Pakistan, an upsurge in malaria and dengue cases during the floods was reported. As per the report PDNA during the 2022 floods, 18% of cases of malaria and dengue in Balochistan were reported, and 4,000 confirmed cases of malaria in Sindh (Hussain, 2022). All the efforts by Pakistan to end malaria failed, as these floods exacerbated the challenge of these diseases. Dr. Alla Schapira, a consultant of the WHO says, “The floods upended anti-malaria efforts in Pakistan”. Dengue is also triggered by the stagnant water of floods which is an ideal place for the mosquitoes to breed and transmit their vectors. Victims and their families have not been accommodated properly; they have been sleeping beneath the open sky which compromises their privacy and enhances the risk of dengue and malaria. More than 1.6 million cases were reported in floods of the year 2022 (WHO, 2023).
- b) **Waterborne Diseases:** Water-borne diseases are caused due to drinking contaminated water. The chief field officer of the United Nations Children's Fund UNICEF in Pakistan was alarmed at the situation and said, “People have no choice except to drink disease-ridden water”. These flood waters have the presence of different kinds of wastes like humans, animals, and industry which is hazardous to health. The presence of toxins in the water gives birth to different kinds of viruses like Escherichia Coli, Shigella, and Salmonella (Gerba, 2009), and consequently, diseases like Diarrhoea, cholera, hepatitis E, and typhoid fever

affect victims. In Sindh, 90,000 people were diagnosed with waterborne infections in a single day as the intensity of floods started to rise (Khushik, Ali, 2022). Moreover, 137,000 cases of diarrhea and dysentery were reported by the officials of Sindh (Hussain, 2022).

- c) **Polio Cases:** Global polio eradication initiative was taken to extirpate poliomyelitis (poliovirus) through vaccination programs. ‘Type 1’ endemic poliovirus is still a matter of concern for Pakistan and Afghanistan (WHO, 2019). According to the officials, new cases of the polio virus were reported from the areas of floods. Floods have not only affected the victims but also the campaigns of local polio workers. These floods have induced displacement and migration, affecting the immunization efforts to eradicate polio. As per PDNA, 26 cases of polio were reported globally out of which, 20 were from the southern districts of Pakistan (The Government of Pakistan et al., 2022).

3) Infections:

Persistent contact with disease-ridden flood water and accommodation in congested places is the primary reason that causes different kinds of skin, eye, and urinary tract infections. Massive cases of infections were reported during the floods likewise skin infection, as the skin is the largest and external protective layer of the human body, so it has been directly exposed to the contaminated water. Additionally, safe and clean toilets along with hygiene care products are not within the reach of victims which causes urinary tract infections.

- a) **Skin and Eye Infections:** Staphylococcus and streptococcus organisms in the flood water are the causative agents of multiple infections. Victims face different kinds of bacterial and fungal infections. Recurring contact with flood water, which contains industrial and agricultural waste, causes rashes and other skin infections. Likewise, fungal infections chromoblastomycosis and dermatophytosis–tinea corporis and onychomycosis–are caused during floods (Gadre, Enbiale, Andersen, & Coates, 2022). Post-2010 floods some 143, 870 cases were reported in Sindh (Baqir et al., 2012).

Eyelid injuries are caused when broken objects accidentally hit the eyes or foreign particles enter the eyes of victims due to high winds. Experts recommend that goggles should be used, but unfortunately, these are not available to the masses, hence contact with the contaminated water causes redness and itching in the eyes. Conjunctivitis is also known as pink eye or eye flu, an inflammation of the conjunctiva, a common and spreadable eye infection during floods. Additionally, most people wash their faces with the same dirty water, increasing the spreading risk of an eye infection. According to a research study conducted in China, the relationship between floods and acute hemorrhage conjunctivitis is directly proportional (Liu et al., 2020).

- b) Urinary Tract Infections:** Infection of the urethra is known as Urinary Tract Infection (UTI). If not treated or diagnosed on time, it spreads into the bladder and kidneys. *Escherichia Coli* and *Enterococci* are the bacteria that cause UTIs. During floods, there is a lack of clean water for drinking and hygiene purposes. The lack of availability of toilets and open defecation promotes the spread of UTIs. Women and young girls are much more vulnerable to UTIs because of the lack of proper sanitation. Cases reported by the doctors and nurses, who were on duty in these areas, informed that females have reported abdominal cramps and that might be due to Urinary Tract Infections. There is an important case study of ‘Rasheeda’, a flood victim. Her story was posted on the relief web, “There are no toilets and availability of safe water. I have to reuse my menstrual cloth without cleaning it with detergent or washing it with flood water.” Upon having symptoms of abdominal cramps, she was checked and was advised to remove her uterus due to infection, before it could spread to the other parts of the body” (Relief Web, 2022).

4) Respiratory Disorder

- a) Pneumonia:** Pneumonia is the most common disease which is caused due to flood water and life-threatening disease if not treated in time. Pneumonia is an infection of the lungs, caused by the presence of bacteria and viruses i.e., influenza in flood water. People having asthma, or other existing respiratory disorders are more vulnerable and the symptoms are; high fever, shortness of

breath and body pain. Lack of proper accommodation and precautionary measures pneumonia spreads quickly.

- b) Diphtheria and COVID-19:** Diphtheria is also a respiratory disorder affecting the nose and mucus membranes. Strep throat is caused by the presence of streptococcal bacteria in the water and through handshakes, coughing, and sneezing of an already infected person. In 2022, 70 cases were reported in the flood-affected areas of KPK, Sindh, and Punjab (Muzzamil, Naz, Mumtaz, & Omair, 2023). Health organizations also suspected that COVID-19, which appeared on the scene in 2019, has not been eliminated. Victims from the flood-affected areas were partially or not vaccinated at all therefore, the chances of infection to spread are doubled due to the lack of proper social distancing and hygiene practices.

5) Psychological Impacts

Every calamity has psychological impacts, because of the trauma caused due to witnessing loved ones getting injured or dying and, the destruction of their property and sources of earnings have psychological effects. Firstly, witnessing such kinds of calamities creates psychological impacts like Post-Traumatic Stress Disorder (PTSD). Secondly, for students, the closure of their educational institutes creates a worrisome situation for their future. Camps organized by Nishtar Medical University after witnessing the situations of the flood-affected areas figured out that students face stress, anxiety, and depression.

- a) Impacts on the mental health of children:** Children are regarded as the future of any nation because they are the next generation that will hold command of the country. Floods not only have physical impacts on children but also psychological ones. In the 2022 floods, 16 million children have been affected (UNICEF, 2022). Children are more vulnerable due to their higher exposures per unit body weight and dependency on their caregivers (Sheffield & Landrigan, 2011) Children's health is at risk of diarrhea, dengue, and other infections, and if not treated timely it may cost us their lives. The psychological trauma developed in the mind of a child needs proper counseling because these disasters have long-term impacts which create fear and aggression. According to PDNA (2022), children under the age of five in the calamity-hit

districts were not fully immunized which has made them even more vulnerable to the deadly diseases. Victimized children are shocked, scared, and sad because at the age of learning their fate is suffering due to these disasters (UNICEF, 2022).

The anxiety of getting misplaced, not attending school for months, and sleeping in the open air directly impacts the upbringing of any child. Similarly, newborn children during disasters require neonatal care which is not present in our current case study. According to a UN survey, one-third of children from six to twenty-three months old suffer from moderate acute malnutrition, while 14 % of infants exposed to acute severe malnutrition are more vulnerable and the consequences are deadly (Dawn, 2023).

GENDERED HEALTH IMPACTS

There exists an intricate nexus between gender and climate, termed as Gender-Climate Nexus (Shafi, Malik, and Niaz, 2023). Every disaster has gendered impacts and women are more vulnerable. Major General Patrick Cammaert says, “It is now more dangerous to be a woman than to be a soldier in modern wars”. Women are highly vulnerable to gender-based violence during such disasters. Moreover, due to a lack of pre and post-partum facilities, women not only suffer physically but also psychologically. A victim of the 2022 flooding said, “Expecting women are crying, vomiting, and are in labor pain but the hospital has nothing to offer” (Baloch, 2022). These kinds of disasters double the burden on females because they are already responsible for looking after their children, taking care of elder members of the family, and doing domestic work. Hygiene-related care is ignored due to major factors; it is not considered a primary issue due to lack of awareness, and due to prevailing taboos and stereotypes females feel ashamed to talk about them.

WAY FORWARD

Given the analysis of the challenges posed to healthcare by the floods, the following way forward is recommended:

Budget Allocation

The budgetary share for the health sector should be 5-10%, but in Pakistan, it is 1.2 percent as per the budget for the fiscal year (GoP,

2023). The required amount of budget allocation for the healthcare system should be ensured, along with proper monitoring, accountability, and transparency. As Pakistan is highly vulnerable to climate-induced disasters, there is an immediate need to improve the healthcare delivery system by focusing on climate change funding streams (WHO, 2015). For example, Bhutan has specifically ensured providing safe drinking water, tackling vector-borne diseases, increasing funds for climate change research facilities, and funding climate surveillance systems (Sen, 2017).

Proper Infrastructure and experienced healthcare workforce

There should be proper infrastructure to facilitate the patients with qualified, trained, and resourceful paramedical staff i.e., doctors, nurses, and attendants (WHO, 2015). Patients should be treated properly and referring patients to private clinics should also be penalized with implementation. The maternal health care system should be dealt with seriously and only experienced doctors should be allowed to perform relevant surgeries and operations. The presence of these professionals should be ensured for the flood-affected areas on an emergency basis.

Awareness and Pre-disaster risk assessments

Raising public awareness through accessible mediums and credible messengers of that particular society should also be ensured. Awareness messages related to health and precautionary measures should be in the native languages, which people can understand easily. Social media can also be a useful tool in spreading awareness. Installation of early warning systems that forecast the likelihood of any event in the future (Schmeidl & Jenkins, 1998).

Implementation of Comprehensive 4Rs

Four Rs' given by the National Emergency and Management Agency (2020), should be followed and implemented. *Reduction*: Identifying and analyzing long-term risks and if possible, eliminating them otherwise reducing their impacts. *Readiness*: Developing operational systems and capabilities like self-help. *Response*: Pre-emptive actions before the disaster strikes or those taken immediately during or after the disaster have struck to minimize

loss of human life and property. *Recovery*: It includes efforts to recover the affected communities. It consists of coordinated immediate and long-term processes.

Research and Innovation

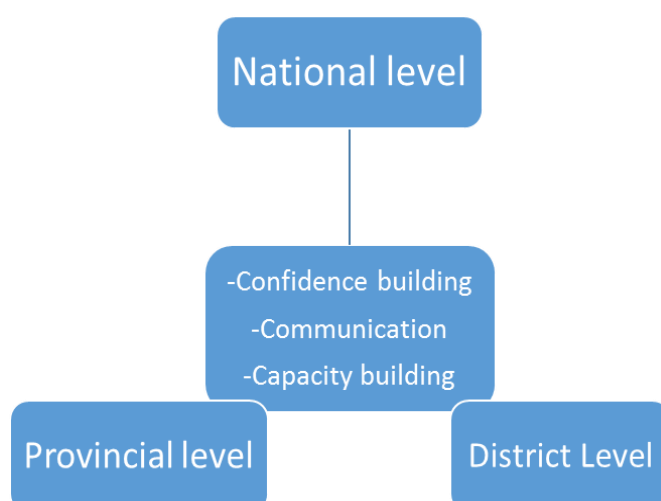
Promoting qualitative research with experts and professionals on how to mitigate threats from climate change is vital to enhance state-level response to climate-induced disasters (Sen, 2017). Research in equipment and medicines to counter the effects of natural disasters is a long-term prevention strategy for example use of artificial intelligence technology.

Proper accommodation and safe places for the victims

Rehabilitation of Internally Displaced Persons during floods into safe and proper zones and community policing is also mandatory. Following the practice of social distancing and mosquito nets during these events to avoid transmissible diseases and ensuring the provision of safe water and access to healthy food, is also necessary.

Capacity Building and Coordination of Disaster Management Authorities

According to the United Nations Office for Disaster Risk Reduction (2015), the Sendai Framework focuses on enhancing capacity building and strengthening coordination among the relevant authorities must be ensured, like that of the National Disaster Management Authority (NDMA), Provincial Disaster Management Authority (PDMA), and District Disaster Management Authority (DDMA). The state can perform much better through this decentralized process if responsibility at the national, provincial, and district level is shared on an equitable basis related to the healthcare system. This decentralization process can achieve targeted goals, with proper communication, confidence, and capacity building among the three levels.



Source: (UNDRR), Sendai Framework for Disaster Risk Reduction 2015-2030

Gender-based inclusive policies and hygiene-related care

Promoting gender equality, empowering women, and involving them in the decision-making process related to climate change saves them from further marginalization (Kameri, 2013). Prioritizing the needs of all victims' especially expecting/menstruating women and rescuing them to safer places where they can access medical services and antenatal care.

Mobile medical vans with the availability of medicines and vaccines

The 2024 Chief Minister of Punjab has launched a mobile van service to provide health assistance in rural areas. These vans have facilities like ultrasound, and blood tests and can treat gynecological issues. Ensuring the presence of these vans in affected areas should also be ensured. There are a few very common diseases, such as water and vector-borne diseases, eye infections, UTIs, skin infections, and snake bites. Their medicines, whether oral or injectable, should be readily available and given to the affected victims, on the spot.

CONCLUSION

In a nutshell, climate change is a real security issue, and it has the worst repercussions on Pakistan's different sectors of security.

Floods have both physical and psychological impacts on human health, resulting in death and transmission of diseases and infections. Since the health system in Pakistan is already facing problems, the impact of floods on the health system is a serious concern. Marginalized and sensitive communities will have to bear the brunt of these climate-induced disasters due to their exposed vulnerabilities. These disasters are inevitable. However, to avert this from happening the very first step that needs to be taken is to build adaptive capacity, particularly for these risk-prone communities, genders, and children. These communities are already facing socio-economic deprivation, which is further exacerbated due to climate-induced disasters, compounding communal insecurities. The human health crisis in Pakistan, during the floods, highlights the need for comprehensive disaster management strategies. Pakistan needs to assess its vulnerabilities, strengthening the adaptive capacity of its healthcare system to respond effectively. The frequent spells of floods embolden vulnerabilities specifically for the marginalized segments of society. The adverse health effects caused by the vulnerabilities above can be mitigated through well-thought-out plans put into practice. The outcome demands collaborative efforts among various stakeholders at international, national, regional, and district levels, to minimize the impact of these disasters.

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