

Assessment of Disaster Impact on the Health of Women and Children

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Abstract: Disaster destroy local health systems and infrastructures; increase the potential risk for safe water, sanitation and diseases prevalence that may affect dreadfully the children's and women's rights to survive; to safety; to food and nutrition; to safe water, sanitation and hygiene; to health and to education. Such worst condition draw attention to scientists the need for understanding social, physical and health related vulnerabilities and capacities of children's and women's during and after disaster. These caused present field based assessment for impact of disaster on women and children living at Kalapara Upazila of Patuakhali district of Bangladesh. The semi-structured questionnaire survey for primary and secondary data collection and physical observation methods was followed to fulfill the objectives. Result showed that most of the women were illiterate; unemployed and more likely to be self-employed in housekeeping. They have no socially agreed right in decision making systems and suffer traditional gender based domination. Their lower economic and social status inclined them to be more vulnerable to gender sensitive disasters which are the regular phenomenon for the study area. Inside the shelter the children's and women's have limited space; basic needs provided were insufficient-- not ensured at both household and community level and the real situations were incidents of gender sensitive violence. The challenges to solve these problems are the integration of gender, women and child issues into disaster research, planning, and organizational practice as a pre-requisite for developing and delivering child and women centered DRR and CCA policy and programs.

Keywords: Capacity, Coping Strategy, Post Disaster, Vulnerability, Women

1. Introduction

Disasters are considered as a public health hazard, because they may cause an unexpected number of deaths, injuries, or illness in the affected community; may destroy local health infrastructures; may have adverse effects on the environment and the population, increasing the potential risk for communicable diseases and environmental hazards that will increase morbidity, premature death, and diminished quality of life in the future; may affect the psychological and social behavior of the stricken community; may cause a shortage of food with severe

nutritional consequences; may cause large, spontaneous or organized population movements, often to areas where health services cannot cope with the new situation [23]. In Bangladesh disasters are almost inevitable annual events [11] which range from ravaging tornadoes and cyclones to devastating floods that submerge land, damage crops, water and sanitation facilities, and other physical structures. As a process, there is an increase of both morbidity and mortality, psychological trauma [18], diseases epidemics, worsening of health hygiene and sanitation system that affects all people, particularly the most vulnerable groups, such as pregnant and lactating women, children less than 5 years of

age, the disabled and the elderly people.

A large number of poor people are to live in vulnerable areas of the southern part of Bangladesh. The vulnerability is so depressed that they have to go and settle in the newly accreted land in Bay of Bengal and its surrounding areas which is occasionally hit by tidal bore or devastating cyclone. The adverse impacts of all the natural hazards affecting socio-economic condition need to be reduced for sustainable development. In reference of the scenario the people who are living in the coastal areas and / or southern part of Bangladesh has risk of Public Health. As they are living cyclone prone area and frequently adverse impacts affect the people; they also affected vast of Public Health issues like physical assault, water born disease, skin disease etc. After or during disaster the coastal people loss their health as well as economic mobility also. Many researches show that after or during disaster women and children are became more vulnerable or in risk at Bangladesh context [28, 29, 30, 31, 32, 33, 34]. As Bangladesh is a developing country and have no enough resources for getting enough nutrition, on the other hand children and women are discriminated traditionally from nutrition and good health. The impact of such recurring phenomenon shows largely when disaster occurred.

As a densely populated country Bangladesh is characterized by a young age structure. Children under 18 years of age constitute about 45% of the population [5]. This 45% of the young population are a great concern in disaster management. Children's rights to survival, to protection, to clean water, sanitation, food, health and education remain in serious threat due to disasters. Most of the people who died and/or injured during cyclones were women and children [32]. This happens because of girls children, in Bangladesh context at their childhood remain closed with their mothers in household work. Because mother acts as home managers and care givers at home. They manage the whole household and take precautionary measures to safeguard all the assets including livestock before taking temporary refuge to cyclone shelters [33]. On the other hand women, along with their children, are the last to leave their houses during pre-disaster and take shelter in safer places [20]. Much of the advocacy literature around children, disasters and climate change seeks to highlight the need for understanding both vulnerabilities and capacities of children and women in times of disaster [9,11]; families, who sometimes lost everything, had their way of living drastically changed [3]; disrupt health systems and infrastructures; increase the potential risk for safe water, sanitation and diseases prevalence [12]; lack of safety and security and basic needs in shelter place [1, 4, 7, 20] that may affect dreadfully the children's [20] and women's rights [32, 37] to survive; to safety; to food and nutrition; to safe water, sanitation and hygiene; to health and to education. Women in Bangladesh becoming destitute following a disaster [27]; women and girls are more vulnerable to sexual abuse in disaster situations; and may be coerced into sex for basic needs such as food, shelter and

security [27]. Therefore the field based information on the impact of disaster on women and children in sustainable disaster management attracted great attention of relevant scientists. This caused us the intensive search for women and children specific risk reduction and adaptation strategies. At the same time extensive literature review indicates that not enough academic and research study was undertaken to analyze the impact of disaster on women and children and their coping strategies adopted at the southern part of Bangladesh. This study was focused on the women and children's risk and vulnerability related to disease, health, sanitation and hygienic measurement during and post disaster stages.

We conducted this study having the following objectives:

1. To analyze the factors that increased vulnerability of women and children at during and post disaster situation.
2. To study the health hygiene and sanitation system practiced in the disaster situation and their effect on women and children.

2. Methodology

2.1. Selection of the Study Area

This study was conducted at Kalapara Upazila of Patuakhali district of Bangladesh (Figure 1). From the baseline study it was found that during last 10 years of the present century, coastal areas have faced at least four devastating cyclones of which two hit Kalapara Upazila. The number of death and loss of socio-economic condition are also increasing with the increasing number of cyclones. Every year, 2-3 cyclones hit Kalapara at different time period with different intensities. Major portion of the people of these areas are poor and live below poverty line, so there is a great impact of cyclone on socio-economic condition of study area. Total 81 cyclone shelters are used as educational institutions and during disaster maximum were wiped out or seriously affected; 1000 people were died and another 5000 people were seriously injured; 620 number of fishing nets, 500 acres of salt culture, about 385 fishing boats were also smashed [1]. Among the 113 cyclone shelters in Kalapara, only 71 have water supply facilities and 88 have toilets. Maximum shelters are vulnerable to earthquake, tsunami or cyclone. About 70% people take shelter during cyclone and the rest 30% people stay at home because of insecurity [1].

Financial losses due to the different disaster were a big burden to all of people of Kalapara as they do not have enough money to cope with and prepare for disaster. After the last disaster a significant numbers of water and sanitation facilities were built in Kalapara without taking into account the adverse impact of natural disasters. As a result, a large number of these facilities were destroyed by floods and cyclones [13] in previous disaster. Consequently, people living in the affected areas suffer from deprivation of the water and sanitation facilities and become vulnerable to several health risks. Therefore this study area was

selected to fulfill the objectives of the present study.



Figure 1. The study area (blue circled) Kalapara Upazila of Patuakhali in Bangladesh (Map, 2015).

2.2. Description of the Study Area

Kalapara Upazila occupies an area of 491.89 sq. km. It is located between 21°48' and 22°05' north latitudes and between 90°05' and 90°20' east longitudes. The total population is 2,37,831. Literacy rate is 52.0%. Main sources of income are agriculture 57.23%. Households owning

agriculture land are 57.23% [5, 6]. The remaining 42.77% are either landless or lands not used for agriculture. Major disasters are cyclone, flood, flash flood, river bank erosion, saline water intrusion etc [6].

2.3. Research Design and Data Collection Method

The study was conducted for a period of 2 months from 1st

May to 30th June, 2015 as this was the scheduled time for data collection for the student of Post Graduate Diploma (PGD) in Disaster Management program as decided by Patuakhali Science and Technology University. A total of 100 households' individual respondents were randomly selected to collect the information from Lalua-14, Balia Tali-11, Nilganj-08, Mahipur-12, Latachapl-12, Dhulasar-17, Dhankhali-26 unions of Kalapara Upazila of Patuakhali district. So that sample size was 100. Combinations of quantitative and qualitative research methods were used. We adopted an exploratory approach through employing participant observations-physical visit, in-depth semi-structured open ended questionnaire for individual interviews and Focus Group Discussion (FGD) to explore the women and children's health hazards suffered and sanitation practices practiced in the post disaster situation; the condition of women and children during and after disaster such as safety and security in shelter places; coping capacities of children and women in times of disaster; way of living after disaster; lack of safety and security and basic needs in shelter places, that may affect dreadfully the children's and women's rights to survive; to safety; to food and nutrition; to safe water, sanitation and hygiene; to health and to education. In addition, this approach was used to collect sensitive data, such as gender roles, income and assets (i.e. livelihoods). Additional information as secondary data was pertaining to the study was attained by accessing the relevant information from media such as journal articles, books, other research thesis and the use of recorded data, through Union Parishad (Local Government administrative office), Upazila Parishad (Sub-district Government administrative office), study areas and from various organizations working with this issue.

2.4. Data Processing Method, Statistical Tools and Techniques

After collection of each day, the data was checked; followed by editing and cleaning to detect errors or omissions and to maintain consistency and validity. Then the tabulation work including editing, coding and tabulation manually and using Excel program. In order to process and analyze the data, simple mathematical tools like average, percentage and tables, graphs were used to present the research findings in a meaningful ways.

3. Results and Discussion

3.1. Demographic and Socio Economic Condition

Study on level of education revealed that 48% respondent's education was up to primary level; 17% were secondary level and 35% were illiterate. Among the respondents more than 50% were 26 to 30 years old, about 33% were of 21 to 25 years old, 10% percent were 31-34 and rest were 16 to 20 years old. About 98% of the respondents were married and rests of the little percentage were divorcee and unmarried. Since most of the women are illiterate they cannot follow the early warning message, understand the technical instructions like post

disaster health safety instructions and have not much capability to safe themselves form disaster risk like use of unsafe water for drinking and household purposes, no use of soap for hand washing, disagrees to go the doctor or hospitals for better treatment, sowing interest to go to village doctor, willing to stay at home during disaster etc. Therefore especially women and children in the study area are more vulnerable to disaster. Research of other scientist revealed that during the last major natural disasters of the decade it has been observed that in India women do not have technical knowledge about disaster occurrence in general and more than half of the victims in the past disasters were women [16]. In many contexts, men are better connected to modern facilities and early warning mechanisms due to their movement in public spaces and access to various channels of communication, such as radio and TV, informal community networks and interaction with officials. Women have limited access to information and knowledge related to disaster risks in their communities as they are more active in the home and thus has less mobility in the community and understands hazards less [36].

In case of earning members 70% cases it is only 01 person, 28% cases it is 02 persons and 2% cases only 03 persons in a family. All the earning members were male and he is the head of the family. Economically the respondents were not enough healthy, 80% respondents were expressed that they have not enough land and work, 17% have some land but not enough and 3% have no land. Among the respondent 38% families are always deficit in earning, 51% occasionally deficit, 9% are equal and only 2% are solvent in their earning. From the above statics we can concluded that majority of the respondents were poor and have no enough money for lives, having number of family members up to 5 with one earning member. Physical visit in the study area showed that in the study areas women is less employed and more likely to be self-employed in homestead agriculture and animal rearing. Due to regular disaster phenomena and the loss of men's economic activities in agriculture, cultivation of cereal and livestock farming women experience a significant increase in their workload after disasters to solve the daily food and other family problem. Women living with her family and employed in the home services are identified not as joint owner with her husband but as a 'farmer's wife'. They have no socially agreed in decision making systems and they suffer traditional, routine and unnecessary gender based domination. Their lower economic, social, and political status be inclined them to be more vulnerable to disasters. This was also supported by other scientist [16] and he commented that women's high rate of poverty as well as cultural constraints on their activities in the societies means they are more likely to suffer losses of life and property in the face of natural disasters. Also other research findings described that due to the above conditions infants, young children, and pregnant and lactating women became vulnerable to malnutrition and micronutrient deficiencies, especially since their nutritional requirements are relatively high, but they are less able to negotiate their fair share of food within the household [20]. Where the nutritional status of

children is already poor, it is make worsen in a disaster situation. Investigation shows that women in matters of their taking food are always neglected-particularly mother eat less during shortages of food and it is frequently occurred during and after disaster. As a result, they are always deficient in nutrition and calorie intake. Our study also showed that women staying in shelter during and after flood suffering from malnutrition. Review of the literature [4] proved that nearly 89 percent of women suffered from food insecurity due to lack of access to and control over resources. Analysis of the damage and loss assessment of different disasters explains women and children are more vulnerable situation due to every disaster.

3.2. Occurrences and Impacts of Disasters

Patuakhali is generally subjected to natural hazards such as flood, cyclone, storm, river erosion, surges and salinity intrusion almost every year. The number of cyclone occurrence is increasing in Kalapara Upazila with the increasing number of cyclones occurrence in the coastal areas of Bangladesh. Study showed that the Kalapara area faced 05 cyclones within the time period of 1821-1960. But 07 major cyclones have occurred here during the last 40 years, where 02 were within last 10 years [2]. Present research revealed that (figure 2) the last ten years cyclone (67%) was the extreme disaster in the study area, and consequently the flood (19%), river erosion (8%) and others (6%).

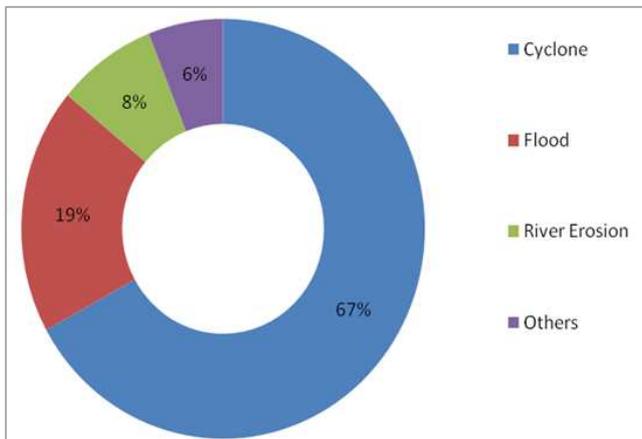


Figure 2. Disaster situation at Kalapara Upazila in last ten years.

Scientist cited that the frequency of cyclones over the years has increased significantly [20]. Major cyclones in 1970, 1991 and 1997 caused over 500,000 deaths [1]. The 2007 cyclone SIDR, which hit Bangladesh's offshore islands including Patuakhali district, affected 2,064,026 households and 8,923,259 people [1]. The Tropical Cyclone AILA hit Bangladesh on May 25, 2009 which affected more than 3 million people in Khulna, Barisal (Patuakhali is under the Barisal Division) and Chittagong divisions [1]. According to Kalapara UNO office, 94 people were dead and another 1678 people were seriously injured by cyclone SIDR of 2007. Because of cyclone AILA, 152 people were seriously injured in 2009. According to local people, more than 1000 people were dead by Sidr and more than 5000 people were seriously

injured. Among the injured many people are living with permanent disability [2]. Most of the people who died and/or injured during those Cyclones were women and children. This happens because of children, particularly girl children's close attachment with their mothers in household work. As the home managers or 'Farmer's wife' and care givers, women, along with their children, are the last to leave their houses and take shelter in safer places [20].

3.3. Water Source and Sanitation Management Before and After Disaster

Access to water supply and sanitation is a fundamental need and a human right [27]. Safe water and hygienic sanitation for the poor is a key factor in improving health and economic productivity and thus an essential component of any effort to alleviate poverty. In Bangladesh, around 74% of the total population has access to water supply [2] and 86% of Bangladesh households have some type of sanitation facility, of which 59% have hygienic toilets [22].

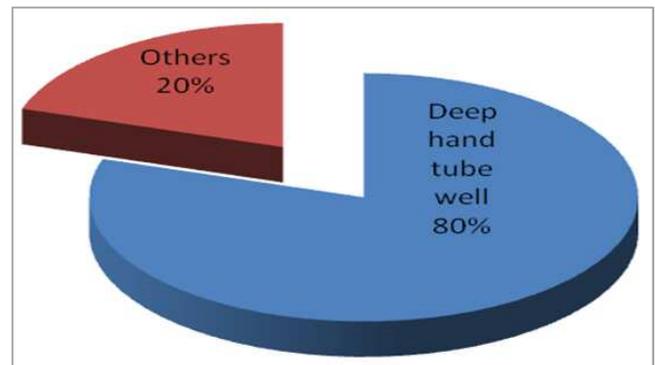


Figure 3. Before disaster sources of water at Kalapara Upazila of Patuakhali district.

Kalapara Upazila has 2801 tube-wells and of them 11 is out of order. 67 tub-wells are placed above average flood level [15]. Before disaster respondent use to collect drinking water (Figure 3) from deep hand tube well situated at their neighbor's house or other places (80%) and for the domestic uses (20%), they usually collect and use water from different natural sources like river, canal, pond etc. However, people who live in char areas mostly use river water after treating water with water purifying tablets or bleaching powder. But after disaster people have no enough sources for water. Only 20 % can collect water from deep tube well due to the submergences (Figure 4). Rest of the respondents (80%) collect water from river, cannel and pond for their drinking and domestic purposes. Concern Universal, 2008 in their research found that in the coastal areas, all (100%) respondents in both Kalapara and Golachipa reported that they use deep tube-well for drinking purposes. About 94.1% and 83.3% of the respondents in Kalapara and Golachipa, respectively, reported that they use river water for domestic uses. Around 88.2% in Kolapara, 66.7% in Golachipa, the owner of the water point are government.

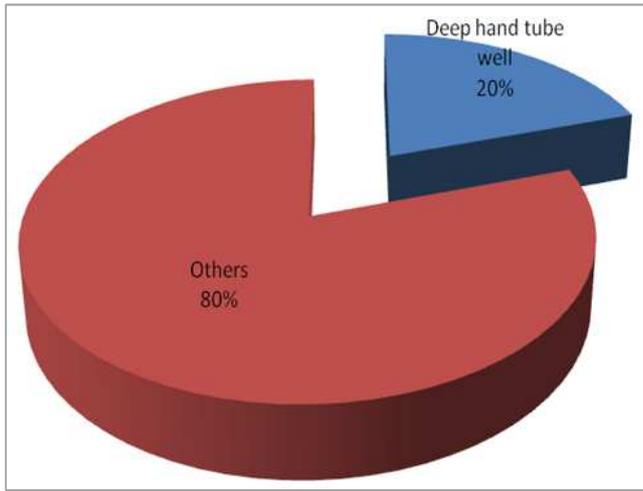


Figure 4. After disaster sources of water at Kalapara Upazila of Patuakhali district.

In the study area (Figure 5) majority of respondents (40%) asked that before disaster they used pit (kacha) latrine, 39% used ring slab latrine and 21% were used open place. On the other hand after disaster 43% used pit (kacha) latrine, 23% used sing slab and 34% used open place. That means after disaster use of pit latrine increased by 3%, ring slab use was decreased by 16% and open defecation was increased by 13%.

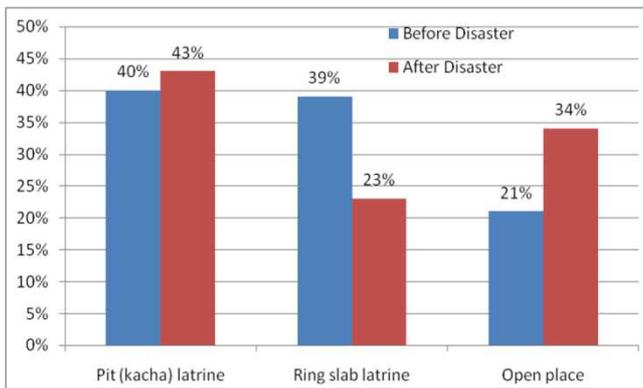


Figure 5. Latrine use behavior before and after disaster at Kalapara Upazila of Patuakhali.

It is important to note that in Kalapara, the rate of open defecation increased after the disaster. From other research might be commented that before disaster, 47.1% of the respondents had used ring slab latrines. After disaster, however, the use of slab latrines in Kalapara increased by 11.7% [13]. Present research and the findings of the previous research are almost contradictory. Key information collected from local key personnel’s showed that the Union Parishad Chairman and sub-Assistant Engineer of the Department of Public Health Engineering (DPHE), this was due to the supply of sanitary latrines in that region.

Previous study [1] revealed that lack of clean drinking water affected more than 84 percent households. This study explores that almost all the respondents are attacked by various diseases during and after disaster. Lack of medical facilities, malnutrition, lack of uncontaminated drinking water

and proper sanitation facilities are the common scenario during disaster. During the post disaster situation where most people are displaced, do not have a shelter and move violently for food or other needs, use of soap or hygiene practice is not anticipated to accept a high priority (Figure 6).

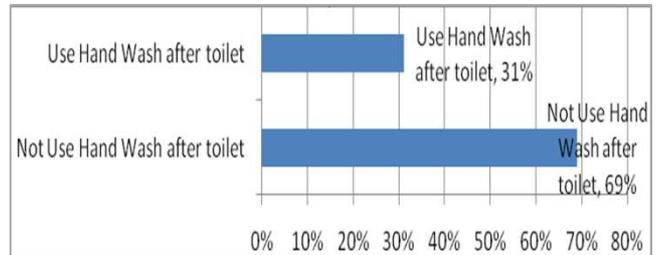


Figure 6. Hand wash (soap) use behavior at Kalapara Upazila of Patuakhali.

Study revealed that after disaster only 31 % respondent used hand wash to clean their hand irregularly and rest 69% did not use. Local victim people commented that after the disaster they have very limited money to buy their minimum food and meet the minimum requirements of basic needs. In this situation use of hand wash-soap is nothing but a luxury to them. Current result also discussed previously that use of ring slab was decreased and open defecation was increased after disaster at the study area. Consequently the potential reason of declining of hygiene practices in the disaster affected areas might be the unavailability of resources and low priority. Previous research [13] also revealed that before disaster, the rates of washing hands with water and soap before taking food and after defecation were 29.4% and 61.1% in Kalapara and Golachipa respectively. Above results and discussion could be concluded that there was a deterioration of hygiene practices after disaster, as reflected by their practices after disasters.

3.4. Health Hazards after Disaster in Women and Children

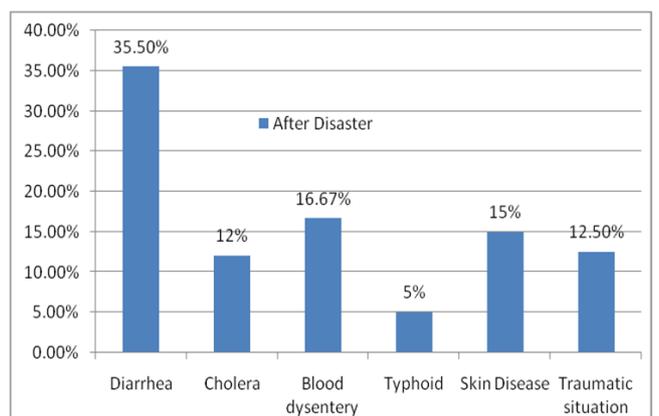


Figure 7. Suffer from disease after disaster at Kalapara Upazila of Patuakhali district.

Fecal-oral transmission remains as one of the main causes of water borne diseases in Bangladesh [26]. Present study showed that after disaster water borne diseases like diarrhea, dysentery, blood dysentery, cholera and typhoid were increased in the disaster affected areas. In the study area 34.5

percent of the respondents suffer from diarrhea, and 12% percent from cholera, 16.67 percent from blood dysentery, 05 percent from typhoid and 15 % from skin diseases (Figure 7). There was no age limitation for these diseases, the respondents told that all age were affected by the said diseases. From other research [7] commented that flood disaster threatens life and health not only through drowning and direct injury, but also through associated diseases and famine.

Current study remarked that 12.5 percent of the women and children suffer from traumatic situation during and after disaster. Notes from other research revealed several reasons why women avoid clinics and hospitals: lack of female examiners; disregard for traditional health care; absence of care and treatment for problems specific to women; inconvenient hospital hours; and long distance from home or shelter [17].

After the disaster happened, health hazards increased with the number of days passed following the day of disaster stricken. The highest health hazards were seen after one week of disaster stricken. Respondent commented that the sources of water used were not safe for their communities asked the local people. Because only 67 tube wells were placed above average flood level [15], were not sufficient for 2,37,831 local people [5] of Kalapara Upazila. Respondent stated that children, older people and women were the most health affected groups and diseased by diahorrea, dysentery and skin diseases etc. On the other hand due to the devastation of disaster maximum sanitation and water facilities were destroyed and surface water source were contaminated and vigorously polluted by disaster debris's commented by local people. Study from the Concern Universal, 2008 found that among the study areas, majority (64.7% in Kalapara and 55.6% in Golachipa) of the respondents stated that at least one of their family members got sick due to water-borne diseases during and after the disaster. The type of water-borne diseases was almost same in all the disaster affected areas. The prevalence of diarrhoea was the highest in all Upazilas (81.8% in Kalapara and 60.0% in Golachipa). Among other water-borne diseases, there were dysentery, jaundice, blood dysentery, cholera and typhoid. The potential reason of the high prevalence of diarrhea [8] is poor water and sanitation situation during and after the disaster in the affected areas. As expected, the levels of health hazards and water-borne diseases were much higher during and after the disaster period than that in normal situation. The patients' flow was higher immediately following a disaster than that in normal times. As expected, children, older people and women were the most affected groups presented mostly with water-borne diseases like diahorrea, dysentery, cholera, skin diseases etc.

There is a significant correlation between the availability of pure drinking water and the types of enteric diseases suffered by the respondents during and after disaster. Researcher [1] suggested that gender-friendly toilet facilities such as separate toilets at shelter centers and portable toilets should be made available at the shelters or flood refuges. Respondent said that the other causes of the health condition deteriorations and increases of illness related to water borne diseases and other diseases after disaster is the negligence of their male to address

the issues and fill financial burden at post disaster situation.

In previous study [24] it was discussed that the aftermath of environmental disasters and reported that the health condition of women deteriorates alarmingly due to the disaster. Firstly, one prominent cause of their falling post disaster health status is the fact that community looks at the health and hygienic needs with less importance and continuously avoid addressing the issue of providing institutional assistance in their most difficult and vulnerable moments. Secondly, socialization factors such as the neglect of these basic needs among women play an important role in determining their health condition.

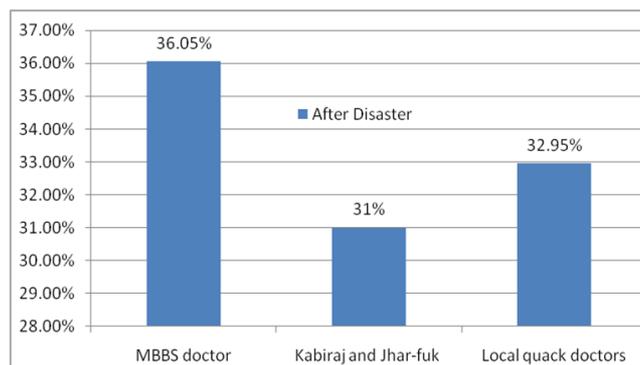


Figure 8. Treatment takes by respondent after disaster at Kalapara Upazila of Patuakhali district.

Present research finding (Figure 8) also showed that 36.05% respondents take the treatment by MBBS doctors at their Upazila Health Complex far from the shelter house or from their home; 31% of them do not get any medical support without kabiraj (village herbal doctor) and jhar-fuk (the professional traditional healer sprinkle treated water over the diseased part of the patients to prevent further disease attack). And these happened due to avoidance of addressing the issue of providing specialist doctor's assistance in their crying need. About 32.95% of the respondents get medical treatment from the local quack doctors. Though a good number of respondents get treatment from MBBS doctors, they were not available at right time at his workplace. It is noted that a good number of respondent depends on rural quack physicians for their treatment. Kabiraj and jhar-fuk still exist in this area.

Respondent also said that during the post disaster situation where they were displaced, do not have a shelter or minimum food and safe water; no enough money to fulfill the basic needs-how they will buy medicine for treatment. Study revealed that in this situation they fill a big financial burden to buy medicine and treatment and this situation make them more vulnerable. Occasionally they depend on the government help but the supply was very inadequate compared to the need of people. Therefore, the potential reason of declining of situation of health related hazards in the disaster affected areas might be the lacking of resources.

3.5. Personal Safety and Security at Home or Shelter During and After Disaster

At Kalapara Upazila during disaster at maximum cases

(65%) women and children took shelter in the cyclone of flood shelter. Rest 35% stayed at home to secure their houses. Majority of the respondent who takes shelter during and after disaster because they do not have security during and after the disaster at their home. On the other hand rest of the women did not leave their house because they fill more security at home then shelter places. Respondent discussed the real situation of the shelter during and after disaster. In many cases facilities provided in the shelter were less than the needed. Women felt insecure at homes and in flood or cyclone shelters because they became victims of violence and faced several gender-sensitive problems. The result of the study came in the scenery that incident of domestic violence, sexual harassment and raping inside the cyclone shelter increased during the cyclone and flood disaster in 2007 and 2009. In many cases the toilet was at outside of the shelter. The young girl and mother were also physically assaulted and face theft. Number of toilet was very few than required. Pregnant mothers suffered more during and after disaster. Security of the women should be ensured at both household and community level. From the study [13] found that as in many cases it was found that women face sexual harassment while going to latrine at night or at shelter house. Previous research reported [21] that number of death in 2007 and 2009 flood were due to snake bites; drowning and lack of medical facilities were more after than the previous floods. Especially death of women in comparison with male was higher. During the floods sexual violence against women became extensive and sexual harassment of women was observed at the shelter centers [1]. All these factors create psycho-mental impact on women's and children life. Respondent women complained [12] that there are cases of sexual harassment on the way to shelters and design of the shelter does not often provide minimum gender-friendly sanitation facility. Most of the respondents suffer from water borne diseases during and after disaster.

3.5.1. Special Facilities Getting by the Women and Children in the Shelter

Respondent complained that there was no system to provide extra facilities or security in the shelter to women, girls or children. Even they were not safe from neighbors or close relatives. In our study also indicated that girls and women's have the limited access in the shelter due to the limited place inside the shelter and insecurity condition. The right to security of persons is violated when women and girls are victims of sexual and other forms of violence while in relief camps or temporary housing [14].

It is well established that women in matters of their taking food are always neglected-particularly mothers, eat less during shortages of food and it is frequently occurred in Bangladesh. As a result, they are always deficient in nutrition and calorie intake. During study respondent asked that women staying in shelter during and after flood suffering from malnutrition. Also women eat very few due to the fear of harassments in the shelter place or in the toilet. Nearly 89 percent of women suffered from food insecurity due to lack of access to and control over resources [1]. So it is necessary to

ensure some common facilities for women and children in the shelter like sufficient food and drinking water, privacy, separate place for pregnant women, sufficient air and light, separate washrooms etc. Women are likely to suffer increased mental strain, and bear the brunt of certain social constraints; for instance, they are shamed by using public latrines, or being seen by men when in wet clothing [25].

3.5.2. Access to Modern Facilities to Get Prepared for Disaster

Respondent complained that 45% respondents did not know about cyclone or flood nor did not get any signal of disaster accept 55% respondent. Most of the women complained that they do not have any personal radio, TV or mobile phone and no newspaper. On the other hand present studies indicate the very poor literacy condition of women and children in the study area. Levels of education of 48% respondent were up to primary level; 17% were secondary and 35% were illiterate. Since most of the women are illiterate they cannot follow the post disaster health safety instructions and have not much capability to safe themselves form disaster risk. It means that most of the women do not get warning signal of disasters due to lack of modern weather forecasting technology like radio, TV, mobile and/or they don't have interest to use these modern access. Most of the residents of rural areas depend on the indigenous technology for getting the signal of disaster. Previous researcher commented that in many contexts, men are better connected to modern facilities and early warning mechanisms due to their movement in public spaces and access to various channels of communication, such as radio and TV, informal community networks and interaction with officials. Women have limited access to information and knowledge related to disaster risks in their communities as they are more active in the home and thus has less mobility in the community and understands hazards less [36] and women and children left aside from most information lines [24]. He also reported that the lower levels of education reduce the ability of women and girls to access information, including early warning mechanisms and resources, or to make their voices heard.

4. Conclusions and Recommendations

4.1. Conclusions

Public health hazards phenomenon may destroy local health systems, infrastructures; increasing the potential risk for water, sanitation and diseases that will increase morbidity, premature death, and weaken value of life in the future; may affect the psychological and social behavior of the women and children dreadfully. As a result children's and women's rights to endurance, to safety and security, food and nutrition, to safe water, sanitation and hygiene, health and education remain in severe threat due to disasters and most of the people who died and/or injured during those disaster were women and children. Such worst condition draw attention to scientists the need for understanding both social, physical and health related vulnerabilities and capacities of children and women in times of disaster as a pre-requisite for developing and delivering

child and women centered DRR and CCA policy and programs. This caused us the intensive assessment for impact of disaster on women and children health and their possible reduction and adaptation strategies. To fulfill the objectives the study was focused on the women and children's risk and vulnerability related to disease, health, sanitation and hygienic measurement at pre and post disaster stages. The evaluation of disasters and their impact on women's and children's life following the semi-structured questionnaire survey for primary data collection, secondary data collection, extensive field visit, physical observation methods allow indicating the vulnerability to disease, health, sanitation and hygienic measurement at pre and post disaster stages. In the present research, these methods have been applied in analyzing exposure to during and post disasters situations of the women and children are living at the area of Kalapara Upazila of Patuakhali district of Bangladesh. Analysis of the result revealed that since most of the women are illiterate they cannot follow the post disaster health safety instructions and have not much capability to safe themselves and their children's. Women are less employed and more likely to be self-employed in housekeeping, homestead agriculture and livestock rearing are identified not as owner or joint owner with her husband but as a 'farmer's wife'. They have no socially agreed right in decision making systems and suffer traditional and unnecessary gender based domination. Their lower economic, social, and political status be inclined them to be more vulnerable to primary disasters like cyclone, flood, storm surge, river erosion and secondary disasters e.g. lack of medical facilities, lack of safe water, malnutrition, proper sanitation and hygiene, prevalence of water borne diseases are the regular phenomenon for the study area. Study shows that after disaster, water borne diseases like diarrhea, dysentery, blood dysentery, cholera and typhoid were increased in the disaster affected areas. There was no age limitation for these diseases prevalence. The highest health hazards were seen after the disaster stricken. In many cases facilities provided in the shelter were less than the needed and the real situations inside the shelter are incident of domestic violence, sexual harassment, raping and severe food shortages. Girls and women's have the limited place inside the shelter and proper security like sufficient food and drinking water, sufficient medication facilities, available doctor, privacy, separate place for pregnant women, sufficient air and light, separate toilet and washrooms etc were not ensured at both household and community level. Because at the study area most of the women are illiterate and they cannot follow the health safety instructions and have not much capability to safe themselves form disaster risk or they don't have interest to use these modern access through radio, TV, mobile, newspaper including early warning mechanisms and resources, or to make their preparedness complete to cope with disaster.

4.2. Recommendations

From the local people to improve the post disaster situation in favor for women and children the respondent recommended that;

1. Communications to flood or cyclone shelter should be smooth for women and children,
2. Safe water source would be available (before, during and after disaster),
3. Safety security would be increased during and after disaster in shelter for women and children.
4. There is no provision for any disaster preparedness training program for the local people. The training programs are arranged for the officials of different organizations and for the member of disaster management committees and volunteer committees. As a result, the local people cannot develop their skill to cope with disaster.

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