

Consumer Importance on Sustainable Water Sanitation & Hygiene Facilities Provided in Rural District Peshawar, Pakistan

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Abstract

This study was accompanied with objectives to analyze the usefulness of, Water Distribution Practices prevailed in targeted union counsel of rural district Peshawar, and Behavior change in WASH. A sample size 359 respondents were randomly selected in rural district of Peshawar. The data was analyzed through SPSS (20) by the application of Chi-Square test statistics and simple univariate analysis. The study concluded that improved Water Distribution Practice had highly significant association with enhancement in behavior change in WASH, adoption of positive Health behaviors, health advocacy and awareness help healthy physique and behavior change in WASH as a way towards healthy life as well as sound human resource, and this human resource can play role in boosting Country's GDP. This study concentrated on aspect of current water distribution practice and behavior change in WASH, in the study area where this study affirmed that sound body has a sound brain. Use of healthy and fresh water from secure water storage and source directly related to healthy physique. Safe drinking water is the only source of avoidance from all types of water born disease i.e. diarrhea, dysentery, cholera etc. And ill health especially for those who have no or less access to health services in rurality. This study also indicated the importance of mass awareness campaign, general perceptions of common men in terms of better and healthy life.

Keywords: Water distribution practices, Hygiene and sanitation, Behavior change in WASH, Volunteer community practices

1. Introduction

Health promotion is the process containing improvement over regulation of positive health behavior with reference to initiation of gaining progress, based on sanitation, while behavior change communication concerning to public health integrates group of actions focused on individual, public and environment. These involvements are indispensable for getting improvement in quality of life circling around an integrated WASH approach (Okun, 1988). Evan (2005) has classified the sanitation into a number of categories ranging from storage, safe collection, water treatment recycling of disposal of human excreta to industrial product and hazardous waste management (Kerr et al., 2005). A reveals about rural water supply and the most essential view point was availability of water supply at their door step. As in far flung areas majority of the people are getting their usable water from the streams or ponds which are very harmful for health, it is also waste their precious time by pitching water from such places. It would be useful if they could get usable water source (stand-post/pipe) near to their houses. In this way they will get fresh and healthy water along with it, it will save their valuable time which will be consumed in other fruitful activities (Lang et al., 1994).

Water sanitation is considered as an important step to provide clean water to the people, in this regard the work of Non-governmental organizations in WATSON is highly appreciated; However development is sustainable, when WASH services continue to work as to bring positive change in people attitude. People become aware and no more ignorant from healthy attitude i.e. water born and other skin diseases etc. which are due to use of contaminated items in negligence (Rabbi & Dey, 2013). In Pakistan, with population increase the per capita water availability ranging down. In the decade of fifties' per head water availability was 5650 cubic. In the decade of seventies, the masses just about acquired two fold and per head water availability demonstrates the opposite pattern (that is diminished/gotten down to 2800 cubic meter). As a result of the time 1992, Pakistan went into the water tension nation and uncertainty prompt moves won't be made the per person water ease of access would diminishing to under one thousand cubic meter till 2012. Changes could be standard or emotional, yet with the possibility to uncover long haul water security, to conform to changing circumstances it is all the more expensive time for government (Wouter & Chen, 2013). In Pakistan majority of the households does not have access to clean and safe drinking water and scarcity of toilets facilities and adequate sanitation systems. These ultra-poor people, mostly living in rural areas or in urban slums, are not only deprived of financial resources, but they also lack of access toward basic needs such as health, education, safe water supply and environmental sanitation facilities (Khan & Javed, 2007).

In certain regions of Africa issue of climate change adaptation decision making under uncertainty, which delineates no clear signals of future rainfall. However, they drink ponds water and open defecation is in practice, due to rain the open defecated faeces flow with rain water into ponds and people get into different diseases by using that contaminated water (Dong et al., 2015). Due to distinct ecological models social affairs give no sensible indicator for future rainfall. Furthermore, raining inconsistency and uncertainty in hot regions having connection between warming and raining, the change of groundwater energize and converts into vaporization which resulted excessive raining. Moreover, due to rain the people don't go far away for open defecation but satisfy their needs in open air nearby houses. Water distribution structures through pipeline system. Furthermore, that pipe dissatisfaction in water supply to customers. It is found that around more than half of the provided volume of water is wasted because of pipe leakages. Moreover, leakages in pipes carry contamination with itself (Allan & Soden, 2008). Water underlines women's vital commitment and core responsibility with respect to managing the family, throughout cultures man is considered as dominant in family hierarchy. Furthermore, water collection for household consumptions in far-flung areas is considered the prime responsibility of women. Moreover, there is huge part of women in water collection consumed their valuable time. Study shows some statistics, In Africa, people go for forty billion hours walking around water. Women and adolescents bear this weight (Sægrov et al., 1999). Poor maintenance of fracture pipes down earth can influence water eminence for occurrence variations in weight attract impurities inside soil with sewerage system through breaks in channels/pipes. However, an absence of hand pumps proper maintenance in rurality may prompt individuals utilizing alternate and less secured sources for drinking water, resulted water borne diseases. Furthermore, there must be O & M budget specified by donor or community voluntarily generate funds for getting out of this

critical situation. However, around the ratio of one third hand pumps are non-practical on account of the absence of maintenance support. Moreover, there is some evidence that raising the standard of water supply services and then letting even occasional short-term failures in water supply can very quickly reverse many of the hard won public health benefits. If communities slip back into a situation where they have to rely on unimproved water and sanitation services then investment has effectively been wasted (Hutton & Bartram, 2008). Now in Pakistan around one third of all testified infections & life losses are due to contaminated water quality disjointedly. The ratio of hepatitis is high in these areas where bad sanitation, surface drains or sewerage system practiced commonly (Reed et al., 2004).

Educated and aware individuals trust that clean and purified water supply will significantly diminish water-borne diseases. The vast majority don't know that protected hygiene practices and access to sanitation are urgent for fighting the primary health dangers to children under five. However, 88% for every penny of all diarrhea contaminations globally credited to risky water supply, the absenteeism of safe hygiene practices and essential public health framework (Azizullah et al., 2011). The water used for the purpose of drinking is profoundly enormous through formal training along with media demonstration. Moreover, electronic or print media should use for formal instruction; media can be viewed by way of the principle capacity causative waterborne diseases & related vigor dangers (Wingender & Flemming, 2011). Should be focused on the gatherings and families which require the longest travel particularly spend over thirty minutes for accumulation of water through vessels. However, in hilly areas of Pakistan women are assigned the duty to get the water from springs for family use (Ahmad & Sattar, 2010). That due to contaminated water people especially kids under five years facing worms in their intestines which affect their body growth i.e. snare worm illnesses have seemed to encounter the evil impacts of improvement deterrent, understanding and mental impedances. Moreover, the association of hookworm has been weakened wisdom, extended unfortunate lacks from school, reduces in coming days money related proficiency (Allen et al., 2013).

2. Methodology

The nature of the research study is descriptive which aimed to explore the behavior changed in relation to effective outcomes, in result of WASH Program been initiated in last decade either by Government or non-governmental development organizations. The study was done in district Peshawar Khyber Pakhtunkhwa, Pakistan. The data was collected from sample population of union council Larama. The study was done while determining the association between the two variables given in the following table.

Variables of the Study

Independent variable

Water Distribution Practices

Dependent variable

Behavior change in WASH Program

2.1 Sampling Design

A sample size of 359 respondent's stands for total number of population size was 5714. In an analogy table of Sekaran (2003).

There were four village counsels in the selected union council Larama, Rural Peshawar, therefore, sample size for each Village counsel was carried out by the application of proportional allocation formula (Cochran, 1977).

$$n_i = \frac{N_i}{N} \times n$$

n = Required Sample size.

N = Total possible respondents in the study area.

N_i = Possible respondents in each institute.

n_i = Selected respondents from each institution.

2.2 Tools for Data Collection

Interview schedule was used for data collection purpose keeping in mind to clarify any shortages in the field.

2.3 Data Analysis

Chi-square test statistics were used to measure the association between dependent and independent variables. For this purpose, Statistical Package for Social Sciences (SPSS-20) was used. Association was carried out by using the following formula.

$$\chi^2 = \sum_{i=1}^r \sum_{j=1}^c \frac{(O_{ij} - e_{ij})^2}{e_{ij}} \quad (\text{Chaudhry \& Kamal, 1996}).$$

3. Result and Discussion

3.1 Water Distribution Practices and Behavior Change in WASH

Water distribution practices depend on the level and nature of physical infrastructure established by Public Health Department with the preview of health and hygiene parameters. The healthy physical state of mind and body is dependent on water distribution practices. There is a complex association between Water distribution practices and behavior change. To assess their relations, a few statements were carefully developed. Respondent's attitudes with regard to these practices are given in Table 1. The results indicates that 83.3% of the respondents agreed that Village/WASH Committee existed in their Villages. Functional and fulfilling their roles while, 1.9% of the respondents thought that village WASH Committee did not exist along with, 14.8% of them were uncertain about the statement. Likewise, 81.3% of the respondents retained knowledge about the women village WASH Committee existed in their village before. While 2.8% of the respondents did not get the knowledge of women

village WASH committee existed in their village before, while 15.9% of the respondents had no idea about any women village WASH Committee existence in their respective areas. Similarly, 46.8% respondent's disclosed that the main source of their drinking water for members of their household was Hand Pump/ Pressure pump, followed by 4.2% of the respondents who were of the opinion that their source of drinking water for members of their household was open well. In addition, 49.0% of these respondents had the opinion that their source of drinking water for members of their household was Piped water/Public tap/standpipe, Another strategy for distinguishing the extent of breaks in little private administration zones of a drinking water conveyance framework is proposed i.e. in view of perceptions recreated pipe streams are introduced to exhibit the use of the hole recognition technique (Bundy et al., 2009). almost 78.3% of the respondents confirmed that the source of water was in premises and did not spend much time for fetching water well in time, while 21.7% of the respondents said that the source of water was a little bit far and spent less than thirty minutes time for fetching water in once/daily the findings explored that the initiation of installation hand pumps had considerably reduced their burden of water fetching in terms of time, labor and finances. In addition, 3.9% of the respondents thought that usually men collect water for their family use either for domestic or drinking purpose use, while 82.2% of the respondents showed a negative attitude as they thought that usually women collect water for their family use either for domestic or drinking purpose use and 13.9% of the respondents were of the opinion that children collect water for their family use either for domestic or drinking purpose use. It could be attributed to the prevalence of patriarchy, when men dominate and women are forced to do more household chores. Some thought about the adjustment in the life, principally of females, that runs with game plan of water supply to poor gathering, could be from an audit appraisal of finalized endeavors did in four nations of the world by Water Aid using tools of Participatory Rapid Appraisal (PRA) systems (Cairncross & Valdmanis, 2006). Correspondingly, 69.1% of the respondents agreed that sufficient water was available to their family for drinking/domestic purpose use, 28.4% of the respondents were not satisfied of the sufficiency of water available to their family for drinking/domestic purpose use and 2.5% were uncertain. Likewise, it could easily be deduced from the findings that either amount of water was low due to deep water table or respondents were excessively using water by on of keeping into consideration that sustainable use. Health report published in session 2004 demonstrates that 1.9 million of children passed away from disease. All these deaths were due to savior water sanitation poor conditions, Passing's further prominent number of youths than HIV/AIDS, measles malarial sickness and combine (Curtis et al., 1995). Moreover, 84.4% of the respondents' agreed about feedback/CRM (Complaint response mechanism) receiving body regarding the intervention of WASH initiated by any agency in that union counsel while 1.9% of the respondents were uncertain. It could be adjudged from the findings that a stiny institutional organization of check and balance was in existence. A brief specify of complaints mechanisms making a comparable point that it is critical to set up successful frameworks however more comprehensively underlining that for these systems to work, they should be viewed as positively affecting the recipients by recipients. Without this, there would be no impetus to go for broke of grumbling and cause conceivable hazard or damage to the complainant or their group. Without a positive

outcome, for example, ceasing debasement, expanding help, or, one would envision on account of SEA, considering the culprit responsible, dissensions components will be constrained in their adequacy (Danquah, 2010). In addition, 84.1% of the respondents agreed that with the statement that complaint addressed well in time either about EVI left in intervention or selection criteria has been violated or any type of suggestion for upbringing improvement in intervention, 14.5% of the respondents were of the negative response about complaint not addressed well in time while 1.4% of the respondents had no idea whether their complaint addressed well in time or not. These findings were comprehensively endorsing the proceeding findings. Similarly 84.1% of the respondents had positive response to O & M Committee trained for water source maintenance, while 13.1% of the respondents neglected themselves with regard to O & M Committee trained for water source maintenance, while 2.8% of the respondents had no idea. It was obvious from the data that respondent had clear knowledge of the check and balance mechanism of the depth for its interventions in the community. In addition they were highly satisfied from these follow up mechanism as well. The various techniques for installation, renovation and rehabilitation of water distribution systems have been reviewed. A detailed account of the development of new methods is presented (Maxwell et al., 2008).

Table 1. Assessment of Sample Respondents of Water distribution facilities in WASH Program

Statements	Yes/A	No/B	Uncertain/C
Village/WASH Committee exists in your Village?	83.3 %	1.9%	14.8%
Was there any women village Committee existed in your village before?	81.3 %	2.8 %	15.9%
Main source of drinking water for members of your household? (A). Hand Pump/ Pressure pump (B). Open well (C). Piped water/Public tap/standpipe	46.8 %	4.2 %	49.0%
How much time is spent on fetching water in one time? (A). On premises (B). Less than 30 minutes (C). More than 30 minutes	78.3%	21.7%	0.0%
Who usually collect water for your family? (A). Men, (B). Women, (C). Children	3.9%	82.2%	13.9 %
Is sufficient water available to your family for drinking/Domestic purpose Use?	69.1%	28.4%	2.5%
Is there any feedback/CRM receiving body regarding this intervention?	84.4%	1.9%	13.6%
Is complaint addressed well in time?	84.1%	14.5%	1.4%
Was any O & M Committee trained for water source maintenance?	84.1%	13.1%	2.8%

3.2 Association between Water Distribution Practices and Behavior Change in WASH

The table shows a highly-significant association ($P \leq .001$) existed between the types of toilet facility in household use with behavior change. Disposition of waste like stool preservation

was appropriate with the coded procedures. All these could be the resultant contribution of the project initiation, its deliverance and proper implementation. Moreover, a highly-significant association ($P \leq .001$) was found between sharing of toilet by more than one households and shared toilet. It could be the obvious factor associated to huge population size at the household level. Further a limited number of toilets not up to the requirements of the number of household members could not also be ruled out. The measure of people per toilet was legitimately connected with *Ascaris lumbricoides* pollution control. Notwithstanding, it is not clear whether the all-inclusive community per restroom were considered or found a common, and offering toilets to another family expanded the danger of intestinal helminths and from protozoan parasites. This is probably because of the opportunities of using HH toilet leads to avoid open defecation in the field forests (Applegate et al., 1990). Likewise, a high-significant association ($P \leq .001$) was found between the places where babies' faeces are usually disposed with behavior change. That is emphatically identified with dirty excreta transfer and nonappearance of adjacent wellsprings of nontoxic water. These infections are firmly identified with absence of face washing, regularly because of nonappearance of adjacent wellsprings of safe water (Heijnen et al., 2014). Likewise, a highly-significant association ($P \leq .001$) was found between the places where adults in HH usually go to defecate with behavior change. This is perhaps due to the reason that awareness of hygienic practices need led to healthy life achieved through practicing these messages. In fact utilizing healthy practices can play a role in healthy physique. In India, 66% of the population lives with unbothered sanitation and a usual 600 million individual's crap outside, speaking to 60% of the worldwide populace honing open defecation (Utzinger et al., 2009). However, a non-significant association ($P > .05$) was observed between latrines provided in this project meeting household needs with behavior change. It could be associated to cultural practices in which men consider using latrine as losing respect and prestige in the household members. The use of latrine was probably dependent on cultural constraints due to non-using of latrine by male family. It is only confined to children and women in certain cases. Creators find that the expansion of lavatories essentially builds the danger of *Escherichia coli* infection among young ladies, Moreover use of restrooms without take-up of cleanliness conduct change, may represent a hazard to youngsters. Furthermore, indicated by Edward Miguel, educator of formative financial matters at UC Berkeley 6, and others there is an unanswered question with regards to the adequacy of enhancing instructive results through toilet development without hand washing offices, and a solid wellspring of perfect, running water (Prüss - Ustün et al., 2004). Furthermore, a non-significant association ($P > .05$) was found between the benefits they see in using the latrine with behavior change. They used latrine However, did not know little about its effects on the family life. There could be the low level of awareness on just considering these latrines as routine life event, having no profound effects in terms of its usage. Over late decades, persuading affirmation has been aggregated that basic and important prosperity impacts are associated with overhauls in access to basic sanitation and handwashing workplaces (Hooton et al., 1996). Unlikely, a highly-significant association ($P \leq .001$) was found between the latrine help them improving lifestyle including privacy with behavior change and a significant association ($P \leq .001$) between the drainage facility household latrines had with behavior change. Surface drains contaminated water source and

when there was no drain flies and mosquitoes transfer open defecated faeces particles into their food and made them contaminated through their legs, feathers and body as a source of quick transferring of contamination of open or no drain. Regularly, everybody have requirements of water, whether they are rich or living below poverty line, oozes and urinates day by day. Be that as it may, where it happens significantly affects family wellbeing. Family units with private toilets have quantifiably brought down horrible rates than families which did not have it. Private toilet's advantage the family as well as neighbors who pick up security from the family unit's defecation. Poor people and their neighbors, particularly corporeal in a country or non-underserved ranges, regularly need isolated toilets, compelling crap in broad daylight spaces, abandoning them extra defenseless than the non-poor to transferable infections (Freeman et al., 2014).

Unlikely, a non-significant association ($P > .05$) was found between washing of hands after defecating with behavior change to avoid inhaling of impurities and dust, open defecated faeces particles. People were found opting for washing hands in the initial operationalization of project. However they were found pretending of not washing hands due to non-availability of soaps and other cleansing instruments. Found as soon as no compost stay transparently visible of the air, in this manner an uncluttered control pit restroom will be best ODF whether secured by a lit, and the lit must be secured from flies (Kar & Chambers, 2008). Furthermore, a high-significant association ($P > .05$) was found between the cleaning of teeth, cutting nail, taking bath etc. with behavior change. These results depicted the exercise of certain practices which had led to bringing cleaning. They included were cleaning of teeth, cutting nail, taking bath etc. All these were found in the teaching of Islam as well, which were often preached by the religion shows at various sermons as well. Approach examinations on sanitation have concentrated on wellbeing impacts among youngsters under five years old, there is developing acknowledgment of the one of a kind wellbeing dangers ladies and young ladies confront because of insufficient sanitation, including expanded maternal mortality hazard from unhygienic birth practices and poor contamination control (Bakker, 2013). However, a non-significant association ($P \leq .001$) was found between the knowledge about O & M committee trained for water source maintenance with behavior change. These findings depicted about the presence of such a facility. The existence of such facility had contributed to the sustainable preservation of cleaning practices and awareness over the issue. Operation and maintenance is a fundamental segment of sustainability, and a ceaseless purpose behind dissatisfaction of water supply and sanitation advantage workplaces some time recently. Various disillusionments are not specific ones. They may occur on account of absence of judgment skills, insufficient cost recovery, or the exertion inadequacies of united workplaces. The above findings concluded that sanitation practices were in practice as resultant factors based on awareness and operationalization of the practices from the project.

Table 2. Description of water distribution facilities in WASH

Statements	Perception	Behaviour Change			Chi-Square (P-Value)
		Yes	No	Uncertain	
Type of toilet facility does this household use	Flush to Pipe Sewer system	44.6%	55.3%	0%	$\chi^2=105.339$ ($P \leq .001$)
	Bucket latrine	14.0%	85.9%	0%	
	Filed/Bushes	2.7%	79.7%	17.5%	
	Total	24.5%	71.8%	3.6%	
How many households share this toilet?	Not shared	26.2%	70.9%	2.8%	$\chi^2=33.074$ ($P \leq .001$)
	Shared	10.5%	81.5%	7.8%	
	Communal	0%	0%	100%	
	Total	24.5%	71.8%	3.6%	
Place where babies' faeces are usually disposed	Kids Use toilet	13.6%	86.3%	0%	$\chi^2=29.000$ ($P \leq .001$)
	Put into toilet	25.1%	71.3%	3.5%	
	Left it open	26.0%	65.2%	8.6%	
	Total	24.5%	71.8%	3.6%	
Place where adults in HH usually go to defecate	H Latrine	31.1%	68.8%	0%	$\chi^2=71.478$ ($P \leq .001$)
	Other Latrine	26.6%	73.3%	0%	
	OD/Field/Forests/Bushes	1.3%	82.6%	7.3%	
	Total	24.5%	71.8%	3.6%	
Latrine provided in this project meeting your HH need	Yes	24.9%	71.5%	2.5%	$\chi^2=.209$ ($P > .05$)
	No	22%	74%	4%	
	Uncertain	0%	0%	0%	
	Total	24.5%	71.8%	3.6%	
What benefits do you see in using the latrine	Reduce smell	24.0%	71.7%	4.2%	$\chi^2=6.923$ ($P > .05$)
	Privacy	33.3%	64.8%	1.8%	
	Uncertain	9.0%	90.9%	0%	
	Total	24.5%	71.8%	3.6%	
Latrine help you improving your lifestyle including privacy	Yes	25.8%	72.9%	1.4%	$\chi^2=88.308$ ($P \leq .001$)
	No	0%	66.6%	33.3%	
	Uncertain	0%	56.2%	43.7%	
	Total	24.5%	71.8%	3.6%	
Type of drainage facility your latrine have	Underground	36.5%	63.4%	0%	$\chi^2=51.179$ ($P \leq .001$)
	Kacha	15.5%	79.5%	4.9%	
	No Drainage	1.9%	84.3%	13.7%	
	Total	24.5%	71.8%	3.6%	
What do you use to wash your hands after defecation	Soap	43.1%	67.8%	0%	$\chi^2=11.478$ ($P > .05$)
	Ash/Sand	33.3%	66.6%	0%	
	Water Only	20.5%	73.9%	5.4%	
	Total	24.5%	71.8%	3.6%	
Do you clean your teeth, cutting nail, taking bath etc.	Yes	24.6%	71.4%	3.8%	$\chi^2=2.769$ ($P > .05$)
	No	28.5%	68.5%	2.8%	
	Uncertain	8.3%	91.6%	0%	

	Total	24.5%	71.8%	3.6%	
Do You know if there is any O & M committee trained for water source maintenance	Yes	28.4%	71.5%	0%	
	No	2.1%	70.2%	27.6%	$\chi^2= 99.181$ ($P\leq.001$)
	Uncertain	10%	90%	0%	
	Total	24.5%	71.8%	3.6%	

4. Conclusion

The study concluded that active participation in both in male and female WASH committee and functioning of committee, along-with understanding the role and responsibilities of members whom can make mentioned these program maximum task achieving. The main source of water supply and storage from traditional times to mechanize or semi mechanized standards indicated towards behavior change over WASH interventions. Consumable water source inside the house or in premises positively impacted the behavior change instead of fetching it from far-flung areas. The WASH interventions in the target areas ensured with complaint response mechanism which need to address the grievance in time, indicating towards, a balanced mechanism of check and redressal. Moreover, non-governmental organizations investment over water and sanitation in rural area also led towards behavior change. The government should do much more in rurality specifically in water sector to provide them with life sustenance. Media campaign should be started on electronic as well as print media to aware them with healthy practices related water distribution practices.

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