EFFECTIVE CONTROL OF FLOOD CAUSALITIES THROUGH TORRENT MANAGEMENT FACTORS

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ABSTRACT: *The study identifies the key factors of flood management namely Torrent Management Factors (TMFs) and investigates that the main cause of occurrence of flood losses is an improper understanding of TMF factors. Therefore, communities suffer at a large scale the TMF elements are Flood Information System (FIS), Safe Mobility (SM) of Victims, Livestock, and Economic Goods. Availability of trained Life Guards, Boats, Transport Facility (TF), Logistics Services (LS) that helps moving and supply of precious economic goods, Food and Medicine Supply, (FMSS) Provision of Accommodation (PA) where victims can be accommodated for a certain period, and Financial Support for Torrent Victims (FSTV). In this connection, the data were collected through Focus Group Discussions (FDGs) from the victims of the megaflood that came in Pakistan in 2010. It was concluded that the main cause of occurrence of losses during the flood is an improper application of TMFs in the result heavy losses occur so it is suggested that TMF may be understood at a deeper level and while developing a strategy of protecting flood victims TMF may be considered accordingly.*

Keywords: Flood Causalities Management, Torrent Control Factors, Internally Displaced Persons, Phenomenon of Flood Losses, and Managerial Tool of Controlling Torrent.

INTRODUCTION

A flood can be defined as, rising-water level in which water exceeds its natural or artificial banks onto normally dry land it harms people as a whole society in numerous ways the catastrophe lasts for days and months. The flood sinks houses, streets, buildings with water, kill or severely injure human beings, livestock, and provide heavy economic loss. The magnitude of the flood could be as high as about 50 to 1,500 cubic feet per second ,1.4 to 42 m3/s [1] that completely block the normal way of living. As soon as flood conditions are declared people started moving into safe places. Almost floods occur the whole year and in all parts of the world. The magnitude of the flood, water level, and root cause varies somewhere it comes at high water speed, and sometimes its pressure is moderate [2].

THE TORRENT MANAGEMENT FACTORS (TMFs)

The TMFs are considered effective tools in torrent management that could be applied to control flood casualties, save the lives of people, reduce economic losses, and provide relief to victims. Whereas this fact is notable that one way or another way round during the occurrence of flood each government or flood support organization apply TMFs factors to assist flood victims nevertheless the foremost problem is that they are not applied in a proper way and required resources are not allocated to support victims[3]. Thus, in this article, it is investigated that when flood outbreaks, whether TMFs factors are applied to its actual scale, proper order, and for the required time period means the required help was given to victims or not. Let's say did flood victims got the proper facility of transportation from the torrent area to the safe zone, did sufferers got safe accommodation, food, medicine, financial support, were their economic goods saved. Did they get help in rehabilitation when they return to their homes after torrent [4]. If victims do not receive help at the required level, receive assistance till the required time period, or resources were not allocated according to their need, it is much expected that the magnitude of causalities can increase drastically to a higher level [5].

THE MAGNITUDE AND NATURE OF FLOOD

The flood can occur at different scales, hence it would be worthwhile in term of flood management to understand its magnitude and nature few essential aspects must be considered that is; to see the speed and flow of water, what geographic range it could affect at most, what is the root cause of flood-like river, ocean, rain or so on. The swiftness of water could be reckless or slow ,for example, if it occurs due to a tsunami the magnitude of the flood could be high, also the depth of the water level in a normal flood could be 01ft to 20 feet or still high [6]. The standard hydraulic methods are used to gauge the extent and frequency of flood, the Montana report 1992 on flood investigation defines that the size of the flood can be measured by multiple regression [7]. Hence, before going to further flood management, a government or relevant bodies declare emergency conditions and carry preparedness to support flood victims.

FLOOD MANAGEMENT APPROACH

The study was conducted in the light that the most of the casualties occur during a flood, as management is not fully aware of TMFs therefore, communities suffer at a large scale [8]. However, most of the flood losses can be reduced at a significant level if TMFs properly understood and applied. During flood, people need urgent assistance in different dimensions that could save their lives, such as in the first step to move them from the danger zone to safe area, to arrange transportation that helps them to travel to a safe place, they need food, accommodation. Medicine, communication facility, day-to-day supports, financial assistance, and rehabilitation [9]. However, it is noticed that at many places this practice is not followed properly, hence flood victims suffer in many ways they cannot travel to a safe place, unable to save their economic goods, find accommodation, food, medicine, and so on. Hence, it severely affects their lives and

their life became miserable [10]. Therefore, there is a dire need for government, managers, and flood relief teams to apply TMFs properly and in a logical order. In general, it is seen that the magnitude of the flood losses and mismanagement is higher in underdeveloped countries compared to developed countries[11]. In underdeveloped economies, government or torrent management organizations are unaware of proper management of TMFs, they often come across with scarcity of funds to assist victims effectively hence in the result they suffer heavy losses [12]. In some cases, a lack of transparency in the administration is observed so besides proper knowledge of flood management the torrent relief organizations have a deficiency of staff, logistics, food, and accommodation.

FOCUS GROUP DISCUSSION

This is explanatory research, which firmly focuses on key management factors to control flood calamities. The first-hand data were collected from megaflood victims of Pakistan qualitative and quantitative form through conducting numerous Focus Group Discussions (FGDs). The "Mega Flood" [13] came across Pakistan, especially in Sindh in 2010. The 2010 torrents were the vilest in the country's account. One-fourth of Pakistan's total land area was submerged, affecting about 20m people and killing over 2,000. The cost of the damage in Khyber Pakhtunkhwa, Punjab, Sindh, Balochistan, and Gilgit- Baltistan was estimated at over $43 billion [14].

The meetings with victims were organized in different cities of Sindh like Hyderabad, Dadu, and Jamshoro, Pakistan. The participants comprise of diverse age groups such as 15 to 65 years both male and female.

KEY PARAMETERS

a) Flood Information System (FIS)
b) Logistic Facility (LS)
c) Accommodation Facility (AF)
d) Medicine (MD)
e) LifeGuard (LG)
f) Financial Support (FS)
g) Communication Facility (*Victims communication to the government, relatives, media, and other stakeholders).*
h) Transport Facility and Safe Mobility (TF)
i) Overall Government Support (GS)

The main objective was to investigate whether victims received a facility of transport during a flood, food, supply of logistics, medicine, accommodation, safe mobility of their economic goods from the danger zone to a safe place [15]. Because of this study, it is generalized that in most of the places during torrent victims do not get the required support. Hence, if they provided full help comprised of TMFs the losses can be reduced at a significant level.

Table #01. Torrent Management Factors Analysis

Respondents	Gender	*AG	FIS	AC	MD
1	M/F	18-22	1	1	3
2	M/F	23-29	1	1	3
3	M/F	30-35	1	1	5
4	M/F	36-40	1.5	3	4
5	M/F	41-43	2	1	1
6	M/F	44-48	3	3	3
7	M/F	49-52	2	2	1
8	M/F	53-56	1	3	3
9	M/F	57-60	1	1	1
10	M/F	61-63	2	1	1

*10 Respondent= 100 (each age group comprises of 10 respondents), FIS= Flood Information System, AC=Accommodation= Medicine. Source: Primary Data Collection from Hyderabad, Pakistan 2020.

Table #02. Torrent Management Factors Analysis

Respondents	Gender	*AG	LG	FS	CF
1	M/F	18-22	1	1	3
2	M/F	23-29	1	1	3
3	M/F	30-35	1	1	4
4	M/F	36-40	1	1	4
5	M/F	41-43	2	3	5
6	M/F	44-48	3	2	1
7	M/F	49-52	4	2	2
8	M/F	53-56	2	3	2
9	M/F	57-60	1	4	3
10	M/F	61-63	1	1	1

*Respondent = 100 (each age group comprises of 10 respondents), LG= Life Guards, FS=Financial Support, CF= Communication Facility. Source: Primary Data Collection from Hyderabad, Pakistan 2020.

Table #03. Torrent Management Factors Analysis

Respondents	Gender	*AG	TP	GS
1	M/F	18-22	1	1
2	M/F	23-29	1	1
3	M/F	30-35	1.5	3
4	M/F	36-40	3	2
5	M/F	41-43	4	2
6	M/F	44-48	2	3
7	M/F	49-52	1	4
8	M/F	53-56	1	1
9	M/F	57-60	2	1
10	M/F	61-63	1	1

*10 Respondent = 100 (each age group comprises of 10 respondents), TP= Transport Facility, GS=Government overall Support till catastrophe exists. Source: Primary Data Collection from Hyderabad, Pakistan 2020.

RESULTS AND DISCUSSION

Table # 01, 02, and 03 shows flood factor management analysis. The flood factor is those facilities that should be provided during a flood to victims. The study helps in defining concrete factors that should be considered by the flood management team. When flood outbreaks do victim get

support in term of a transport facility that helps them to move from a dangerous to a safe place, do they get logistics in case they need life jackets, lifeguard, boat, first aid, necessary financial support to hire the facility of transport, buy food in an emergency, medicine or other necessary stuff, do they have the facility of communication, can they reach out to relevant departments such as government, or flood support unit to seek help, are they able to communicate with the medical department, lifeguards, boating service and so on, do they provision of accommodation if they move from flood area to safe place where they going to stay. These all are considered as flood management factors[16]. This study was conducted in the light that at what level flood victims were able to seek help during difficult flood times. In 2010 Pakistan faced a megaflood that claimed hundreds of; lives, victims suffered heavy economic loss whose value was in million, thousands of livestock were sunk all above hundred thousand people migrated from flood areas that were spread about over more than two hundred thousand square kilometers and displaced. So it was thought to define concrete management guidelines that supposed to be followed during flood conditions and that help managers in aging flood victims effectively[17]. So. Fundamental factors of flood management were devised if all flood managers or flood management team consider those fundamental factors accordingly flood causalities could be reduced at a significant level. Most of the losses occur due to mismanagement of Flood Management Factors (FMF) such as Flood Information System, Logistic Service of essential goods (LS), Accommodation Facility (AC) on a safe place, Medicine (MD) Life Guard (LG), Financial Support (FS) Communication Facility (CF) Transport Facility (TF) from dangerous area to safe place Government Support (GS) government should carefully take responsibility of victims and deploy all FMF in a flood area. The severe losses occur due to mismanagement of FMFs the Table #01, 02, 03 shows flood victims did not get satisfactory support of Flood Management Factors apart from some medicine victims did not get satisfactory help in transportation[18]. Logistic supply of necessary items such as medicine, moving of their economic goods to a safe place, accommodation in safe areas hence thousands of people were displaced, and most of the livestock were missing, the victims did not get any financial support on weekly or monthly basis hence they were highly desperate and most were bagged as they were unable to buy necessary things like accommodation rent, bills, food, clothes and so[19]. Most of the flood victims of 2010 in Pakistan did not provide food on an organized basis hence a lot of riots outbreaks due to hunger and many victims were gone into malnutrii0on besides various cases of robbery and other crimes were reported in flood victims. So in the light of the miserable conditions of megaflood victims, it is recommended that FMFs protocols were followed and victims get support in all flood factors[20].

CONCLUSION

The flood victims in Sindh Pakistan in 2010 did not get the necessary support, management was unaware of the protocol of flood management, and flood management guidelines were not pre-defined, hence hundreds of people died, injured, thousands of families were displaced, economic loos in millions of occurred, and the country experienced heavy catastrophe and this happened due to absence of pre-defined measurement of flood management [21]. Hence, FM factors were defined in this article those factors are Flood Information System, Logistic Service of essential goods (LS), Accommodation Facility (AC) on a safe place, Medicine (MD) Life Guard (LG), Financial Support (FS) Communication Facility (CF) Transport Facility (TF) from dangerous area to safe place Government Support (GS). If the government, philanthropists, flood management organizations follow this protocol and consider FMFs during flood conditions then a significant number of causalities can be reduced, lives of people can be saved, and they will secure. Most of the losses occur during floods not only in Pakistan but worldwide due to ignorance or improper management of FMFs [22]. Typically flood victims do not get the facility of moving from one place to another safe place, the logistic facility of moving their economic goods to a safe place in a short span of time, safe provision of accommodation in a safe area, weekly or monthly financial support to buy necessary things, poor medicine supply, lack of food. They have less facility of communication with relevant offices of government, the government ignores its role of facilitating flood victims hence they come across with great vulnerability [23]. Therefore, flood causalities can be reduced at significant levels if FMFs managed in a proper way that began from accepting responsibility by the government. As in some cases, government or responsible organizations do not take things seriously or ignore its sensitivity in the initial phase. Most of the time victims do not get flood factors to support that comprises of and victims suffered hugely for victims, can they report causalities to the relevant department to seek support, in Logistic (LS), Accommodation (AC), Medicine (MD). So through the application of proper management of Flood Management Factors (FLRs) many precious lives can be saved, people can be moved safely from dangerous place to safe area, victims will get food, medicine, accommodation, regular assistance, and financial support and their economic loss will be less at a significant level. In other cases, where FMFs are not applied in the proper way a common citizen suffers directly.

SUGGESTIONS

The TMFs applied before and after the occurrence of a flood. The government, flood management teams, or other relevant organizations may follow the protocol of Flood Management Factors. The regular training may be carried out at a macro and micro level from top to low management at the city to village level as a significant number of human resources development and they are prepared before the torrent. A suitable number of human resources may have appointed in municipalities; government administrative units besides emergency funds may be reserved that help in the time of torrent. A small booklet may be published that defines a full management process of pre and post-flood conditions. A suitable monitoring system may be deployed as all processes performed in a transparent way. All flood management factors and process of its application may be understood deeply as during emergency best measurements can be taken

and precious human life, economic goods, livestock can be saved.

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