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EVALUATION OF 2013 FLOOD DAMAGES IN PAKISTAN: A CASE STUDY OF AHMEDPUR EAST, BAHAWALPUR, PAKISTAN

Muhammad Mohsin

Department of Geography, Govt. S.A. Postgraduate College, Dera Nawab Sahib, Ahmedpur East, Bahawalpur, Punjab, Pakistan

ABSTRACT

Current study evaluated the damages of 2013 flood in Tehsil Ahmedpur East (Bahawalpur). For this, Basti Agrani, Mouza Bait Bakhtiari was selected as a study area for field survey. Total 61 respondents have been selected as samples and data had gathered through structured questionnaire using random cluster sampling. Simultaneously, field observation was also done and snaps of the destroyed fields and houses captured through digital camera. Findings revealed that in study area majority of the inhabitants have lost almost all of their possessions to furious flood. In this regard, 45.9% respondents have been faced the loss of 100,000-300,000 PKR, 24.6% faced the loss of 300,000-500,000 PKR. Among these, 70.4% were lost their standing agricultural crops whereas 14.7% were confronted with the losses of their houses etc. About 67.2% farmers have been destroyed their agricultural land holdings varies from 1-4 acres. Cotton was the chief crop that massively destroyed and 80.9% farmers lost their standing crop of cotton etc. After flood, 47.5% respondents were stayed in open sky without any roof, 31.1% were used un-safe places of trees and high terrain shelves to save themselves. Due to drinking contaminated water, 85.3% respondents were suffered in diseases. Among these, 73.2% suffered in Malaria etc. Only 53.9% respondents acquired treatment from their own expenses, 59% respondents have been faced the financial problems even to meet their daily needs. It is noteworthy that Punjab government granted the aid of 498.7 millions PKR for the flood victims those lost their houses. Furthermore, to save the human lives and precious properties of people study suggests; a comprehensive flood prevention plan should be design, there should be a pre-flood warning system to inform and evacuate the vulnerable people of flood prone areas timely, a trained anti-disaster force should be set up to rescue flood victims quickly etc.

Keywords: Flood 2013, Ahmedpur east, Cotton crop, Flood prevention plan, Flood prone areas.

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1. INTRODUCTION

Flood is one of the most catastrophic natural hazards of the earth damaging both for countries economy and humans. The damages of floods either direct in the form of casualties, loss of residences, property, agricultural land etc. or indirect damages relating temporary housing, communal break etc. (Jonkman and Bočkarjova M et al, 2008). Flood damages encompass a wide range of harmful effects from humans to public infrastructure, cultural heritage, ecological systems, industrial production and economy of the affected country (Messner and Meyer, 2005). At the same time, most of the flood victims fell devastated and are emotionally and psychologically traumatized (Ugwu and Ugwu, 2013). It is happened through out the globe but frequently occurred in countries of monsoon Asia like Pakistan, India, Bangladesh, China, Thailand etc. Among these, South Asia is the most vulnerable region of the world to climate change impacts i.e. floods etc. (McCarthy *et al.*, 2001). Therefore, most common water-related natural hazard in Bangladesh is flood (Ahmed, 2006). The causes of floods usually are melting of glaciers, river torrents and heavy rains that brought by monsoon winds. In 2011 flood in Thailand's was the most notable example of the impact of floods both on industries and the whole country's economy affected the main industrial sectors in Thailand i.e. the automotive and electronics industries (Haraguchi and Lall, 2013).

Pakistan is a country with diverse type of land and fluctuating pattern of climate. Climate is usually considered hot and dry in Pakistan but its shown significant conspicuous variations in last few years. Many districts and urban centers lying nearby to rivers are ever on a great risk to confront with different flood types i.e. Riverine flood, flash flood and urban flood particularly in Punjab province (Table 1). As a recent World Bank report warns Pakistan of the occurring of five major risks related mainly to climate change/global warming including floods and seriously threatens nearly half of the country's population (Khalil and Zaheer, 2013). From 2010 to onward Pakistan is frequently experiencing disastrous floods particularly the 2010 flood was most devastative (since the creation of Pakistan in 1947) in nature and cost huge sum of property, agricultural crops and a large number of human lives (Table 2). This is unprecedented and extraordinary in the known history of the Indus river system and the flood peaks were far in excess of the recorded historical floods (Haq and Zaidi, 2011). It has been estimated that the flood 2010 was a 600 years extraordinary event (IPD, 2011). This disastrous monsoon floods inundated an area as vast as the size of England (AFP, 2010).

Moreover, this flood have had affected 78 districts and inundated over 100,000 sq. km area affecting more than 20 million people (ADB and World Bank, 2010) with over 1,980 reported deaths and nearly 2,946 injured (National Disaster Management Authority (NDMA), 2010). About 3,246,361.7 acres of the cultivated area of field crops has been reported as destroyed throughout the affected areas (Agriculture Cluster, 2010). Mostly, Punjab is susceptible to a variety of disasters particularly floods in the province have caused heavy loss to life, property, infrastructure and livelihood of the people (Provincial Disaster Management Authority (PDMA), 2012). The overall estimated monetary loss in floods 2010 was 43 billion US dollars (Jassar Farms, 2010). Soon after, in 2011 another flood and heavy rains inundated most of the area in Sindh province and damages property and human lives.

In 2013, a similar flood likes 2010 damages many districts of Punjab including Bahawalpur, Vihari, Dera Ghazi Khan, Rajanpur, Narowal, Multan, Sahiwal, Muzaffargarh etc. Early estimates

have shown that 25 districts in Pakistan have been affected by floods (WHO, 2013) where 207 people have been died and 1,122 had injured in flood. More than 13,33,066 people have been affected in country due to flooding and over 12,48,644 acres of standing agricultural crops have been damaged (Table 3). Among all provinces and territories in Pakistan, Punjab has been severely affected by flood in all sectors (National Disaster Management Authority (NDMA), 2013). Later, on the basis of updates from different sources it is found that about 46 districts in Pakistan have been flooded in 2013 flood where 25 were located in Punjab province.

According to initial calculations made by the extension wing of the agriculture department, the worst hit standing crop was rice (100,000 acres) followed by cotton (70,000 acres) and sugarcane, fodder and vegetables.

Whereas in contrary, according to an expert of Agricultural Forum of Pakistan, cotton crop was the most affected crop with 265,000 acres losses in Punjab followed by 90,000 acres of rice and 25,000 acres of sugarcane (Ali, 2013). This flood and heavy rains caused damage and disruption in many urban centers of the country as well. Due to this flooding and heavy monsoon rains, over 51 people died and water paralyzed many parts of the Pakistan's largest city Karachi (Tribune, 2013).

History is evidenced that Bahawalpur is seldom faced flood hazard. First mentionable flood came in 1945 when the city was the part of Bahawalpur state (abolished in 1954) and affected the areas nearby river Sutlej i.e. Khanwah Khander, Goth Laskder, Jhangiwala, Dera Bakha etc. The next devastating flood was witnessed in 1988 and at that time much more damages have been occurred on both sides of the river Sutlej and people homes, installed tube wells, standing crops, model colonies and small industrial estate badly flooded (Auj, 1995).

After passing 25 years in 2013, heavy monsoon rains in upper parts of the country and huge volume of water released by India in river Sutlej (that is almost abandon from many years) caused flood in nearby areas of Goth Laskder, Jhangiwala, Dera Bakha etc. in Bahawalpur city. Due to high flood in river Sutlej, erosion had been inundated several villages and destroyed thousands of acres of crops from Minchinabad to Ahmadpur East in Bahawalpur.

In the consequence of a high tide in river Sutlej, several villages have been submerged due to breaches in embankments in different areas as hundreds of acres were submerged due to flood in river Sutlej and Chenab at Mauza Kachi Shikrani near Uch Sharif, Ahmedpur East due to a breach in an embankment (The News, 2013).

Thus, Ahmedpur East is one of the flood prone area in Bahawalpur that is regularly been facing severe flood damages since 2010. Flood 2013 also brought similar destruction in Ahmedpur East's many Union Councils (UCs) and Mouzas (Table 4).

Therefore, damages assessment of flood is essential to saving these financially backward and flood prone areas to formulate a comprehensive flood prevention plan and preparedness strategy to cope up the flood risks.

Table- 1. Flood Types and Areas at Risk in Punjab, Pakistan

Sr. No.	Flood Type	Rivers	Vulnerable Districts
1.	Riverine	Indus Jehlum & Chenab	Mianwali, Layyah, Muzaffar Garh, DG Khan and Rajanpur. Jheum, Sargodha , Khushab, Khanewal, Lodhran and Multan

		Ravi	Lahore / Shahdara, Gujranwala, Okara and Sialkot
		Sutlej	Pakpattan, Vehari and Bahawalpur
2.	Flash		Dera Ghazi Khan, Rajanpur, Mianwali, Sialkot, Sheikhupura and Lahore
3.	Urban		Rawalpindi, Lahore, Gujranwala and Faisalabad

Source: Provincial Disaster Management Authority (PDMA) (2012)

Table- 2. Estimates of Total Damage Cost of 2010 Flood by Sector

Sector	**Total Damages (Direct and Indirect) PKR millions**
Housing	135,014
Health	4,222
Education	26,464
Irrigation and Flood Management	23,600
Transport and Communication	112,911
Water Supply and Sanitation	9,306
Energy	26,300
Agriculture, Livestock & Fisheries	428,805
Private Sector and Industries	23,932
Financial Sector	57,251
Governance	5,976
Environment	992
Total	**854,773**

Source: ADB and World Bank (2010)

Table- 3. Flood Damages in Pakistan 2013 (as of 02 September 2013)

Human		**Infrastructure**			**Livelihood**	
Damages	No.	Damages	No.		Damages	No.
Person Affected	13,33,066	Villages Affected	5,502		Cropped Area Affected (acres)	12,48,644
No. of Deaths	207	Houses Damages	Partial 41,060	Full 19,102	Cattle head perished	4,812
No. of Injuries	1,122					

Source: National Disaster Management Authority (NDMA) (2013)

2. STUDY AREA

Tehsil Ahmedpur East is one of the five tehsils of Bahawalpur district (Figure 1). It is lies between latitude 29°-09′ N to 29°-15′ N and longitude 71°-16′ E to 71°-26′ E and bordered by north to Multan and Muzaffargarh districts, on east tehsil Bahawalpur, on west district Rahim Yar Khan and on south tehsil Yazman. It is comprised the area of 1,707 sq. km. and had population of 718,297 (District Census Report (DCR), 1998) that now estimated to crossed over 1 million. It has 34 UCs (a combination of few Mouzas) where 5 are urban and 29 are rural and 187 Mouzas (TMA Ahmedpur East, 2013). Ahmedpur East has a rich historical background and home of many ancient palaces i.e. Sadiq Garh Palace, Qadeem Mahal (Palace) and Jamia Masjid Chowk Bazar etc. and was also the centre of interest and activities for Nawabs (rulers) of former Bahawalpur State. The climate of the area is usually hot and dry and it received rainfall about 20-25 cm annually. Economy of the area is based on agriculture and it has a special place for the production of many

crops i.e. Wheat, Cotton, and Sugarcane etc. and also a well known market of mangoes, dates, citrus etc. (Wikipedia, 2013).

Table- 4. Total Flood Damages of Agricultural Crops in Ahmedpur East

No. of Mouzas Affected	No. of Owner/ Farmer Affected	Total Crop Area Affected (Acres)
24	4,510	17,860.5

Source: Agriculture (Extension) Department of Ahmedpur East (2013)

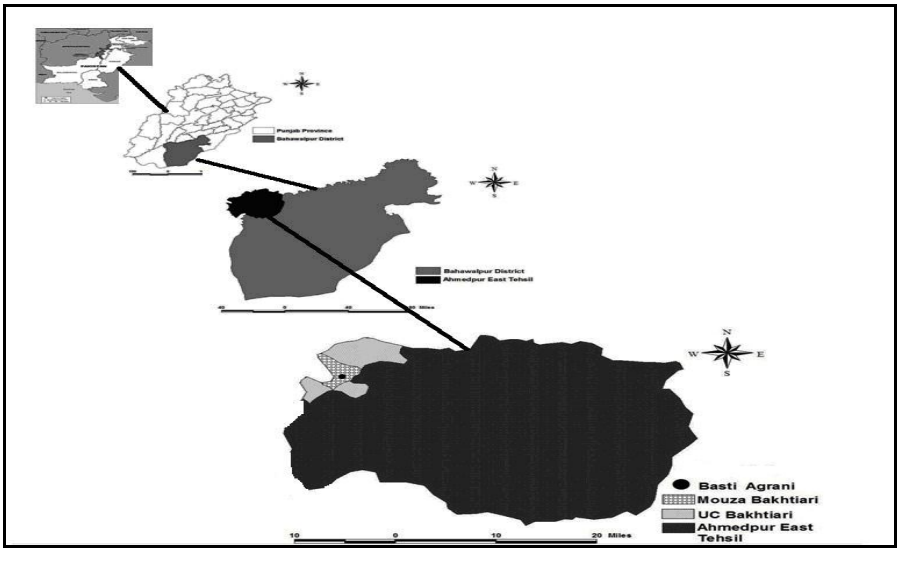
3. OBJECTIVE OF THE STUDY

The main objective of the study is to evaluate the damages caused by 2013 flood in tehsil Ahmedpur East.

4. DATA COLLECTION AND METHODOLOGY

To achieve the desired objective of the study both primary and secondary data was employed. A detailed field survey was conducted in September 2013 to the flood affected areas of tehsil Ahmedpur East. Basti Agrani, Mouza (small revenue state comprising few villages) Bait Bakhtiari is selected as a sample area that was one of the severely flooded areas (Figure 1). Primary data had been collected through structured questionnaire from 61 respondents using random cluster sampling method. Apart, field observation was also keenly viewed the destroyed properties and agricultural crops and snapshots were taken using digital camera. Secondary data was collected from Agriculture (Extension) department of Ahmedpur East, Tehsil Municipal Administration (TMA) of Ahmedpur East, Crop Reporting Service (CRS) of Agriculture department of Bahawalpur and different news reports and views. After that data was processed and tables and graphs were prepared in MS Excel. Maps of the study area were constructed using ArcView 3.2a software.

Figure- 1. Location Map of Study Area in Ahmedpur East Tehsil



Source: Author (2013)

5. BRIEF OVERVIEW OF THE FLOODED AREA: BAKHTIARI

Union council (UC) Bakhtiari is situated on north western corner of the Tehsil Ahmedpur East and on the edge of river Punjnad. The total population of the UC is 18,266 (TMA Ahmedpur East, 2013). Flood 2013 brought a large scale destruction of these financially poor and flood prone areas lying along the southern banks of river Punjnad. It is noticed that damages have been done in many Mouzas of UC Bakhtiari i.e. Bait Bakhtiari, Mouza Shikrani, Chak Kehal, Mouza Jagir Sadiq Abad, Bait Ahmad etc. Particularly, Bait Bakhtiari remarkably effected from 2013 flood (Table 5). Almost, 85% area of Mouza is inundated with flood water along with 933 farmers and owners affected significantly. Total crop area of 2,969 acres of standing crops was seriously destroyed (Agriculture (Extension) Department of Ahmedpur East, 2013). Total area of the Mouza is 3,477 acres (Crop Reporting Service (CRS) of Agriculture Department of Bahawalpur, 2005) and population is 3,917 (TMA Ahmedpur East, 2013). Study site Basti Agrani, Mouza Bait Bakhtiari where the survey was conducted was a typical poor rural dwelling of about 350 residents where majority has hand to mouth earning and cultivate the crops of some big land lords of the surrounding areas. They have mud bricks and straw made houses and muddy streets. Residents that were asked about the flood damages were seen in miserable situation and lost almost all of their possessions to the furious flood particularly standing crop of cotton. According to them, a severe tide of flood came at the late night of 24 August 2013 on 2:14 AM and rapidly inundated their houses, crops and cattle along their sheds. They hardly survive themselves and their children to climb on trees and high terrain shelves. Moreover, they have not received any pre-flood warning from any source. At the time of survey, they were still deprived any relief from government after passing the period of almost one month.

Table- 5. Flood Damages of Agricultural Crops in Mouza Bakhtiari

No. of Owner/ Farmer Affected	Total Crop Area Affected (Acres)	%age of Mouza Affected
933	2,969	85.0

Source: Agriculture (Extension) Department of Ahmedpur East (2013)

6. EVALUATION OF FLOOD DAMAGES

The damages of flood cover a wide range of harmful impacts both for humans and physical objects i.e. houses, agricultural land, roads etc. (Table 6). Similarly, the scale and magnitude of floods destruction also greatly influence the flood hit area. The flood 2013 brought a profound devastation in study area Basti Agrani, Mouza Bait Bakhtiari. Flooded people have lost almost all of their possessions (houses, property, agricultural land etc.) and people financially faced immense difficulties even to fulfill their daily needs. The main losses of people are given below;

Table- 6. Different Flood Damages

Flood Damages	Tangible and Priced	Intangible and Un-priced
Direct Damages	• Residences • Capital assets and inventory • Business interruption (inside the flooded area) • Vehicles • Agricultural land and cattle • Roads, utility and communication infrastructure • Evacuation and rescue operations • Reconstruction of flood defenses • Clean up costs	• Fatalities • Injuries • Inconvenience and moral damages • Utilities and communication • Historical and cultural losses • Environmental losses
Indirect Damages	• Damage for companies outside the flooded area • Adjustments in production and consumption patterns • Temporary housing of evacuees	• Societal disruption • Psychological Traumas • Undermined trust in public authorities

Source: Adopted from Jonkman and Bočkarjova M et al (2008)

6.1. Financial Losses of People

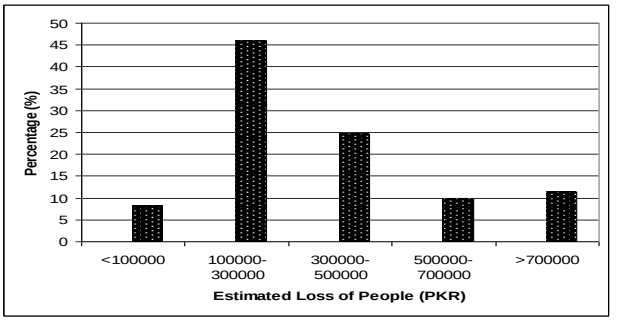
Table 7 and figure 2 depict that in study area 28 (45.9%) respondents have been faced the loss of 100000-300000 PKR, 15 (24.6%) respondents faced the loss of 300000-500000 PKR whereas 5 (8.2%), 6 (9.8%) and 7 (11.4%) respondents have faced the financial loss of <100000, 50000-600000 and >700000 PKR respectively. These results demonstrates that majority of respondents in study area were belonged lower class farmers wherein many were lived under poverty line. These losses severely affected their livelihood as well.

Table-7. Financial Losses

Estimated Loss (PKR)	<100000	100000-300000	300000-500000	500000-700000	>700000
Respondents	5	28	15	6	7
%age	8.2	45.9	24.6	9.8	11.4

Source: Field Survey (2013)

Figure-2. Financial Losses of People



Source: Field Survey (2013)

6.2. Losses Classification with Regard to Severity

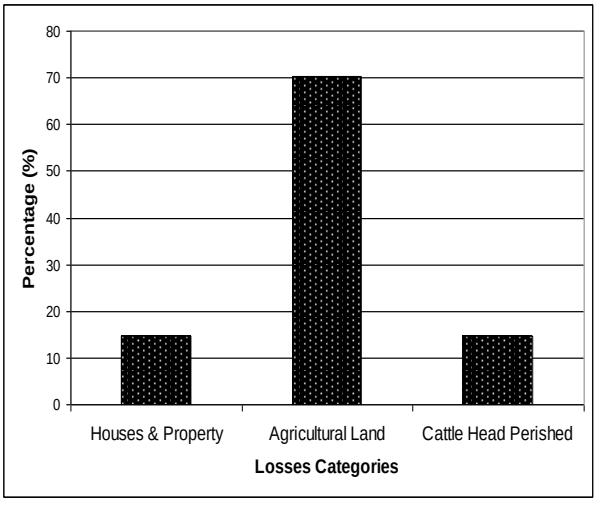
Table 8 makes it clear the major sectors of flood damages. Majority of the respondents (43) that have the corresponded share of 70.4% were lost their standing agricultural crops the biggest earning source of these unfortunate people. These people were mainly the peasants that cultivate the agricultural lands of landlords residing in surrounding Mouzas and were unable to pay the lease money of agricultural land. Respondents that faced the losses of their houses, property and cattle head perished were 9 (14.7%) each. During survey, they were still building their damaged houses that completely destroyed by furious tide of flood. Fortunately, they haven't loss any human life.

Table- 8. Major Losses

Losses Classification	Houses & Property	Agricultural Land	Cattle Head Perished
Respondents	9	43	9
%age	14.7	70.4	14.7

Source: Field Survey (2013)

Figure- 3. Major Losses in Flooded Area



Source: Field Survey (2013)

Plate- 1. A Collapsed Roof in Study Area

Source: Author (2013)

Plate- 2. A Damaged Mud Brick Room

Source: Author (2013)

6.3. Inundated Agricultural Land

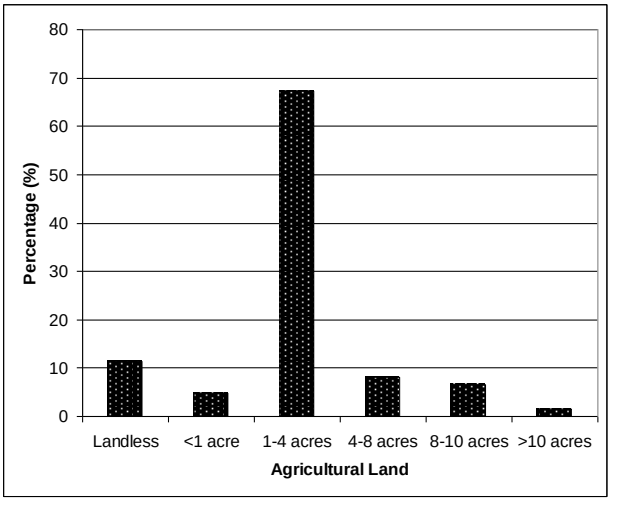
Agricultural land was badly affected by flood in study area. Table 9 depicts that majority of the respondents (41) have agricultural land holdings ranges from 1-4 acres and have the share of 67.2%. These were mainly peasants that cultivate the lands of land lords and pay huge money of about 30,000 PKR per acre to these land owners. But due to the flood they were unable to pay the lease money. While, 7 (11.4%) respondents were landless, 3 (4.9%) have less than an acre land, 5 (8.2%) have the agricultural land holdings of 4-8 acres, 4 (6.5%) have 8-10 acres and only one respondent have agricultural land of more than 10 acres. These results cleared that in study area majority of the people were small farmers having little amount of agricultural land.

Table- 9. Inundated Agricultural Land

Agricultural Land (Acres)	Landless	<1 acre	1-4 acres	4-8 acres	8-10 acres	>10 acres
Respondents	7	3	41	5	4	1
%age	11.4	4.9	67.2	8.2	6.5	1.6

Source: Field Survey (2013)

Figure-4. Inundated Agricultural Land



Source: Field Survey (2013)

6.4. Crops Grown on Inundated Land

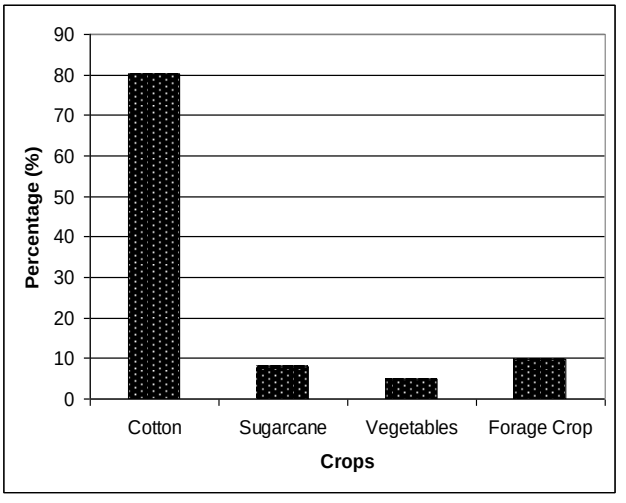
Table 10 and figure 5 make it clear that in flooded agricultural land Cotton was the chief crop that extensively ruined and 49 (80.9%) respondents lost their standing crop of Cotton (Plate 3). Remaining people have little share in overall destroyed crops proportion. Among these, 5 (8.1%) respondents lost Sugarcane crop, 3 (4.9%) lost grown Vegetables and 6 (9.8%) lost forage crops of their cattle. These results suggest that due to the loss of Cotton crop the financial and other linked difficulties of respondents extremely raised and their daily life badly effected.

Table- 10. Major Crops of Flooded Area

Major Crops	Cotton	Sugarcane	Vegetables	Forage Crop
Respondents	49	5	3	6
%age	80.3	8.1	4.9	9.8

Source: Field Survey (2013)

Figure- 5. Major Crops of Flooded Area



Source: Field Survey (2013)

Plate- 3. Destroyed and Inundated Cotton Crop

Source: Author (2013)

6.5. After Flood Household Movement

Table 11 and figure 6 show that after flood majority of the respondents lost their shelter and been forced to stay at risky points therefore 29 (47.5%) respondents were stayed in open sky without any roof. Whereas, 19 (31.1%) respondents were used un-safe places consisted of trees and high terrain of land for own survival. These people were also been endangered from flood's water and mosquitoes attack. About 13 (21.1%) respondents were moved to their relatives lived in nearby

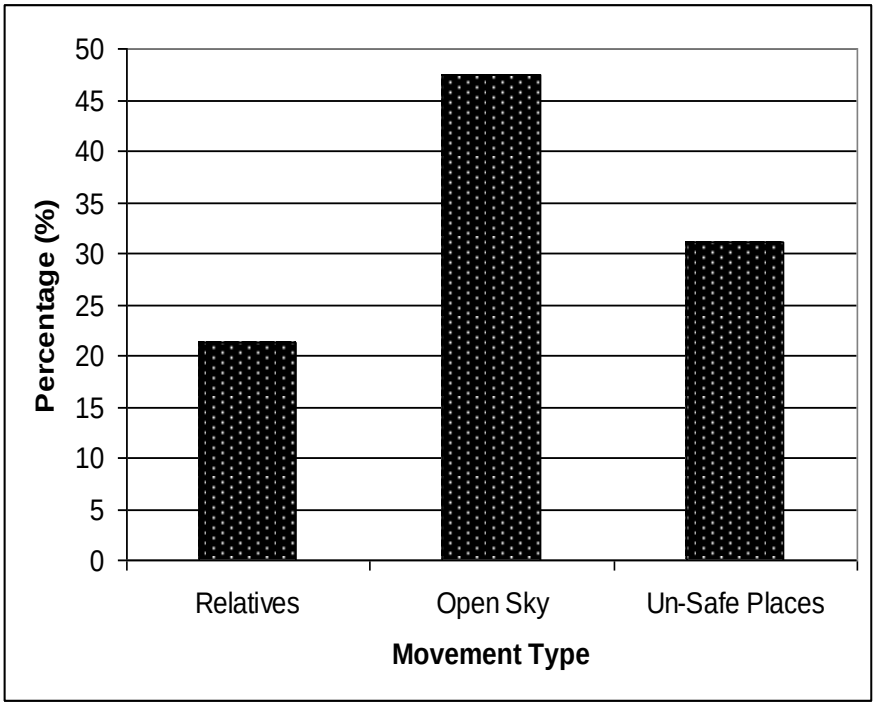
villages. These results portrayed that flood 2013 also caused major damage to villagers' houses and properties and a large proportion of innocent people were exposed to great risk of flood associated dangers. Notably, no one move to government's established relief camp. This is because of these relief camps were located far a distance from this flooded area.

Table- 11. After Flood Household Movement

Movement Type	Relatives	Open Sky	Un-Safe Places
Respondents	13	29	19
%age	21.3	47.5	31.1

Source: Field Survey (2013)

Figure- 6. After Flood Household Movement



Source: Field Survey (2013)

6.6. Family Members Suffered in Diseases

Table 12 depicts that in study areas 52 (85.3%) out of 61 respondents suffered in diseases mainly by drinking stagnant flood water that was polluted by biological and chemical contamination (Plate 4). While 9 (14.7%) fortunate respondents remained safe from diseases.

Table- 12. Family Members Suffered in Diseases

Option	Yes	No
Respondents	52	9
%age	85.3	14.7

Source: Field Survey (2013)

6.7. Main Diseases

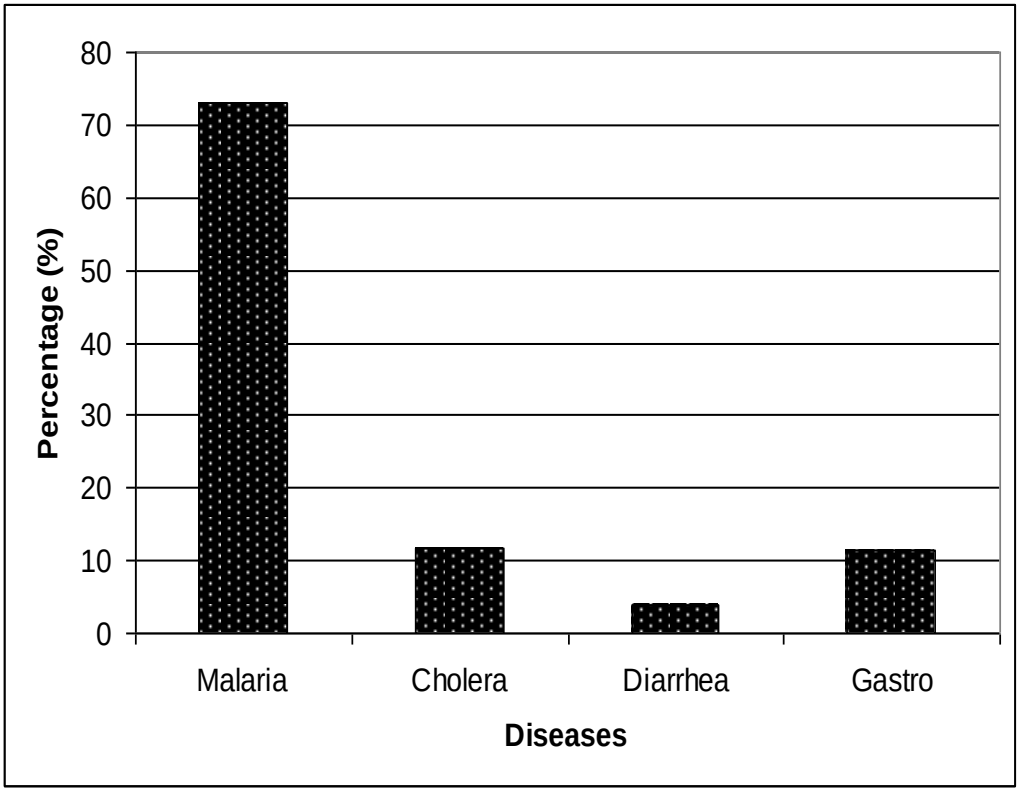
The main out broken diseases in flooded area were waterborne (Table 13 and Figure 7) where 38 respondents family members (73.2%) suffered in Malaria one of the most wide spread waterborne disease in Pakistan and worldwide. The unhygienic conditions of the people and stagnant flood water created suitable environment for the breeding of mosquitoes that caused the wide spread of disease. While, small numbers of people also undergo other diseases i.e. 6 (11.5%) respondents each were suffered in Cholera and Gastro and 2 (3.8%) respondents suffered in Diarrhea. Hence, Malaria incidence was the most fatal for poor people of the study area that mainly effected the children and infants.

Table- 13. Main Diseases

Diseases	Malaria	Cholera	Diarrhea	Gastro
Respondents	38	6	2	6
%age	73.1	11.6	3.8	11.5

Source: Field Survey (2013)

Figure- 7. Main Diseases in Study Area



Source: Field Survey (2013)

Plate- 4. Stagnant Polluted Water in Study Area

Source: Author (2013)

6.8. Treatment Source

Table 14 makes clear that in study area 28 (53.9%) respondents received treatment whereas 24 (46.1%) respondents were not able to take cure form any mean due to the financial problem. Moreover, these 28 respondents got treatment from their own expenses (Table 15) and no government or non-governmental organization's (NGO) medical team was arrived in this calamity-hit area to rescue the poor inhabitants.

Table- 14. Received Treatment

Option	Yes	No
Respondents	28	24
%age	53.9	46.1

Source: Field Survey (2013)

Table- 15. Treatment Source

Source	Govt. Medical Staff	Private Cure	NGOs Medical Staff
Respondents	Nil	28	Nil
%age	0.0	100	0.0

Source: Field Survey (2013)

6.9. Major Problems of People Facing after Flood

Table 16 displays that in study area 36 (59%) respondents have faced the financial problems to meet their daily needs. Among these, majority was belonged to poor peasants and was facing great difficulties to pay lease money to land owners. Besides, 13 (21.3%) respondents have faced difficulties in provision of food to their families, 8 (13.1%) have been facing the problems of medical cure and 4 (6.6%) respondents were wandering for the search of shelter after damaging their houses. In these poor circumstances, the announcement of Punjab's government aid of 498.7

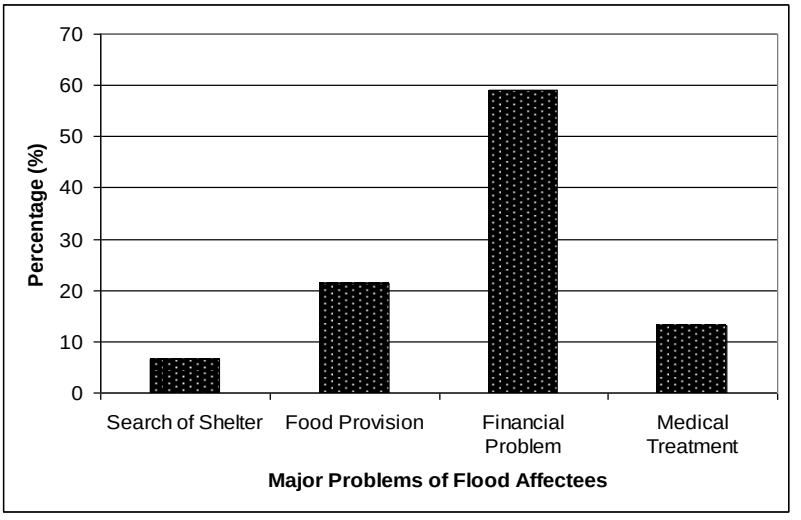
millions PKR for the flood victims of twenty five districts in the province those lost their houses and properties brought a ray of hope (Nawai Waqt, 2013).

Table- 16. Major Problems of Flood Affected People

Problem	Search of Shelter	Food Provision	Financial Problem	Medical Treatment
Respondents	4	13	36	8
%age	6.6	21.3	59	13.1

Source: Field Survey (2013)

Figure- 8. Major Problems of Flood Affected People



Source: Field Survey (2013)

7. CONCLUSION AND SUGGESTIONS

Flood one of the catastrophic natural hazards of the earth damaging both for countries economy and humans. It is happened through out the globe but frequently occurred in countries of monsoon Asia like Pakistan, India, Bangladesh, China, Thailand etc. Pakistan is a country with diverse type of climatic patterns and regularly been facing floods since 2010. Particularly, 2010 flood extremely affected country's economy and humans, inundated over 100,000 sq. km area and affecting more than 20 million people (ADB and World Bank, 2010) with over 1,980 reported deaths and nearly 2,946 injured (National Disaster Management Authority (NDMA), 2010). Similarly, flood 2013 also brought a massive destruction in Pakistan, 207 people have been died and 1,122 has injured. More than 13,33,066 people have been affected throughout the country and over 12,48,644 acres of standing agricultural crops have been damaged in 25 districts of Pakistan including Bahawalpur (National Disaster Management Authority (NDMA), (2013) and WHO (2013).

Ahmedpur East tehsil in Bahawalpur district also seriously flooded and many UCs and Mouzas inundated with flood water. Total 24 Mouzas flooded with 4,510 affected farmers and owners and 17,860.5 acres of standing crops mainly cotton were destroyed. Mouza Bait Bakhtiari in Ahmedpur

East was the most severely affected area by flood. Almost 85% area of the Mouza flooded with 933 affected farmers and 2,969 acres of destroyed crops (Agriculture (Extension) Department of Ahmedpur East, 2013).

Basti Agrani, Mouza Bait Bakhtiari is a typical rural dwelling that was completely eroded in flood 2013. Field survey results have been proved that majority of the inhabitants have lost almost all of their possessions to furious flood particularly financial deprivation seriously effected the life of inhabitants. In this regard, 28 (45.9%) respondents have been faced the loss of 100,000-300,000 PKR, 15 (24.6%) faced the loss of 300,000-500,000 PKR whereas 5 (8.2%), 6 (9.8%) and 7 (11.4%) have faced the financial loss of <100,000, 50,000-600,000 and >700,000 PKR respectively. Among these, 43 (70.4%) were lost their standing agricultural crops whereas 9 (14.7%) were confronted with the losses of their houses, property and cattle head perished each. Farmers having destroyed agricultural land holdings varies the size of 1-4 acres were 41 (67.2%) mainly the peasants that cultivate the lands of land lords. While, 7 (11.4%) were landless, 5 (8.2%) have the agricultural land holdings of 4-8 acres, 4 (6.5%) have 8-10 acres etc. Cotton was the chief crop that extensively ruined and 49 (80.9%) farmers lost their standing crop of Cotton. Remaining 5 (8.1%) respondents lost Sugarcane crop, 3 (4.9%) lost grown vegetables and 6 (9.8%) lost forage crops. After flood, 29 (47.5%) respondents were stayed in open sky without any roof, 19 (31.1%) were used un-safe places of trees and high terrain shelves and 13 (21.1%) were moved to their relatives lived in nearby villages. Due to drinking contaminated water, 52 (85.3%) out of 61 respondents were suffered in diseases while 9 (14.7%) remained safe. Among these, 38 (73.2%) suffered in Malaria, 6 (11.5%) in Cholera and Gastro each etc. About 28 (53.9%) respondents have been acquired treatment from their own whereas 24 (46.1%) were not able to take cure as 36 (59%) respondents have been faced financial problems, 13 (21.3%) have been faced the difficulties in provision of food to their families, 8 (13.1%) have been faced the problems of medical cure and 4 (6.6%) were being wandered for the search of shelter. Hence, flood 2013 brought a considerable damage in all areas of life in study area and inhabitants' daily life chiefly affected with numerous problems and calamities. They were found in miserable conditions and waiting for relief. In this regard, it is noteworthy to mention the Punjab government's relief aid of 498.7 millions PKR for the people of 25 flood hit districts in the province those lost their houses etc. (Nawai Waqt, 2013).

In order to save the human lives and precious properties of people from flood this study suggests; concerned authorities should design a comprehensive flood prevention plan, there should be a pre-flood warning system to inform and evacuate the vulnerable people of flood prone areas timely, a trained anti-disaster force should be set up to rescue flood victims quickly, new dams should be built to store the additional water of rivers and rain to save from flood, embankments and supers should be built around settlements and sensitive places, government should be provides seeds, fertilizers and pesticides etc. to flood effected farmers, an efficient rehabilitation and restoration strategy should be formulate by district governments for the relief of flood victims, effective flood preventive strategies should be convey to public for avoid and reduced flood damages etc.

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