

Has the Root Cause of Health Issues during Floods been Over-looked and Mismanagement? With Special reference to July-August 2010 Flood

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Abstract

Major floods in Pakistan have always complicated the situation with serious health issues. As flood affected people have been directly in contact with flood waters, so, suffer from skin diseases- dermatitis, fungal infections, skin allergies and scabies- they also suffer from diarrheal diseases and doctors normally treat diarrheal patients as cholera patients. Respiratory diseases – upper and lower respiratory tract infections-are also common during flood. Floods also bring about wounds- Puncture wounds- and injuries, during 2010 flood from overall the country 2,697 injured people are on records. The flood affected people also suffered from gastric complaints and the bites of harmful creatures like snake. Infants and children with weaker immunity system are prone to diseases - measles, cholera and malaria-. Floods always bring with them problems for the female. During 2010 Pakistan floods Care International treated 5424 patients of which 1682 were women.

Keywords: Hydro-meteorological disasters; Damages; Health impacts

Introduction

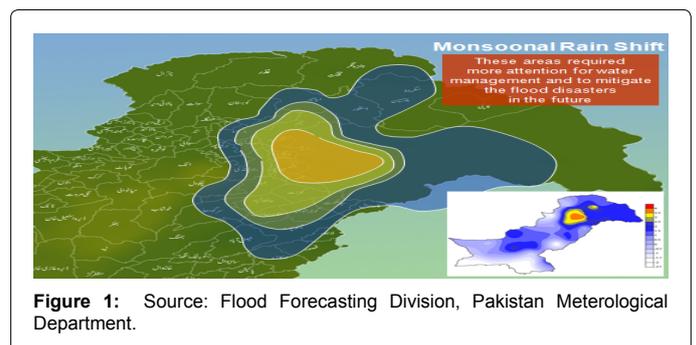
Floods have a long history of striking the land of Pakistan. The period from June to September is the season, when summer monsoons originating from Bay of Bengal, enter Pakistan from north-eastern side and cause heavy rainfall [1]. During the season monsoons from Arabian Sea also cause rainfall in southern parts of the Sindh province [2]. This season is recognized as the rainy-season for the country. During the season due to heavy rainfall add water into the rivers like that of Indus, Chenab and Jhelum etc., as a result these rivers over flow and cause major inundations. These floods become more devastating due to higher rate melting of snow and glaciers in the northern mountainous ranges of the country [3]. It is a general estimation that higher population density exposes an area to a natural hazard and its practical application is visible in the form of upper and lower Indus plains which are the most densely populated parts of the country and are always exposed to floods throughout the history of Pakistan. This exposure has always brought worst happenings -killings, injuries and diseases-with it, as most of the residents of these areas are living under poverty line with limited health facilities and infrastructure [4] (Figure 1).

Owing to climatic and environmental situation, Pakistan receives flooding not only each year but also as a regular feature. Such flooding is normally experienced in active flood plains of the country. On the other hand, when floods exceed customary flooding point, they create a hazardous situation likewise what happened in 1973, 1976, 1988, 1992, and 2010 [5] (Figure 2).

Whenever there is flooding in any part of the world even in the more economically developed countries (MEDCs) of the world, it causes many problems and among these issues health problems and diseases are a great challenge even for the modern world [6]. When we consider such problems for a less economically developed country (LEDCs) of the world like Pakistan with poor economy, lack of planning, cultural issues and number of other issues it adopts a horrible form. There are many direct and indirect reasons for these health problems and diseases. Many a people from flood-affected areas have suffered from such health problems and diseases throughout the flood history of the country [7].

“Ill health” and “ill being” is an expression that covers not simply disease as well other dimensions such as starvation, exclusion, desperation, weakness, isolation, anxiety and hopelessness [8]. This ill being can accordingly check humans from comprehending their full potential. Good health, in comparison, is recognized as fundamental constituent of a good quality of life. This is the reason access to good health is identified as a fundamental right and an indispensable human requirement. WHO defined health as “a situation of absolute physical, psychological and social well being not just the nonappearance of disease or sickness.” This definition is applicable to all human beings apart from way of life, nationality, age, color and gender. Inequalities and insufficiencies in health therefore influence the comfort of a person and wellbeing of humanity as a whole [9].

Whenever there is flooding in any part of the country, it bring with massive devastation of infrastructure. If it's the destruction

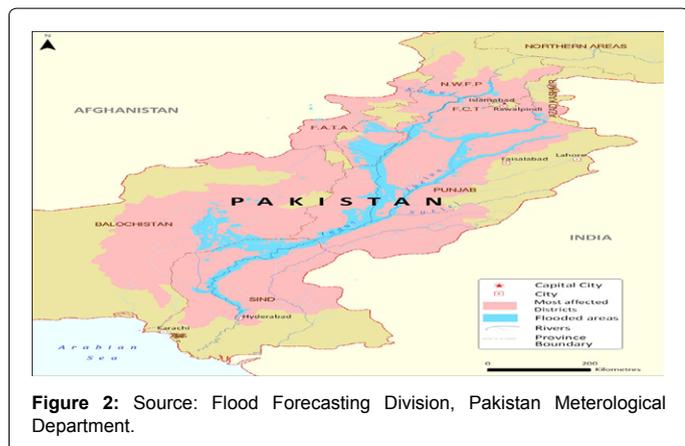


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Province	Injured	Deaths	Population Affected
Punjab	262	110	6,000,000
Sindh	1,235	411	7,274,250
KPK	1,198	1,156	3,800,000
Baluchistan	104	54	700,000
All over the country total	2,946	1,985	18,074,250

Table 1: Flood losses as a result of July-August 2010 flood.

of health related infrastructure it maximize the problems of flood affected community. Unfortunately, every major flood in the history of the country devastated health related infrastructure. For instance, if we take the example of July–August 2010 flood, during the flood damages to the health facilities had also been unbearable as it damaged around 514 health facilities including many hospitals [10]. The repair and reconstruction of all of these is difficult, time consuming and an expensive task. After the destruction of health related infrastructure, rehabilitation of the affected community up to the pre-flood level had always been a hard task to achieve (Table 1).

Methodology

The center of attention for this study is to focus on the flood affected community and the role of the government to facilitate them. All the facts and figures used in this study have been accessible for the judgment of the status of the study. July–August 2010 flood, affected 78 districts [11] all over the country. Out of these districts 24 were from KPK, 17 from Sindh, 12 belonged to Balochistan, 11 districts were from Punjab and left over 14 districts belonged to AJ&K and GB [12]. Out of these 78 floods affected district of Pakistan, 29 districts were recognized as severely flood affected districts [13]. Out of these 29 severely flood affected districts, total number of 13 districts were taken as random samples, 04 districts from each province KPK (Nowshera, DI Khan, Mardan and Charsada), Sindh (Sukkur, Thatta, Badin and Shikarpur) and Punjab (Muzaffargarh, Multan, Rahim Yar and Jang) were taken as random samples, while two districts were selected as random samples from Baluchistan (Jaffarabad and Naseerabad).

After that 50 house-hold samples were randomly selected from each district. While 150 house-hold samples were taken from remaining from flood affected districts of Pakistan. Purpose was to cover maximum flood related concerns of the flood affected community of the country. Total 800 household samples were investigated from all over the country. Male and females both were given proper representation. The age of the sample considered to be 30-65 years. So that the respondent might have experienced maximum number of

floods since 1973. The memory and reflexes of the respondents were also taken in to consideration. Along with it doctors, representatives of relief providing agencies, government officials and scholars/experts of the field and media spokes person were also interviewed randomly.

The study has used both quantitative and qualitative schemes. The study had debates with major stakeholders at national level at the same time with the randomly sampled households. “Quantitative Household Questionnaires” were used for the collection of first-hand knowledge. For the purpose pilot surveys were conducted as a result well designed questionnaires were ready to collect primary data to fill the needs of the study. Respondents were taken from all flood affected districts of the country with the help random sampling. Then collected data was tabulated for better analysis at the same time giving best recommendations related to the study. Self-observations, photography and recording videos during the July–August flood 2010 were also used as a basic source of data collection.

As a basic source of data collection, “Quantitative Informants Interviews” were also conducted from the flood affected communities. Interviews were conducted, particularly from the persons who have been the eye-witness of most of the floods since 1973. Government officials like the meteorologists who were working at met offices as well the relief workers and officials from organizations such as NDMA. Doctors working at the relief camps as well the members from different NGOs were also interviewed. In many cases foreigners working at the relief camps were also considered as a source of information as most of the time such people responded in an unbiased way. Telephone interviews were made with NGO staff members who had been involved in the recent post flood situation in Pakistan and interviews were also made with the Water and Power Development Authority staff member to get an insight into the situation. Coordinator for water, sanitation and hygiene was requested to share his experience and data regarding the public meetings.

Initially study related literature was reviewed for concepts from all over the world and for the topic flood related papers and references were extracted and analyzed. Government based publications like reports from State Bank of Pakistan and Extracts from Economic Surveys of Pakistan etc were also used to fill the needs of the study. Numerous studies have been reviewed for the determination of floods impact on human beings. Geography and climatology have also been reviewed with special reference to flood prone areas of Pakistan to analyze the causes, characteristics and consequences of major floods in Pakistan. To reach more precise findings references from different flood prone parts of the world have been incorporated.

Review of Literature

Academic circles all over the world as well all over the country have tried to produce much thought and research to highlight social and economic problems evolved as a result of these floods [12]. Academia has also been trying to investigate fool proof ways to prevent or at least mitigate the effects of these floods and has also been working on rescue, relief and rehabilitation of the flood affected community, particularly the community suffering from diseases and health problems. Focusing on various characteristics, perspectives and phases of floods and also debating various approaches for the effective management of floods [14].

Sare Laerke, in her PhD Thesis [15] entitled as: “Ensuring a Sustainable Development within a Changing Climate”, discusses that various practices must be used to avoid and mitigate climatic hazards

such as floods. She also discusses various tools to attain sustainable development within a changing climate. She also suggests how to handle flood affected people during and after the strike of floods.

Federal budget speeches [16] like that of 1973–74, 1989–90, 1993–94 and 2010–11, have always presented the clear impact floods on the economy and economic projects going on within the country. These also mention how the people of Pakistan were affected by floods, relief and rehabilitation efforts by the government of Pakistan have always been highlighted through budget speeches like that was done by Dr. Abdul Hafeez sheikh in 2010–11.

UNICEF in August 2010 prepared a report, entitled as, Pakistan Monsoon Floods, the work discusses that the summer flood of 2010 was worst in the history of Pakistan as an estimated 3.2 million people have been affected across the country including an estimated 1.4 million children. The work stresses that the flood has damaged roads; washed away bridges and the irrigation system have also been extensively damaged. The work also highlights the ways of facilitating the flooding affected community by the government as well by the NGOs and INGOs.

The structure and system of NDMA in the country focuses on mitigating floods while on other hand after the strike of a flooding event it also provides rescue, relief and rehabilitation facilities. NDMA Annual Reports [17] (2010, 2011 and 2012) discuss disaster management system in Pakistan like organizational structure of NDMA, and its response to major disasters in Pakistan like to July–August flood 2010.

Federal Flood Commission (FFC) works under the influence of Ministry of Water and Power. Annual Flood Report 2010 floods [18], by the Office of the Chief Engineering Advisor and Chairman, Federal Flood Commission, Islamabad, and Annual Flood Reports 2011 and 2012 floods, by the Office of the Chief Engineering Advisor and Chairman, Federal Flood Commission, Islamabad. These reports, describe the mechanics of floods with floods in Pakistan and historic flood events in Pakistan, problems caused by floods and flood management and protection facilities.

Asian Development Bank and World Bank, in 2010 published a DNA [19] entitled as, Pakistan Floods 2010: Damage and Needs Assessment; the purpose of this DNA (Damage and Needs Assessment) has been to assess the damage and losses caused. DNA also calculates the cost of reconstruction. As well relief items provided to the flood affected community. The guiding principles of the needs assessment and recovery strategy are the key points of discussion.

The work of Ahmad et al. [20] first introduces the area, and then discusses the deaths, injuries and home fewer people in brief. It also discusses the after effects of floods. Though the army has restored the major road network, there are countless settlements far beyond the reach of these roads. It also discusses the desperate situation of the affected people during winter rain in the high altitude areas, along with cold temperatures and snow in the mountains. Due to shortage of time and limitations of space, substantial part of viewed literature has not been discussed here.

Results and Discussion

Whenever there is flooding it brings with it a number of socio-economic problems. One of the main social problems caused by floods has been health problems. These health risks become exceptionally complex as a result of massive human displacement and overcrowding

at mismanaged flood relief camps [21].

During self-conducted survey more than 88 percent of the displaced persons complained for government mismanagement. Just at a relief camp in the outskirts of Karachi was holding 8,000 people from different parts of Sindh. During survey more than 73 percent of the respondents claimed that they left their homes with their families with slight more than the dresses they were wearing. A respondent at Karachi camp, on September 05, 2010 claimed that since last 14 days am at the camp and what I have received from the government is just an old shirt and a trouser to wear. More than 91 percent respondents claimed that camp administration keep most of the stuff with them, they have been provided to distribute among affected people. Unfortunately, the central government itself has repeatedly been caught for setting up medical as well relief camps for just photo sessions. On other hand, affected community appreciated the role of private donors who had been directly distributing food, clothes, blankets and money among the flood affected people. More than 95 percent of the people were dejected at the unhygienic situation at relief camps. Availability of food on regular basis was another issue. For instance, on September 01, 2010, hundreds of families from flood relief camps kept blocked the National Highway for more than three hours and their demand was just food for their small kids and families whom were dying with hunger [22]. When illiterate rural community had been living in overcrowded camps, under unhygienic conditions, wearing dirty clothes and malnourishment is on one side there is nothing to eat. How these people under such poorly administrated camps can remain strong and healthy.

Unfortunately during self-conducted survey at more than 90 percent of relief camps disease control activities were not up to the mark. It is the fact that access to vital medicines, health services and the restoration of public health infrastructure always remained a key concern in the flood affected areas of the country. On one hand Pakistan is ranked as 145 out of 187 countries on UNDP human Development Index, on other hand 65 percent of its population resides in its rural part [23]. Floods mostly strike the rural part of Pakistan which is even under normal circumstances deprived of basic health facilities. As throughout the history, the government has allocated nominal amount for health sector. For instance, public sector health expenditure during 2006–07 were 0.57, during 2007–08 were again 0.57, during 2008–09 were 0.56, during 2009–10 were 0.54 and during 2010–11 were only 0.23 percent of GDP [24]. It was the basic need of the people of Pakistan to increase the ratio of GDP expenditure on health sector every year but the data indicates these are declining year after year. Even, after the strike of July–August 2010 flood, during 2010–11, there was a dire need to increase this ratio up to the maximum extent but this ratio declined badly. Here's a question, when a quarter part of the population of a country has been affected by floods and been suffering from diseases and injuries. How can a government reduce the percentage of expenditure specified for health sector? (Table 2).

During floods pregnant and lactating women had to face many a

Province/Region	Population Affected	Injuries
Balochistan	7,00000	104
KPK	38,00000	1198
Punjab	60,00,000	262
Sindh	72,74250	1235
AJK	2,00000	87
Gilgit Baltistan	1,00000	60
Total	18,074250	2946

Table 2: Human population affected in response to July-August 2010 flood.

problem at flood relief camps particularly under cultural traditions of the country. In Pakistan during 2009–10 maternity mortality rate (MMR) was very high as compared to other countries of the world. Women living in rural areas as usual were at higher risk of dying of maternal cases as compared to the urban women. In urban areas maternal mortality rate (MMR) was 175/100000 live births while in rural areas maternal mortality rate (MMR) was 319/100000 live births [25], which is more than double in rural areas. Moreover, in Pakistan 50 percent of females are married before the age of 20 and this ratio is much higher among rural women. These early marriages are responsible for higher fertility rate (4.1) among women [26]. These ladies experience severe risks during their pregnancies and are responsible for higher MMR. In Pakistan eight percent of maternal deaths are referred as iatrogenic.

As a result of self conducted survey, we came to know that more than 80 percent of such cases occur in rural areas. This indicates poor quality of services is provided to the women at the time of delivery. You can imagine the situation, when such a country suffers from a super flood like that of July–August 2010 and experiences extensive health related damages and destructions mentioned (Table, A) below. During July–August 2010 flood, 515 health facilities (5.3 percent) out of 9721 health facilities all over the country were damaged or totally destroyed [27]. As the work force displaced and infrastructure was damaged so not 100 percent of the health facilities were fully functional to facilitate the affected people.

The situation may become horrible. According to self-conducted survey during July–August 2010 flood maternal mortality rate (MMR) reached the limit of 381/100000 live births which are much higher as compared to the normal situations. The government and NGOs tried their best to handle the issue properly. Due to unavailability of much needed resources and trained staff at relief camps MMR increased (Table 3).

Rural areas of Pakistan are also known as the flood prone parts of the country. In general, it is the cultural tradition of the rural community of Pakistan that females stay away even from seeking the most wanted care if there is no female to offer them. It is the factual history of the flood affected community of Pakistan that pregnant women caught in the floods died or became disable as a result of pregnancy related complications. The question is why this happens so. The answer is so simple and clear. In the absence of specialist lady doctors (gynecologists) at the relief camps, these women could not have access to regular check-ups, laboratory tests, needed diet and exercises. Even at the time of delivery non-technical women handled the cases resulted in deaths or some other complications [28]. The worst thing is that such deaths are not counted in flood related deaths and in most of the cases even family members don't bother about such death or disabilities just say, "it was the will of God." Data collected during

the self conducted survey related to MMR at relief camps, when was discussed with gynecologists, more than 95 percents of deaths occurred as non-technical persons tried to handle the cases or unavailability of sufficient medical facilities. If we try to study the history of such cases during the summer flood of 1973 around 947 pregnant women became the flood victims, during the flood of 1988, the pregnant women affected by flood waters were 1,125 and 133,000 women were directly affected by the July–August flood 2010 [29].

As a result of floods in Pakistan like that of 1973,1976,1988,1992 or 2010 conditions in flood affected areas mostly become favorable for the survival, growth and reproduction of vectors and water borne diseases. This situation may become ideal for the widespread of pathogenic organisms in the environment. Therefore, transmission of diseases by vectors- borne diseases and water-borne diseases in the disaster affected communities turned out to be a serious health risk. Large scale floorings like the flooding of 2010 mostly result in the disruption of public water supplies, waste disposal systems. Disruption of both resulted in the contamination of public water supplies which act as a serious threat for the health of affected communities [30]. During the single year of 2010 specified for July–August 2010 flood more than 37 million medical consultations were reported about diseases such as skin diseases, diarrhea, pneumonia, and malaria [31]. These consultations are highest in number from 2000–2010. During self conducted survey every second child and every third person was suffering from these diseases at varying intensities. Ministry of Health Pakistan confirmed that in the province of KPK (severely flood affected province during 2010) 142 Police cases were registered while as compared to registration of polio cases during 2009 was just 89. In the same way the province got registered 1392 cases of measles while just 863 cases of measles were registered during 2009.

As a result of July–August 2010 flood 3999 water supply schemes and 2842 sanitation schemes were damaged [32], which resulted in the mixing of sanitation water with water for domestic use. This mixing produced extensive volume of contaminated water which became the basis of the spread of dangerous diseases among the affected community like gastroenteritis, hepatitis, cholera, typhoid fever and diarrheal diseases. Diseases like diarrhea are infectious diseases and are transmitted by the fecal-oral route. Such diseases are termed as water-borne diseases. Many of the non-epidemic infectious diseases spread through direct contact with contaminated water. Some of these diseases are wound infections, dermatitis and ear, nose and throat infections. Many other water and sanitation related diseases are associated with water and solid waste and are number of times transmitted through vectors [33].

Dr Anthony Fauci, (Director of the U.S. National Institute for Allergy and Infectious Diseases at the US National Institute) is of the

Province/Region	Completely damaged	Partially damaged	Total	Total Health facilities of all categories	Affected facilities as % of provinces total
Punjab	9	48	57	2891	2
Sindh	103	48	151	1305	1165
Balochistan	26	19	45	2075	210
KPK	40	150	190	1739	10.9
Gilgit-Baltistan	2	1	3	731	0.41
AJ&K	6	33	39	616	6.3
FATA	0	30	30	364	8.24
Pakistan	186	329	515	9721	5.21

Table 3: Over-view of damaged health facilities during July-August 2010 flood.

view: "Infected water may cause not just one, but many infections."

Many of the water borne diseases like malaria and dengue fevers are very common among the flood affected communities in Pakistan. Malaria is one of the most devastating diseases for the people of Pakistan and takes the shape of a killer during summer floods. It has been a main cause of morbidity in the country. There is also evidence from a number of research works [26] that malarial occurrence is absolutely linked with such extreme flooding.

It was 1994, when first case of dengue hemorrhagic fever (DHF) was reported in Karachi. During the summer floods of 2005 and 2008, dengue-bearing mosquitoes got breeding grounds and thrived well. Most recently during the floods of 2010 and during the heavy monsoon rainfall of 2011 dengue-bearing mosquitoes got ideal conditions to thrive in the form of fresh stagnant water [34]. During these flooding conditions although all the provinces of the country were affected by the dengue but the Province of Punjab was badly affected. During this period of time 21,292 cases of dengue were confirmed by the medical staff and out of these 352 were recognized as fatal cases. There were 386 confirmed cases of dengue and as a result seven deaths in KPK. 1,547 cases were reported from Sindh province out of this total 18 were the serious cases [35].

Muhammad Asghar (resident of a village) Thatta District, Sindh, expressed his views as follows: "We are aware malaria and dengue fevers are great risks to human health, what can we do, when our homes have been severely damaged by flood waters. We have damp homes to sleep and stagnant water is all around us."

When after the recede of flood waters a question was put to government official.

Why don't you people drain away this water? He replied in following way: I agree with you that these pools of stagnant should not be here. But unfortunately we don't have such a modern machinery to drain away this massive amount of water when sub- soil is saturated with water and canals and rivers are full of water too.

Throughout the flood history of the country shallow methods of irrigations like shallow wells or hand pumps providing water for domestic purposes are more prone to infectivity from flooding than deep boreholes. It is the fact that the ground water is an important source of water for many rural communities in Pakistan. During floods, when water table rises it is certainly infected by the water of pit latrines. Conventional pit latrines use traditional infiltration methods which is a big source of water contamination particularly in the rural part of Pakistan. When flood affected communities use this contaminated water whether due to unavailability of pure water or due unawareness about its potential risks of causing water-borne diseases [36].

Most of the flood affected people suffer from skin diseases as they are directly in contact with flood water. All the times it was observed that skin infection was the leading cause of illness in the flood affected areas. They commonly suffer from dermatitis, fungal infections, skin allergies and scabies [37].

Doctors working at the camps, when were questioned about the reason behind the spread of dermal diseases. More than 90 percent of the doctors related it to hot weather and unhygienic conditions prevailing at the flood relief camps.

Doctor Shahroze Ali, (a general physician) working at the relief camps of Sindh Province, described as:

"Un-hygienic conditions and overcrowding at relief camps are the main reasons for dermal diseases at relief camps."

Prof. Dr. Syed Atif Hasnain Kazmi: [38] (Head of the Department of Dermatology at King Edward Medical University Lahore) expressed his views as follows:

"The diseases such as dermatitis are mostly caused due to the direct contact of an individual with contaminated water. Large amount of water during floods increases the chances of mould infection, exposure of an individual to this infected water result in dermal infections. Eczema is the most common dermatitis during floods."

Diarrheal diseases are also common among affected people. As it's the history of floods in Pakistan whenever there are floods in Pakistan there is news about the outbreak of cholera and even most of the time doctors working with flood affected people were advised to treat all diarrheal patients as cholera patients. Unfortunately, during floods such medicines were not available for every flood victim. Due to traditional believes number of times cholera or diarrhea affected patients were treated by self evolved treatment methods as a result in every session of floods, since 1973, there is a big record of deaths as a result of diarrhea and cholera.

Hotez [39] related floods in Pakistan with cholera in a way: "I am really worried about the flood affected parts of Pakistan as cholera as an epidemic may break out in these parts of Pakistan. Where according to reports people are living under harsh conditions and sanitation water has mixed with daily use water, I am afraid as under such conditions cholera can break out as an epidemic".

Dr Peter Hotez warned the concerned authorities in a way: "This disease (cholera) causes diarrhea-based dehydration which can cause the death within hours and unfortunately the most effective vaccination to protect the affected community is not available at camps."

Respiratory diseases are also very common among the flood affected people. The most common respiratory diseases are upper and lower respiratory tract infections. Most of the time flood affected communities don't take respiratory diseases as serious diseases. But in the long run such diseases have very negative effects on the health of the affected people. For a proper healthy body it's compulsory that human body must be treated in time through proper medications, otherwise complications may affect the immunity system and may reduce the working efficiency and life span of the affected person.

Dr. Zulfiqar Bhutta, (a research scholar) Aga Khan University, Karachi, related respiratory diseases with floods in a way: "Even after the retreat of floods, flood water keeps standing in the area for longer time, this stagnant water and dampness act as a breeding ground for organisms such as bacteria, viruses and fungi. This infected water become airborne and is inhaled by the flood affected people, as a result people suffer from lung diseases."

Floods are the natural disasters which bring about many complications with them and one of them is wounds. Puncture wounds and infected wounds are two important visible categories of wounds. The flood affected people along with other diseases also suffered from gastric complaints. These gastric problems further increase the difficulties of affected community. These problems are even responsible for the deaths of many people during floods.

Dr Wasim Jafri (Professor of Medicine and Head of the Gastroenterology Section at the Aga Khan University, Karachi) said: "In Pakistan flooding mostly occurs during summers, extensive heat

and higher level of humidity in the atmosphere provide ideal conditions for the spread of gastric problems.”

Whenever there has been flooding in Pakistan it has always caused injuries. When we see the situation of 2010 floods, there was no part of the country where injured people were not present. During 2010 from overall the country 2,697 injured people were on records out of these 2,697 injured people 98 were from Balochistan, 1,193 were from KPK, 350 were from Punjab, 909 from Sindh, 60 from Gilgit-Baltistan (GB) and 87 from AJK. During floods bites of harmful creatures like that of snake bites are very common, so the treatment for such bites is also needed. Unfortunately in most of the cases medicines to treat affected people have not been available in the flood affected areas. The poor and illiterate people of these areas are use to of self treatment of such patients or carry such patients to locally so called doctors. During such foolish things, these people lose time and in many cases lose precious lives.

Infants and children have weaker immunity system so they are prone to every sort of diseases like measles, cholera; malaria etc. There has been very high infant mortality rate all over the country throughout the history of Pakistan. During 2009–10, infant mortality rate was confirmed as 86/1000 live births. If someone wishes to compare this factor with other courtiers of the world, here again Pakistan is ranked as number eight in infant mortality rate. As far as the health and the death rate of children under five years of age is concerned fetal diseases pneumonia, diarrhea, malaria and higher level of malnutrition are the main causes of death. About 45 percent of maternal deaths were due to anemic mothers. About 31.10 percent new born babies died during 2010 as they were acquiring less weight. While, 22 percent of children under five years of age died due to diarrhea, and 14 percent of such children died due to pneumonia.

During July–August 2010 flood, 9.0 million children were recorded as flood victims, out of these 9.0 million children, 114,000 children were under one year of age and 486,000 children were under five. Due to weaker immunity system during 2010 flood, 15 percent of the infants lost their lives.

A 51 years old, respondent, Musa Khan from Noshera(KPK), 49 years old Din Muhammad from Rahim Yar Khan(Punjab) and 54 years old Gunaksi Devi from Khairpur (Sindh) expressed their concerns in the following manner:

“Our children are suffering from diseases; they are getting weaker and weaker but needed food for ill persons and medicines are not available at camps. The medicines that are available at camps are doing nothing to our patients.”

When question about the mental health of the flood affected children was placed in front of 500 respondents around 35 percent accepted that their children are suffering from phobias, nightmares and psychological problems.

Conclusion

Under the climatic conditions and socio-economic structure of the country, people are suffering from diseases like malaria, diarrhea, cholera and all of the above mentioned diseases. In Pakistan in normal situations, when every sort of reproductive health related facilities are in access, maternal mortality rate is very high. When floods strike the land, people are surrounded by flood waters at their homes or leave their home and stay at relief camps. Under above mentioned circumstances, these fatal diseases become 200% more injurious as compared to the

normal circumstances. With damaged or destructed health related infrastructure. Unavailability of balanced diet, unhygienic conditions at relief camps make flood affected people vulnerable to diseases. Damp houses surrounded with stagnant flood waters create ideal conditions for occurrence of malaria and dengue fevers. Contaminated water becomes the main cause of diarrheal diseases and cholera. Hot and humid climate and overcrowding at camps expose the flood affected community to the dermal diseases and eye infections. These diseases increase the intensity of difficulties of flood affected people.

References

1. Akhtar S (2011) The South Asiatic Monsoon and Flood Hazards in the River Basin, Pakistan. *Journal of Basic and Applied Sciences* 7: 101-115.
2. Irfan M (2010) Options after the Floods. *The Daily Dawn English Newspaper, Karachi*.
3. Saksena R (2007) Monsoon Floods: A Recurring Hazard. *Focus* 1: 5-21.
4. Khan B, Iqbal MJ, Yosufzai MAK (2009) Flood risk assessment of river Indus of Pakistan. *Arabian Journal of Geosciences* 4: 115-122.
5. Ahmad A, Iftikhar H, Chaudhry GM (2006) Water Resources and Conservation Strategy of Pakistan, Islamabad. Pakistan Institute of Development Economics.
6. Shah S (2014) Nearly Two Dozen Floods Hit Pakistan since 1950. *The News International (The Daily English Newspaper, Islamabad)* September 10.
7. Mansoor A (2010) These are not Pakistan's Worst Floods. *The Express Tribune (The Daily English Newspaper, Karachi)* August 24.
8. United Nations (2010) Pakistan Flood Emergency and Relief Response Plan. UN Office for the Coordination of Humanitarian Affairs, New York, pp. 53-57.
9. Ahmad H, Bokhari J, Siddiqui QTM (2011) Flash Flood Risk Assessment in Pakistan. Pakistan Engineering Conference, 71st Annual Session Proceedings, pp. 697-707.
10. Memon N (2012) Malevolent Floods of Pakistan, Islamabad. Strengthening Participatory Organization, p. 8.
11. Muhammad A (2011) Supper Flood 2010 in Pakistan, Lahore. Pakistan Meteorological Department, p. 5.
12. Ahmad F, Kazmi SF, Pervez T (2011) Human response to hydro-meteorological disasters: A case study of Pakistan 2010 flash floods in Pakistan. *Journal of Geography and Regional Planning* 4: 518-524.
13. New York Times (2010) New York.
14. The Nation (2010) Wednesday, September 29, Lahore.
15. Laerke S (2010) Ensuring a Sustainable Development within a Changing Climate. Unpublished Ph.D. thesis, University of Copenhagen, Denmark, pp. 1-136.
16. Government of Pakistan (2010) Budget Speech of Federal Finance Minister 2010-11, Islamabad: Ministry of Finance. Economic Affairs Division, pp.7-8.
17. NDMA (2010) Annual Report 2010, Islamabad: Prime Minister's Secretariat, Islamabad, Pakistan.
18. FFC (2010) Ministry of Water and Power of Pakistan. Annual Flood Report, Islamabad: Pakistan, WAPDA.
19. World Bank and Asian Development Bank (2010) Pakistan Floods 2010: Damage and Needs Assessment, Islamabad. World Bank and Asian Development Bank.
20. Ahmad F, Kazmi SF, Pervez T (2011) Human response to hydro-meteorological disasters: A case study of Pakistan 2010 flash floods in Pakistan. *Journal of Geography and Regional Planning* 4: 518-514.
21. Mission Report (2010) WMO Fact-Finding and Needs-Assessment Mission to Pakistan, Islamabad. World Metrological Organization.
22. The Nation (2010) October 10, Lahore.
23. Pakistan Floods: Damages and Challenges (2010) BBC, August 26, Pakistan.
24. The Pakistan Observer (2010) The Daily English Newspaper, September 17, Islamabad.

25. The Dawn (2010) The Daily English Newspaper, August 30, Karachi.
26. Government of Pakistan (2011) World Health Organization. Weekly Epidemiological Bulletin: Flood Response in Pakistan.
27. Gul I (2011) Paradise Lost and Neglected. Weekly Pulse.
28. Mustafa H (2014) Climatic Change and Vector-borne Diseases in Pakistan. The Daily Times English Newspaper, Lahore.
29. NDMA (2012) Resilience: Promoting a Culture of Prevention, Mitigation and Preparedness. NDMA 3: 1-8.
30. Semple S (2011) People's Experiences of the Pakistan Floods and their Aftermath. Pattan Development Organization, Islamabad.
31. Kazmi (Head of the department of Dermatology at King Edward Medical University Lahore) in an interview on July 03, 2011.
32. United Nations Children's Fund (UNICEF) (2010) Pakistan Annual Report, Islamabad, Pakistan.
33. Manzoor M, Manzoor M, Bibi S, Jabeen R (2013) Historical Analysis of Flood Information and Impact Assessment and Associated Response in Pakistan (1947-2011). *Research Journal of Environmental and Earth Sciences* 5: 142-143.
34. Amber S, Gonzalez PA (2014) Flood Disaster Profile of Pakistan: A Review. *Science Journal of Public Health* 2: 144-149.
35. Sherin A (2010) Flood Related Health Issues in Pakistan. *KMUJ: Khyber Medical University Journal* 2: 43-44.
36. NDMA (2012) Resilience: Promoting a Culture of Prevention, Mitigation and Preparedness. NDMA Newsletter 3: 1-8.
37. Woods A (2010) Pakistan: The Threatening Catastrophe and how to Fight it. *Financial Times*.
38. Brohi N (2011) Effects of 2010 flood on Women in Pakistan: A Scoping Study. Aurat Publication and Information Services Foundation, Islamabad.
39. The Pakistan Observer (2010) The Daily English Newspaper, September 27, Islamabad.