

Lack of Community Participation in Drinking Water Supply Project and its Impact on Health and Services Provided to Flood Affected People

Asam Shad

Sustainable Water Sanitation Health and Development Programme, Department of Environmental Sciences,
COMSATS Institute of Information Technology, Abbottabad, Pakistan
E mail:Asamshad@gmail.com

Abstract

Pakistan experienced extraordinary rainfall in mid-July 2010, which continued until September 2010. According to the National Disaster Management Authority (NDMA) the rains/floods have affected over 20 million people. The selected aid organization for study which has worked in response to disaster has not consulted community due to approach modification which leads to create negative impacts on inhabitants of water facilities provided in reconstruction phase by the organization. The main focus for this study was on the health and services aspects of the facilities and how the lack of community participation played a role in them. In order to achieve this, interviews were carried out with village residents as well as relevant organization. Reports, strategy and policy documents have also provided important and relevant information. The main finding of the study was that inappropriate facilities provision by non government organization is result of imprecise quick response for implementation of project.

Keywords: Impact, drinking water, health, affected people

1. Introduction

One of the global challenges is the safe access to the drinking water (Bernstein 2002). It is reported that about 1.1 billion people are without access to adequate water supplies and people without adequate and safe access to water supplies are suffering most from water-borne diseases (Mara 2003). The World Health Organization has estimated that majority of water borne disease cases can be prevented by increasing the provision of safe drinking water (Barthram and Gordon 2008). On other hand one of the major problems which are faced to provide access to clean and safe drinking water to affected people is the lack of strong evidence of the effects of drinking water facility failure on public health gains from these provided facilities (Lee and Schwab 2005). There is a great need for effective studies of public health gains which can be achieved from a community drinking water supply but more is the need to know the impact of these provided drinking water facilities on public health (Hunter *et al.* 2009).

1.1. Clean and safe water supply in emergencies

An emergency is a “situation arising in the aftermath of a disaster”, which can result in “a serious disruption of society, involving widespread human suffering and physical loss or damage, and stretches the community’s normal coping mechanisms to a breaking point” (Davis and Lambert 2002).

Emergency relief efforts from aid organizations are necessary when the response capacity of local authorities is insufficient. From a public health point of view the (re-)establishment of a safe water supply is one of the three main interventions, together with hygiene promotion and sanitation. Such actions will reduce the exposure of the affected population to health risks and prevent the spread of water- and excreta-related diseases, as classified by Mara and Feachem (1999).

It is studied that situation become worst when after flood disaster water supply system is damaged and clean and safe water supply to affected people become a problem. In this situation a government approach to supply 25L of water per person per day becomes very difficult (WHO 1992). The transmission of water-related diseases in emergencies is as much likely to the lack of sufficient quantities for personal and domestic hygiene as to contaminated water sources (The Sphere Project 2004). The post contamination is also an issue in such a situation which increased risk of water-borne diseases (Sobsey 2002). The most important evidence found by many studies was that people’s behavior was more important than any hardware used in achieving the expected benefits from water supply facility (Dyer 2002). In developing countries inadequate financial resources for operation and maintenance of water supply infrastructure and unavailability of technical skills also cause problem in provision of clean and safe water supply to affected people (Lenton and Wright 2004). In rural areas of many developing countries people have to obtain their drinking water from such a surface source which is untreated and situated at a distance from their communities (Hemson 2007). It is studied that in many developing countries water fetching responsibility lies on women and after damages to water supply they have to fetch water

from greater distance as compare to pre disaster situation (WHO/UNICEF 2004).

Regional differences also cause problems in implementation of infrastructure for clean and safe water supply after disaster due to local socio-cultural, economic and political situation. Accessibility of water supply on equal basis has been a challenge for south (UNDP 2003). Moreover, Rapid growth in population and occurrence of disasters are two main reasons which are limiting the access to clean and safe water supply in the south (UNCHS 2003). Developing countries are having very limited resources to cope with problems of natural disasters and their impacts (Clasen and Cairncross 2004).

1.2. Flood disaster and post disaster efforts for drinking water supply in Pakistan

World Health Organization reported after the flood 2010 that ten million people were compelled to drink unhygienic water (WHO 2010). On 28th July 2010 flood in Khyber Pakhtunkhwa (KPK), Pakistan water came ashore, resulting in severe contamination of drinking water sources with pathogenic microorganisms. The contamination of drinking water resources produced life threatening health problems in the flood affected areas such as acute diarrheal diseases, cholera and other serious infections. In order to overcome this situation the government of KPK with help of PaRRSA (Provincial Relief, Rehabilitation, Reconstruction and Settlement Authority) and aid organization has worked for clean and safe water supply in relief phase and adopted a cluster approach as post disaster effort (Government of Pakistan 2010).

1.3. Aim and objective

Aim of this study was to assess the impact of non involvement of community in drinking water project and focus was on health and services provided to flood affected people. Objective of this study was to highlight the importance of approach of organization for successful drinking water supply project implementation.

2. Material and Methods

2.1. Study area and approach

District Nowshera of province KPK, Pakistan was selected for study. It was one of the most affected areas by flood which came in July 2010 and all the water sources of the selected study area were damaged due to the flood. After flood many aid organizations responded to the situation created by the flood and as post disaster efforts they have done a lot of the work for clean and safe drinking water provision to flood affected people. Three villages were selected for study and criterion for selection was the type of intervention made and implementing organization.

Local non government organization which is selected for study has worked successfully on different drinking water supply projects in rural areas of KPK before the flood 2010. Community participation approach is followed by this organization in implementing projects but after flood disaster 2010 it has to modify the organizational approach for quick response. In flood affected areas this organization has worked on a mega project of deep hand pump on emergency basis. For provision of drinking water facilities on emergency basis the organization has to modify their approach for implementation of project and drinking water facilities were constructed without the consultation of community.

Three villages were selected for study from district Nowshera these villages were Kachkulabad, Mulphatti and Ummeh tent. The Kachkulabad is located in union council Kabul River, Mulphatti village in union council Ammenkot and Ummeh tent is located in union council Azakhel.

According to 1998 census Nowshera population is 9 Lac. The total population of Kachkulabad is 1050, population of Mulphatti is also 1050 and Ummeh tent is 1750 (Government of NWFP 2002).

2.2. Methods

For collection of data tools used were both qualitative and quantitative. Qualitative tools used for study were secondary data collection, field surveys, focus group discussions, schedule interviews and semi structured interviews. The secondary data was used to have general information about the study area and then it was followed by field surveys. Focus group discussions were carried out in order to select respondent for schedule interviews and semi structured interviews. To analyze data quantitatively water sampling was also done for fecal coliforms tests. Fourteen water samples were taken from selected villages for fecal coliforms tests. These tests were conducted to assess the drinking water quality. These drinking water samples were taken only from deep hand pumps installed by organization.

Proportionate random sampling technique is used for respondents' selection for data collection.

Table 1: Distribution of respondents in selected villages

VILLAGE	TOTALRESPONDENTS	MALE	FEMALE
Kachkulabad	15	12	3
Malphatti	15	11	4
Ummeh tent	25	21	4

To collect data from selected organization about the project 5 respondents were selected.

3. Result and Discussion

3.1. Impact of water supply on health

3.1.1 Pre and post flood comparative analysis of diseases in study area

Assessments by WHO and UNICEF showed that a large proportion of the world's population does not have access to adequate or microbiologically safe sources of water for drinking and other essential purposes. It is reported that about 1.1 billion people are without access to adequate water supplies and this figure is increasing with occurring of disasters in different regions of the world [2]. Results obtained from figure 1 showed that after the flood water borne diseases are prevailing and there is a need to provide clean and safe drinking water to flood affected people. Comparison of these results with results obtained by community after the interventions would help to understand the impact on health of affected people of interventions made by organizations for clean and safe water supply.

The data related to water borne diseases after the interventions made by government and non government organizations yielded the result (figure2) that diseases are still prevailing in the study area and the situation is worse than the results about water borne diseases situation after the flood. These results clearly showed that interventions made by the organization after the flood for clean and safe drinking water provision are not creating positive impact on community health (Fig. 1&2)

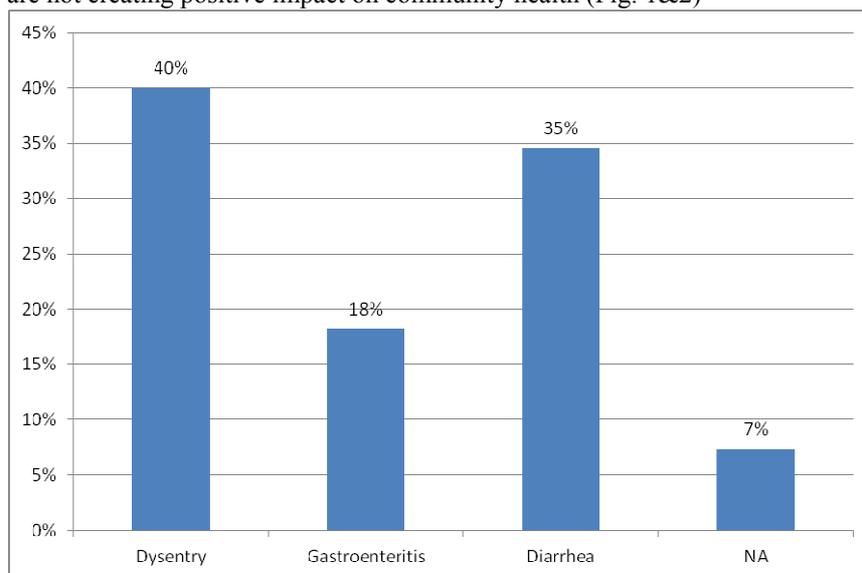


Fig 1: Water borne diseases after the flood in kachkulabad, Malphatti and Ummeh tent

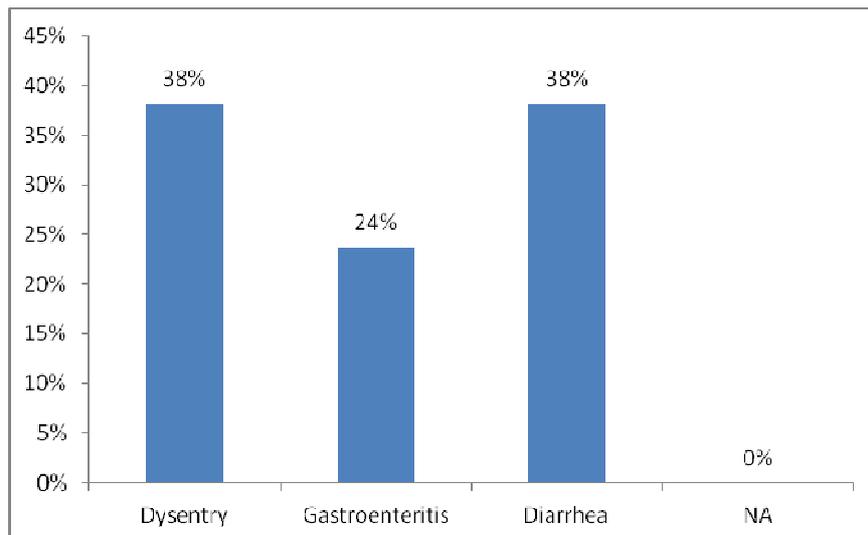


Fig 2: Water borne diseases after the work of organization in kachkulabad, Malphatti and Ummeh tent

3.1.2 Drinking Water quality tests for fecal coliforms

Samples which were taken from villages were 14 in number and fecal coliforms tests were conducted to assess the drinking water quality. These samples were taken from deep hand pumps installed by organization and tests were carried out in order to see whether drinking water is meeting the criteria of minimum standard for fecal coliforms or not? The minimum standard for fecal coliforms colonies in 100 ml of drinking water sample is 0 colonies (Khan *et al.* 1999). The analyses of the data yielded by fecal coliforms tests has shown that the fecal contaminants are present in the drinking water and fecal coliforms colonies were ranging from 4 to 300 colonies/100ml. These results confirmed that drinking water is containing pathogenic organisms for water borne diseases.

3.2.3. Impact of water supply on services

3.2.1 Distance of drinking water source from community

The data related to services was obtained by different groups of respondents which were made on base of sex. 3 females from Kachkulabad and 4 from Malphatti village were selected for interview out of total sample which was consisting of 55 respondents. In study area according to figure 3, 29% respondents were complaining that sources are not developed at suitable places and they are having distance problem. 44% people were satisfied from the quantity of water while 27% of respondents complained about availability of water consistently.

According to figure 4, 64% of respondents in selected area were saying that they collect water from a distance which is less than 500 meters. While 36% were complaining about the distance of the sources. These results showed that minimum standard for water source development in emergency is kept in mind by the organizations but if we analyze the data separately for selected villages than we obtain the result that this minimum standard is followed only in Ummeh tent and in other two villages people are having the problem of distance (Fig. 3&4).

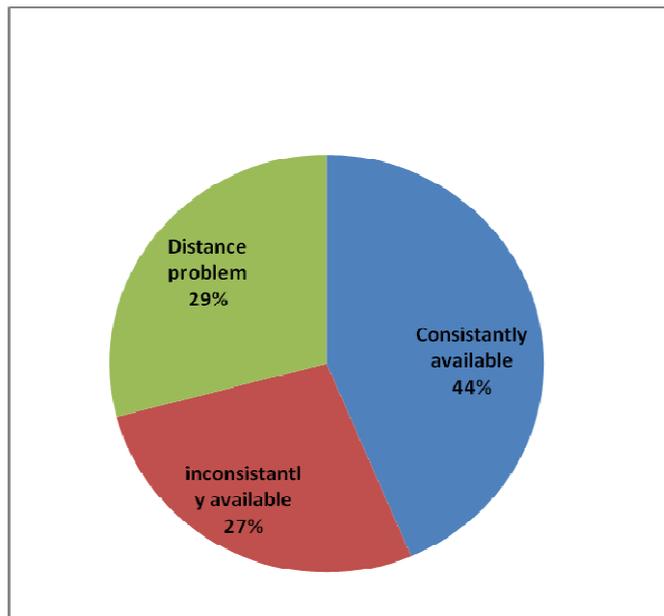


Fig 3: Availability of drinking water from main water source in study area

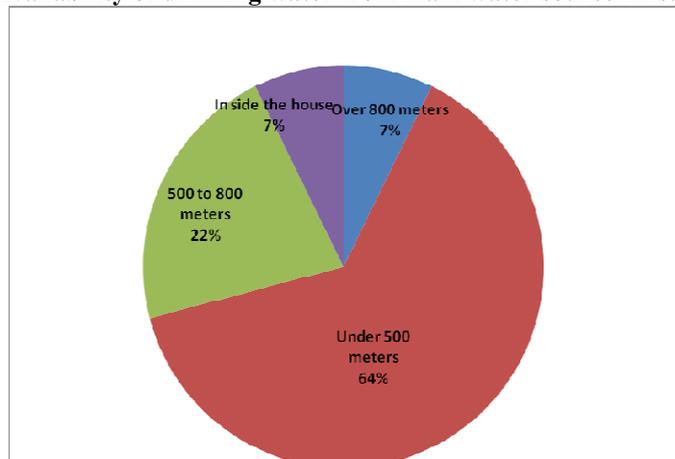


Fig 4: Distance of the consumer from water source in Kachkulabad, Malphatti and Ummeh tent

3.2.2 Water fetching responsibility in study area

This data helped to know which group of respondent is affected more in term of services. The result which is obtained from the figure 5 is showing that male and female Childs are doing water fetching work while female adults are also involved in this activity. This distance is causing time wastage problem for children and security problem for female adults who have to fetch water from the distance (Figure 5).

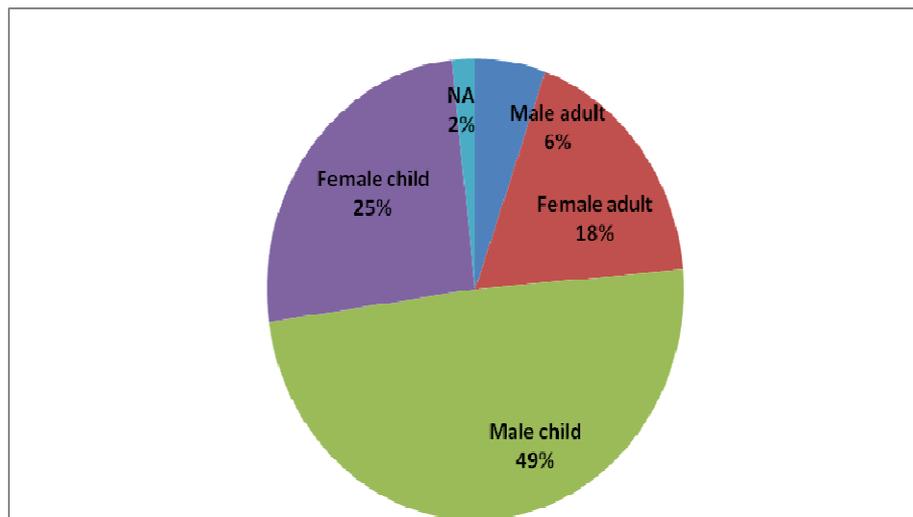


Fig 5: Water fetching responsibility in Kachkulabad, Malphatti and Ummeh tent

4. Conclusion

The aim of this study was to look at the health aspect, services provided and approach used by Organizations in provision of water facilities focusing on the extent to which residents were not involved in decision-making and how this affected the health and services provided to them. The aforementioned objectives were met and the central findings are highlighted as following.

Water facilities have been constructed and administered with a generally low to non-existent involvement of the locals in the affected villages which ultimately lead to inappropriate water facility implementation in the study area. Besides this, the technical problems were also found with the facilities due to inappropriate site selection for their construction. This has adversely affected both the health and services provided to the inhabitants. The rehabilitation phase was largely a product of the bureaucratic and centralized procedures of organizations. Similarly, female residents in the study area were suffering from poorly planned facilities, and the long walking distances needed to reach them as revealed by greater no of respondents. Diarrheal diseases were commonly reported among the population in the study area, which was an indication of contaminated water, improper designing of water facilities. The aforementioned adverse affects of the water facilities could have likely been reduced through simple consultation, which could have significantly improved the situation especially for the female fraction of the study area and it was only possible if organizational approach was not modified and project was given proper time so that community was able to participate in the project properly. The community should therefore be assisted rather than supervised in the process of provision of facilities.

5. Acknowledgements

I would like to thank the Department of Environmental Sciences, CIIT, Abbottabad for accepting me into their master program of Watsan, and for providing a great learning environment throughout the two years of my study. I am also thankful for the flexibility in the program that has let me to specialize in water and sanitation related issues.

6. References

- Bernstein, S., 2002. Freshwater and human population: a global perspective. *European Journal of operation Research*, 12, pp 111-112.
- Bartram, J., Gordon, B., 2008. The global challenge of water quality and health. *Water Pract. Technol.* 3 (4), doi:10.266/WPT.200890.
- Clasen, T.F., Cairncross, S., 2004. Household water management: redefining the dominant paradigm. *Trop. Med. Int. Health*, 9, 187—191.
- Davis, J., Lambert, J., 2002. *Engineering in Emergencies: A Practical Guide for Relief Workers*, 2nd ed., ITDG Publishing, London.
- Dyer, R., 2002. Assessing impacts of improved hygiene. In: *Sustainable environmental sanitation and water services 28th WEDC Conference*, Calcutta, India.
- Government of Pakistan, 2010. *Reconstruction and Rehabilitation strategy: Water and sanitation sector and cluster approach*.
- Government of NWFP, 2002. *Multiple Indicator Cluster Survey*, jointly conducted by Ministry of Local

- Government and Rural Development NWFP and UNICEF, Peshawar.
- Hunter, P.R., Zmirou-Navier, D., Hartemann, P., 2009b. Estimating the impact on health of poor reliability of drinking water interventions in developing countries. *Sci. Total Environ.* 407, 2621–2624.
- Hemson, D., 2007. ‘The toughest of chores’: policy and practice in children collecting water in South Africa. *Policy Futures Educ.* 5, 315–326.
- Khan, A.R., Akif, M., Waddud, S., Khan, K., 1999. Pollutions studies of Kabul River and its tributaries for the assessment of organic strength and fecal coliforms. *J. Chem. Soc. Pak.* 21(1). 41-4.
- Lee, E.J., Schwab, K.J., 2005. Deficiencies in drinking water distribution systems in developing countries. *J. Water Health* 3, 109–127.
- Lenton, R., Wright, A., 2004. Interim report on Task Force 7 on Water and Sanitation, Millenium Project. UNO, United Nations Development Group, New York.
- Mara, D.D., 2003. Water, sanitation and hygiene for the health of developing nations. *Public Health* 117, 45
- Mara, D.D., and Feachem, R.G.A., 1999. Water- and excreta related diseases: unitary environmental classification, *J. Environ. Eng. —ASCE*, 125, 334–339.
- Sobsey, M.D., 2002. *Managing Water in the Home: Accelerated Health Gains from Improved Water Supply.* Water, Sanitation and Health. Department of Protection of the Human.
- The Sphere Project, 2004. *Humanitarian Charter and Minimum Standards in Disaster Response*, 2004 ed., The Sphere Project, Oxfam Publishing, Oxford, UK.
- UNDP, 2003. *Millennium development goals: A compact for nations to end human poverty.* New York: United Nations Development Program.
- UNCHS, 2003. *Local action for global goals: Water and sanitation in the world’s cities 2003.* London: Earth scan.
- WHO, 1992. *The International Drinking Water Supply and Sanitation Decade*, CWS Unit, Division of Environmental Health, WHO, Geneva.
- WHO/UNICEF, 2004. *Meeting the MDG drinking water and sanitation target: a mid-term assessment of progress*, World Health Organization and UNICEF Joint Monitoring Programme for Water Supply and Sanitation. 36 p.
- WHO, 2010. *Report on water and sanitation damage assessment 25th August 2010.*

The IISTE is a pioneer in the Open-Access hosting service and academic event management. The aim of the firm is Accelerating Global Knowledge Sharing.

More information about the firm can be found on the homepage:

<http://www.iiste.org>

CALL FOR JOURNAL PAPERS

There are more than 30 peer-reviewed academic journals hosted under the hosting platform.

Prospective authors of journals can find the submission instruction on the following page: <http://www.iiste.org/journals/> All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Paper version of the journals is also available upon request of readers and authors.

MORE RESOURCES

Book publication information: <http://www.iiste.org/book/>

Academic conference: <http://www.iiste.org/conference/upcoming-conferences-call-for-paper/>

IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digital Library, NewJour, Google Scholar

