

Impacts of Natural Disasters on Community Health: A Study of Disaster Discourse in Gilgit-Baltistan, Pakistan

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Abstract- Natural calamities have a disastrous effect on natural environment and human health. The present study highlights the adverse health consequences of disaster affected communities living within the risky regions. The present study was descriptive in nature. Data has been collected from ten districts of Gilgit-Baltistan and the population consisted of households that have been affected by natural disasters between 2010 and 2017. This study was conducted from February 2019 to December 2019. An estimated 113, 266 populations were affected by natural disasters in the said period. Keeping in view this estimation, a sample size of 384 households was calculated. Results of the study clearly show that natural disasters have profound impact on the human health. After the occurrence of disaster, an overwhelming proportion of population 75% of under five years' children and affected and suffered from diarrheal diseases. Furthermore, post-disaster depression level found high among in disaster victims. This is also found that natural calamities are responsible to destroy healthcare facilities, disrupt routine health services, and increase number of deaths, physical and mental disabilities which also decrease quality of life.

Index Terms- Natural disasters, Health impacts, Health status, Disaster's victims, Post-disaster depression, Gilgit-Baltistan

I. INTRODUCTION

Natural disasters are sudden and awful events have affected annually millions of people worldwide. There were 4,130 natural calamities recorded around the world from 2004 to 2014, resulting approximately five million people killed and a minimum of 1,195 billion US\$ loses were documented [1].

Natural disasters also have various negative impacts on social, economic, physical and mental health and environmental sector [2]. Furthermore, natural calamities such as floods, earthquake, avalanche, land-sliding, droughts, lake-outburst and diseases outbreak could have considerable burden on public health sector [3,4]. Impacts of natural hazards on public health include deaths, injuries, water borne diseases, communicable diseases, diarrheal diseases, psychological traumas, and destruction of health care infrastructure, disrupt routine health care facilities. Deaths and injuries are attributed to severe negative impacts which is directed to the natural disasters [5]. Flood of 2010 was responsible to damage 515 health facilities and 3500 health workers were displaced in Pakistan [6]. This situation has disrupted health services in the affected regions. According to National disaster management authority (NDMA) this flood has been responsible to damaged health facilities approximately \$50 million worth in Pakistan [7]. The United Nations reveals that natural disasters consequently have damaged an estimated \$7.82 billion of health infrastructure from 1972 to 2011 in Latin America and Caribbean [8]. The death rate for male is higher than female from floods and tornados in United States of America and European countries [9]. Even though, in developing countries the condition dramatically changed that the death rates are higher in female than male from natural disasters [10].

The present study explores the impacts of natural disasters on public health with especial reference to those communities of Gilgit-Baltistan that have been directly affected by natural calamities from 2010-2017. Gilgit-Baltistan is the northern province of Pakistan. The region is prone to natural hazards like earthquake, flood, and avalanches, land-sliding, flash and mud

flood, lake-outburst [11]. All these natural hazards have a significant impact on public health. A hazard mapping survey of Gilgit-Baltistan has been conducted by a non-government organization "Focus humanitarian assistance", which indicated that nearly half of all houses in the region were at risk of multiple hazards. For instance, Skardu, Gilgit, Ghizar, Astore and Hunza districts are highly vulnerable to flooding in the future [12,13,14]. As a result, flood disasters are common and almost occur annually in this region. There were 246 deaths recorded and approximately 113,416 populations were affected in Gilgit-Baltistan from 2010 to 2017 [15, 16, 17, 18, 19]. In July 2010, a massive flood occurred in the region, resulting Karakorum highway, Silk route, Ghizer, Sikardu and Astor road were blocked for all type of transportations. Karakorum highway connects this region with rest of the Pakistan. Due to blockage of the main highways for 45 days, each districts were cut off from Gilgit division and also the whole region disconnected from the rest of the Country. As a result, failure of essential items supplies due to poor access and an absence of doctors, collapse of basic health units in remote areas as well as DHQ and THQ in main towns. Health and information management system, inadequate supply of medicine government and other relief agencies also faced severe challenges in providing health relief to affected areas. Due to failure in supply of clean water and other health services, water-borne and other viral diseases outbreaks after eight weeks of flood became common and took a heavy toll on the health of the population. An overwhelming number of the population experienced psychological disorder due to wideness the death and severe injuries of their loved ones. Furthermore, this calamity damaged property of the residents, which make them economically handicapped [20, 21].

II. IDENTIFY, RESEARCH AND COLLECT IDEA

The researchers employed community-based survey through exploratory techniques. This study was conducted in ten districts of Gilgit-Baltistan, Pakistan and the population consisted of the

III. WRITE DOWN YOUR STUDIES AND FINDINGS

households that have been affected by natural disasters between 2010 and 2017. The study period was from February 2020 to December 2020. Two phase sampling procedure was adopted where 16 villages were selected through convenience sampling as the universe of the study. In the second phase, the data was collected through snowball sampling. The number of villages designated in each district, and their names are specified in the following table:

Table.1 Number of Sample villages

S.No	Districts	Villages		
1	Gilgit	BaseenPayeen	Sakarkoi	KargahNullah
2	Hunza	AttaAbad	-----	-----
3	Nagir	Minapin	-----	-----
4	Shiger	Buldo	-----	-----
5	Kharmang	Gultari	-----	-----
6	Ghizer	Damas	Dalnati	-----
7	Astor	Loss	Parishing	-----
8	Diamer	GaisBala	Raikot	Thak Nullah
9	Skardu	Qumara	-----	-----
10	Ghanche	Thalis	-----	-----

As projected 113, 416 populations were affected by natural disasters between 2010 and 2017, based on this estimate; a sample size of 384 households was calculated. Data was collected though a well-structured questionnaire.

Table.2 Details of damages/losses-natural disasters in Gilgit-Baltistan from 2010-2017.

Year Wise	Population Affected	Villages affected	Houses affected	Deaths
2010 ¹	100,000	195	3538	183
2011 ²	NR	NR	120	NR
2012 ²	NR	NR	70	NR
2013 ³	150	01	14	
2014 ³	13266	17	1292	13
2015 ³	-----	-----	886	18
2016 ³	-----	-----		25
2017 ³	-----	-----	-----	07
Total	113,416	213	5,034	246

NR=No record

Source: 1. National Disaster Management Authority Pakistan, Islamic relief & WWF, 2010.

2. National Disaster Management Authority, 2011, 2014

3. Gilgit Baltistan Disaster Management Authority, 2017

DATA ANALYSIS.

Data was analyzed thorough statistical package for social sciences (SPSS). The data has also been presented in uni-variate tables. Descriptive and inferential statistic has been used for data analysis.

Three hundred eighty-four male and female respondents were included in the present study. An overwhelming number of the respondents 35.42% reported having an 'excellent 'or 'good

28.12% health status before they were affected by the disaster while 22.92% reported their health status as 'fair' and 13.54% reported themselves as being in 'poor' physical or mental health pre-disaster. The data shows pre-disaster general health status of the participant; majority of the respondents were having good health condition.

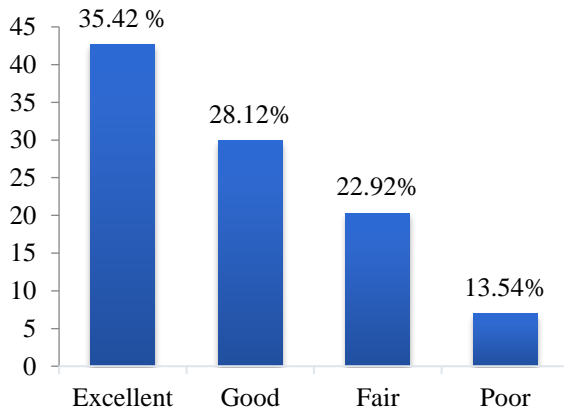


Fig.1. Health Status (Pre-Disaster)

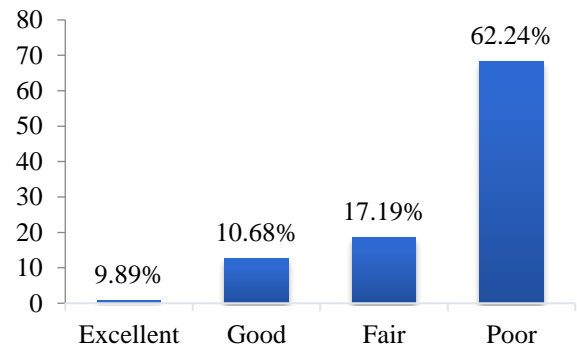


Fig.2. Health Status (Post-Disaster)

Post-disaster results showed a dramatic shift in respondents' general health status. Only 9.89% of respondents considered their health to be excellent following the disaster whereas more than half of the respondents 62.24% considered themselves in poor health. Almost 17.19% respondents graded their health as fair and 10.68% considered themselves in good health. As we compare to pre and post disaster health status of the participants, an enormous changing is to be found among the data. Pre-disaster overall general health status was found good, however post-disaster the situation changed, mostly participants reported poor health. Disasters do have negative impacts on human health as the respondents' awareness of their health status changes unambiguously post-disaster compared to before the occurrence of the disaster Fig.1.

Post-disaster detail of ailments that have affected the participants, 48.96% respondents suffered from eyes infection, more than half of the respondents 58.07% reported skin diseases and an enormous number 75% reported diarrheal diseases (Acute diarrhea, cholera, dysentery and food poisoning). 33.85% stated malaria and 29.17% indicated they were suffered from acute respiratory infection. Lowest proportion reported physical disability i.e. 2.86%. Due to displacement of large population and temporary sheltering in crowded condition, unhygienic practices, inadequate sanitation, unhygienic and shortage of food, contaminated water and malnutrition changed the health condition of the victims. Table.1 clearly shows post-disaster health condition of effected population.

Table. I. Post-disaster detail of diseases reported from victims

Details of diseases	n	%	n	%	Total n
	Yes		No		
Eye infection	188	48.96	196	51.04	384
Skin diseases	223	58.07	161	41.93	384
Diarrheal diseases	288	75.00	96	25.00	384
Malaria	130	33.85	254	66.15	384
Acute respiratory infection	112	29.17	272	70.83	384
Physical disability	11	2.86	373	97.14	384

The status of post-disaster diarrheal diseases among under five year's children. Majority of the respondents 53% reported after the occurrence of disaster their under five years' children

suffered from diarrheal diseases (acute diarrhea, dysentery, cholera, food poisoning) whereas 24% asserted that their children did not suffer from any diarrheal diseases and 23% respondents reported having no children that is **Fig.3**. Although, it is a fact that children are mostly affected by natural disasters, because they are in the process of both physical and mental development.

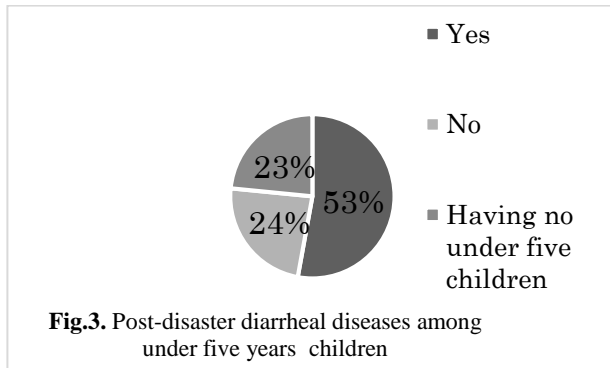


Fig.3. Post-disaster diarrheal diseases among under five years children

Pre-disaster depression level among respondents and their family was also shown. Overwhelming 60.16% respondents asserted that depression sign was not found among them or even in their family, while 26.56% reported minor level of depression, 8.59% respondents stated moderate level and 4.69% indicated that they or their family members were suffered from severe depression.

Table. 2.Pre-disaster depression level among respondents and their families

Depression Level	n=384	%
Minor	102	26.56
Moderate	33	8.59
Severe	18	4.69
No Depression	231	60.16
Total	384	100.00

Post-disasters intensified depression level dramatically changed among respondents or even in their family members. Most of the respondents 34.11% reported moderate level of depression found among them or their family. On the other hand, a significant proportion of respondents 28.13% stated severe while 23.44% indicated minor and 14.32% participants reported no depression signs found among them or even in their family members. Natural disasters indeed substantial impact on mental health of a person, because it destroys tangible resources, the association of mental illnesses and destruction of property or fatalities are deepest.

Table. 3. Post-disaster depression level among respondents and their families

Depression Level	n=384	%
Minor	90	23.44
Moderate	131	34.11
Severe	108	28.13
No Depression	55	14.32
Total	384	100.00

Natural disasters have significant negative impacts on economic sources and human health. It is not possible to fully protect people and physical infrastructure from natural calamities, but better planning and preparedness can reduce the human fatalities and economic losses [22]. Many studies have proved that natural calamities increase mortality, morbidity and mental illnesses. Angelin et al conducted a study on titled "Health impact of Chennai floods 2015. Observations were reported in a medical relief camp". According to the study 46.84% participants had acute respiratory tract infections and 14.41% with skin problems [23]. In our study 29.17% participants had acute respiratory infection and 58.07% reported skin diseases. Neelofar MR, Qadri H & Bhat RA illustrated that post disaster mental illnesses were high among the flood victims, 56% cases found to be post traumatic disorder and 44% reported depression aftermath of a disaster [24]. Pre and post-disaster mental health issues were compared. The study showed a huge deference among the data post-disaster mental health cases are high as pre-disaster, such as 28.13% severe depression and 34.11% moderate depression

cases reported. It is clear that the dominated health issues during the disaster were mental health illnesses. It has also been reported that the worldwide natural disasters affected 2.9 billion and 1.2 million people killed from 2002 to 2014 [25]. Keith Suter published a book on "global order and global disorder: Globalization and the nation-state in 2003. According to him natural calamities naturally attract media attention and donors. The report further reveals that in 1999 natural disaster were killed 80,000 people, and in the same year infectious diseases killed 13 million people around the world [26]. Kurg et al conducted a study entitled "suicide after natural disasters". They have taken 377 countries as sample that have been directly affected by natural disasters. Results of the study shows that during the four years of post-disaster period the suicide rates increased by 13.8 percent [27]. The present study, shows that the negative impacts of disaster on human health. A significant number of sufferers stated that before occurrence of the disaster their overall health condition was quite good but the situation shifted at once in post-disaster. Due to displacement of large population and temporary sheltering in crowded condition, unhygienic practices, inadequate sanitations, unhygienic and shortage of food, contaminated water and malnutrition completely changed the health condition of the victims. Majority of the people reported that they and their under-five year's children had experienced diarrheal diseases such as acute diarrhea, cholera, dysentery and food poisoning. Most of the people stated that they suffered from eyes infection, skin diseases, diarrheal diseases, malaria and acute respiratory infection. Mental illnesses also increased post-disaster because of deaths, injuries, destruction of property and economic losses.

IV. CONCLUSION

In summary, natural calamities are responsible to destroy healthcare facilities, disrupt routine health services, increase number of deaths, physical and mental disabilities, and drastically decrease quality of life.

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