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How Effective The Health & Hygiene Sector Revitalization Interventions In The Flood Hit Area Of Swat.

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Abstract: *The key objective of the study was to know the health and hygiene situation in the area, after the Interventions initiates by government and non government organization (NGOs) in the flood hit area of swat. A sample size of 265 respondents was randomly selected from the total population. For the comparison of before and after flood situation of local people associated with health and hygiene sector, paired sample T-test was used. The result show a highly significant reduction in cases of diseases due to health and hygiene sector rehabilitation (P=0.000) was observed, moreover there was an significant increased in number of water supply tanks (P= 0.000), increases in length of sewerage lines (P=0.000), was observed due to community infrastructures revitalization intervention. The study found that the health & hygiene sector intervention had improved the general heath conduction in the area, by effectively controlling various diseases. Similarly the community infrastructures revitalization interventions were also found effective in reconstruction of water supply tanks and sewerage lines in the area. Due to improvement in the health, hygiene and community infrastructures in the disaster effected area, it is vital to persist such program for full rehabilitation of health & hygiene and community infrastructure, and also should be taken as model in the feature disaster situations in the country.*

Kew words: *Flood, Health & hygiene, Revitalization, health Infrastructures*

1. Introduction

The occurrence of natural catastrophe has been mounting over the time, consequential in loss of life, damage to material goods and devastation of the environment. The number of citizens at danger has been mounting each year and the bulk are in developing countries with elevated poor quality levels of living making Them further at risk to calamity [14]. A disaster is define as "incident that causes destruction, environmental disturbance, loss of human life, worsening of physical condition and health services on amount enough to deserve an extraordinary response from outside the affected population area". [15].

The World Confederation for Physical Therapy concluded that there is no state that is immune from disaster, while susceptibility to disaster varies. Most Common types of disaster, which upset the standard life of inhabitants and has most horrible affect on environment are natural disaster which are floods, earthquakes, hurricanes, snowstorms thunderstorms and blizzards, cold spells, heat waves, volcanic eruptions, sand, or dust storms frost droughts that can have immediate impacts on human health and social economic apprehension on community.[13]. The floods are the most important source of natural catastrophe casualty's globally and were held responsible for 6.8 million deaths in the 20th century. Asia is the most deluge affected region, accounting for almost 50% of deluge related victims in the last quarter of the 20th century. [5].

According to the Center for Research on the Epidemiology of Disasters (CRED), a major increase of water height in a watercourse, lake, dame or coastal region are to be defines as flood. [6]. The world health organization in its report on flood effects on human health separated the health aspects into two main categories, the direct effects death, injuries caused by the flood waters, the water-borne infections, vector-borne illness, severe effects of disclosure to chemical pollutants released into deluge waters are the indirect effects caused by the flood. The numeral of casualty related with deluge is closely linked to the life-threatening dis-

tinctiveness of deluge and to the behavior of sufferers. Subgroups exposed to unfavorable health effects of deluge include women elder and children. [16] The emergency relief activated is a harmonized multi-organization comeback to diminish the consequence of an emergency situation and its long-standing outcome. Relief activities comprise saving, repositioning, distributing food item and water, providing medical help and preventing disability and urgent situation health care services .Recovery efforts cover restoration health infrastructure, in large medical sector rehabilitation. [13]

According to the National Disaster Management Authority, the July 2010 floods have worst ever flood in the country history science independence, because the flood rings destruction across the country. The 2010 flood done destruction in seventy-eight districts, affected more than 20 million people and 100,000 square km area affected in the countryside. In the number of death caused by the 2010 flood were 1,980 and more than 2,946 people injured in the country. The 2010 floods also affected public health infrastructure like Basics Health Unite (BHU) and dispensaries, water supply, drainages system in the area. Out of total 9,271 health facility 515 were either partial or completely damage, while In Khyber Pakhtunkhwa and Sindh the total health facility 11% in the worst affected district were damage in the flood. The majority of effected healthcare facilities were in rural area and providing basic health services to the local residents. The estimated cast required to revitalize the health infrastructure are around $50 million. [7]

In 2010 flood Khyber Pakhtunkhwa were the leading province in which 1015 people lost their lives and around 1000 people got severe injuries. Swat was among worst effected district in which alone286 people died and 100 injured, further in Khyber Pakhtunkhwa 3.8 million people affected, and 1.5 million loss shelter, 100 health facility, 1300 water supply sources have destroyed in various part of the province. [9].

Shabir concluded in its report the major Achievement of the relief activates in health and hygiene sector revitalization in the disaster affected area were effective and need base in which government through his various partner provided 20 million medical consultations, 250 million water purification tablets, 160,470 hygiene kits, 428 tons of medicines were distribution among the flood victim. Further in water and Sanitation hygiene 11,341 water purification buckets, and establish 3896 water purification units and also 45 de watering pumps in the disaster affected area in the country [11].

The united nation in its deluge aid report concluded that the start of the flood last year, world health organization (WHO) through the health area partners has provided crucial life saving medication wrap to 14 million flood hit people, as well as 323,500 diarrheal interventions by 647 diarrheal sickness kit, 1,486 prime healthcare parcels, 42 interagency urgent situation health kits, 311 sensitive respiratory illness kits, 138 transportable health kits, 101 fundamental healthiness kits and five shock kits. Moreover 930 anti-snake venom, 459 anti-rabies vaccines, and 168 diphtheria antiserum and malaria life saving drugs were distributed, in suitable reaction of alerts and emergency situation. [12]

Further the united nation in its report mention that priority was children form age range of 6-59 month, in which about 12 million kids were provided vitamin A supplementation. The deluge hit area people no access of safe drinking water, no proper sewerage line, and poor cleanness situation caused different illness, like cholera and diarrhea, so the world health organization provided health services through it medical worker in deluge hit people in both fix and mobile health services to more than 100,000 ill individual in the area.[12] IRSP the Integrated Regional Support Program in its project report concluded the catastrophe have worst affect on supply of safe drinking water and sewerage system in the area, so in order to revitalized of safe drinking water and sewerage system in flood hit area, the organization provided drinking water to 11,019 people form 10 newly install boreholes and re function two damage water scheme in the area. Further structure 40 demo toilet and 3 public and 10 school latrines has been structured. Encouragement of secure cleanliness practice with Integrated Water Resource Management (IWRM) under this 43 cleanliness sessions held with 1309 persons together with 520 men, 655 women and 134 children. IEC substance has been developed and spread among people on cleanliness activity, clean water habit and cleanliness [4].

The environmental protection society in its reported stated that through health revitalization intervention cleanliness kits was provided to 1750 disaster hit people, and to bring awareness among affected community 28 consultation meeting arranged, and provided guideline to 900 in which 691 male and 209 kids about safe health activated in different area of swat. And also 6 water tanks were established in the area, due to which 3113 family and 21792 affected people was access to clean drinking water [2].

UNICEF in its report stated that the organization help the earthquake hit community in providing 160,000 cleanliness kits dew to which about 1.1 million people are safe health activity. For further improvement of situation 2,100 health worker networks developed and provide immunization of children aged 6 months to 15 years against

various disease and developed 99 basics health facility in the area. In the health & hygiene awareness program distribute of cleanliness messages to 1.5 million people on harmless water user, latrine usage and hand washing with soap and widen School cleanliness and sanitation instruction messages to 303,000 students. Further the program change the cleanliness manners of 900,000 people [17].

2. Methods and Material

The study was carried out on effectiveness of health & hygiene rehabilitation programs in the disaster affected area of swat. Sketch on a technique devised by Sekaran [10] a sample size of 265 respondents was randomly drawn from the population and interviewed. The present study is supposed to compare present situation of health & hygiene, community infrastructure rehabilitation before and after interventions. So paired sample t test was used which is given as follow [3].

$$t = \frac{\bar{d}}{\sqrt{s^2 / n}}$$

3. Results and Discussion

3.1. Respondent's perception about Health and hygiene interventions

Frequency and percentage distribution of respondents regarding health and hygiene intervention is given in table.1. A majority of 82.3% respondents agreed that health intervention were sufficient, Similarly 81.9% respondents stated that qualified doctors were available for health care, 79.6% respondents stated that the services provided by doctors were free of cost, 84.5% respondents view that the medicine were of good quality, 81.5% respondents received medicine free of cost, 89.8% respondents view that clean drinking water and sanitation facilities are available in the area now, 86.4% respondent's view that now they have knowledge of health and hygiene,. 81.4% respondents stated that toilet facilities were provided to them. The result is supported by various reports in which these organization assisted affected people, the world health organization during 2010 flood worked closely with other health sector organization and provided necessary services to 14 million flood affected people and also the doctor and other medical staff worked in clinics in Punjab and Sindh has provided primary healthcare services in both fixed and mobile clinics to over 100,000 patients, furthermore the EPS constructed 6 water supply scheme in different area of swat, which provided safe drinking water to 3113 household and 21792 persons, and also on dirtiness intervention 900,000 people cleanliness behavior changed.[12,2,17]

Table.1. Frequency and Percentage Distribution of Respondent's perception about health and hygiene

Health and Hygiene	Yes	No
The interventions for rehabilitation of health are sufficient	218 (82.3)	47 (17.7)
The qualified doctors are available for your health care	217 (81.9)	48 (18.1)
The services of doctors are free of cost	211 (79.6)	54 (20.4)
Quality medicines are provided to you	224 (84.5)	41 (15.5)
The medicines are provided free of cost	216 (81.5)	49 (18.5)
Safe drinking water and sanitation is available now	238 (89.8)	27 (10.2)
You got the knowhow of health and hygiene	229 (86.4)	36 (13.6)
Toilet facilities are provided to you	216 (81.4)	49 (18.5)

*Number in table represent frequencies and number in parenthesis represent percentages proportion of respondent

3.2. Severity of illness in respondent's family member before and after rehabilitation interventions

Causes of severe illness in respondents family members before and after health sector rehabilitation interventions is given in (Table- 2) Majority 59.3% respondent's replied that before the health sector intervention 3-6 of family member got ill of severe disease, 29.8% of the respondents replied that the family member suffers from serious illness were less than 3 before health interventions between 3-4 family member, further 8.7 % replied that no family member was severely ill before health intervention, while 2.2% stated that person suffer from severe disease before health intervention were above six in their family, however there are singe of improvement in control of severe disease as after the health sector intervention, majority 61.6% of the respondent's replied that no family member suffer from severe disease after the health sector intervention, 31.6% of respondents informed that less than 3 family members suffer from disease after health sector intervention, and only 6.8% stated that the number of family member suffer from disease were between 3-6 member after health intervention. The result is supported by the

(AKDN) the Aga khan development network organization in its integrated health project work on the awareness about health promotion ,disease prevention, and personal hygiene, infection disease, immunization programmers reported that. The program achieved remarkable success against various diseases in the area, and due to which the health condition were mainly upturned in the area [1].

Table .2. Frequency and percentage distribution of the respondents on the basis of number of family members got ill of severe disease before and after rehabilitation interventions,

Number of family members got ill of severe disease	Before health sector rehabilitation intervention	After health sector rehabilitation intervention
No member of the family got ill	23 (8.7)	164 (61.6)
Less than 3	78 (29.8)	84 (31.6)
3 – 6	156 (59.3)	17 (6.8)
Above 6	8 (2.2)	----------
Total	265 (100.0)	265 (100.0)

*Number in table represent frequencies and number in parenthesis represent percentages proportion of respondents

3.3. Number of water supply tanks in the respondent's area before and after rehabilitation intervention

Table-3. Indicates information of water tanks in respondent's area before and after rehabilitation intervention. The information show that majority 89.9 % of the respondent's replied that before the rehabilitation intervention only 1-2 water supply tanks were providing safe drinking water in the area, and 10.1% reported that no water tank were available in the area, The table also indicate that after rehabilitation intervention the number of water supply tank has increased as majority 75.5% stated that after rehabilitation intervention 3-4 water supply tank were providing safe drinking water to the people ,mand 24.5% respondents replied that the number of water supply tanks in the area were 2-3 after rehabilitation intervention. The result supported by Environmental protection society in its annual report stated that under the community infrastructure scheme the EPS constructed 6 water supply scheme in different area of swat, which provided safe drinking water to 3113 household and 21792 persons[2].

Table .3. Frequency and percentage distribution of the respondents regarding number of water supply tanks available in their area before and after rehabilitation interventions

Number of water supply tanks	Before rehabilitation intervention	After rehabilitation intervention
No water supply tanks	27 (10.1)	----------
1-2	238 (89.9)	65 (24.5)
3-4	----------	200 (75.5)
Total	**265 (100.0)**	**265 (100.0)**

*Number in table represent frequencies and number in parenthesis represent percentages proportion of respondents

3.4. Length of sewerage lines in the respondent's area before and after rehabilitation intervention,

Table- 4 Indicates information of the respondents regarding the length of sewerage line in the area before and after rehabilitation intervention. The information show that before rehabilitation interventions majority (50.6%) of the respondents were devoid of any sewerage facility in their area, 40% respondents reported that length of sewerage line in the area were up to 60 meter before rehabilitation intervention, Further 8.3% respondents replied that length of sewerage line were in the range of 61-180 meter in the area, and 1.1% of the respondents reported that length of sewerage line were between 181-240 meter before rehabilitation intervention. The table also shows information on the length of sewerage line after the rehabilitation programs, in which majority 71.8 % of the respondent's replied that the sewerage line were up to 60 meter in the flood hit area, 14.4% respondents reported that the length of sewerage line after rehabilitation intervention were 61-120 mater in the area, while 12% respondents reported no sewerage facility provided to them, and 15.1% replied that available sewerage line length were between 61-180 meter,1.1% respondents reported that after rehabilitation intervention length of sewerage line was between 121-180 meter. The above findings are supported by IRSP (Integrated Regional Support Program) (2011) in its WASH specific project which work on disaster affected area sewerage system. Under the rehabilitation of sewerage line various projects were completed and 7 kilometer of sewerage line were either newly constricted or rehabilitee in different project area, which was in improvement in the health and hygiene sector [4].

Table 3.4. Frequency and percentage distribution of the respondents concerning length of sewerage lines in the respondent's area before and after rehabilitation intervention,

Length of sewerage lines	Before rehabilitation intervention	After rehabilitation intervention
No sewerage facility	134 (50.6)	32 (12.0)
Up to 60 meter	106 (40.0)	190 (71.8)
61 – 180	22 (8.3)	40(15.1)
181 – 240	3 (1.1)	3 (1.1)
Total	**265 (100.0)**	**265 (100.0)**

*Number in table represent frequencies and number in parenthesis represent percentages proportion of respondents

4. Result of T-Test and its Hypothesis

To indentify the effects rehabilitation interventions on reinstatement of community infrastructure, health and hygiene situation, before and after rehabilitation intervention, paired t-test was used. Various hypothesis of rehabilitation are given in table-.4. And its results are discuses subsequently.

4.1. Hypothesis-1

H1 = **Rehabilitation interventions are ineffective in controlling cases of disease in flood affected areas.**

H2 = Rehabilitation interventions are effective in controlling cases of disease in flood affected areas.

As table-.4 indicate a highly significant (P= 0.000) reduction in cases of diseases due to health and hygiene sector rehabilitation was observed in flood hit areas. It is clearly visible from the above figure that the p- value is less than 0.05 for the 95% confidence interval, therefore we rejected the null Hypothesis and establishes reduction in diseases in the respondent's family member after health and hygiene sector improvement programs. A positive mean difference value (2.3), indicate decrease in the number of respondents family member suffer from severe disease after health and hygiene sector improvement programs. The probable reason for disease control in flood affected area included availability of doctors, medicine and other health and hygiene programs in the disaster affected area. The result is supported by the Aga khan development network organization AKDN(2007) that reported achievement of remarkable success against various diseases in the disaster affected areas, and due to which the health condition were mainly upturned in the area.

4.2. Hypothesis-2

H1 = There is no change in number of water supply tanks constructed in the respondent's area.

H2 = There is changed in the number of water supply tank constructed in the respondent's area.

As shown in table-4. changed in number of water supply tanks after community infrastructure rebuilding interventions was analyzed, a highly significant change (P= 0.000) is found. As the value is smaller than 0.05 for the 95% confidence interval, therefore we rejected the null hypothesis and establish the number of water supply tanks in the have changed area after community infrastructure rebuilding interventions. The negative mean difference value (-1.5) shows, increase in the number of water supply tanks in the study area after community infrastructure rehabilitation intervention. The result is supported by Environmental protection society (EPS) in its annual report which stated that under the community infrastructure scheme the EPS constructed 6 water supply scheme in different area of swat, which provided safe drinking water to 3113 household and 21792 persons[2].

4.2. Hypothesis- 3

H1= Rehabilitation interventions were ineffective to reconstruct sewerage line destroyed in the flood affected area.

H2 = Rehabilitation interventions were effective to reconstruct sewerage line destroyed in the flood affected area.

As result indicate (table-4) a highly significant (P=0.000) change in length of sewerage lines in respondent's area, was analyzed due to rehabilitation interventions. It is clearly evident from the above analysis that the p- value is less than 0.05 for the 95% confidence interval; hence we rejected the null hypothesis, and establish improvement in length of sewerage line in respondent's area after rehabilitation intervention. A negative mean difference value -1.5 of length of sewerage line in context of infrastructure rebuilding interventions sug-

gests increase in the length of sewerage line after rehabilitation intervention. The result shows improvement in the sewerage system in the respondent area. The above result is supported by the Integrated Regional Support Program in its WASH specific project which work on disaster affected area sewerage system, under the rehabilitation of sewerage line various projected were completed and 7 kilometer of sewerage line were either newly constricted or rehabilitee in different project area[1].

Table 4.4. Paired sample T-test result for testing research hypothesis

Statement	Before rehabilitation intervention		After rehabilitation intervention		Mean differences	t-value	p-value
	Mean	Standard Error	Mean	Standard Error			
Number of family members got ill of severe disease	2.9	0.1	0.6	0.06	2.3	**24.0**	**0.000****
Number of water supply tanks	1.6	0.04	3.2	0.06	-1.5	**-43.6**	**0.000****
Length of sewerage lines	23.01	2.1	40.9	2.1	-17.9	**-13.2**	**0.000****

* Number in table in parenthesis in the last column represents p value.
** Highly Significant

5. Conclusion

The above result help to conclude that the Interventions related to health sector were relevant and well thought out. These health services were extended to three broad categories i.e. direct health services in form of vaccination & medicine, secondly reconstruction of sanitation system & water supply & lastly awareness raising. The communities are satisfied form the health intervention and there were signs of improvement in human health at community level. From the hypothesis testing the study found that the health & hygiene sector intervention had improved the general heath conduction in the area by effectively controlling various diseases. Similarly the community infrastructures revitalization interventions were also found effective in reconstruction of water supply tanks, and sewerage lines in the area.

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