



GLOBAL JOURNAL OF MEDICAL RESEARCH: K
INTERDISCIPLINARY
Volume 18 Issue 5 Version 1.0 Year 2018
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4618 & Print ISSN: 0975-5888

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Aims: The objective of this study was to understand the reproductive health status of women during the flood. The study also aimed to explore the effectiveness of existing reproductive health care services for women and adolescents during the flood.

Methods and Material: We used both qualitative and quantitative method in this study and our sampling procedure was purposive. We used a semi-structured questionnaire to collect data from 46 women in six villages under three different districts of Bangladesh, namely - Faridpur, Shariatpur and Sirajgonj. Moreover, five focus group discussion with the vulnerable women, ten exit interviews of the health care seeking women and five key informant interviews' of the local health care providers were conducted.

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GJMR-K Classification: NLMC Code: NLMC Code: WQ 200



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Impact of Flood on Women's Sexual and Reproductive Health: An Empirical Evidence from Northern Bangladesh

Abu-Hena Mostofa Kamal ^α, Umme Umama ^σ, Shahrear Roman ^ρ & Mohammed M. Khan ^ω

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Results: Findings of this study revealed that during flood women suffered more from leucorrhoea TID, pregnancy-related complexity, urinary infection and malnutrition compared to normal time. In contrast, poor responses by the institutions entitled to mitigate disaster-induced vulnerability enhanced sufferings of the victims.

Conclusion: Strengthening women-friendly disaster management program and enhancing institutional governance might be effective to reduce women's SRH vulnerability during a flood.

Keywords: disaster, reproductive, health, women, bangladesh.

Key Messages: Inadequate institutional response to reduce women's sexual and reproductive health-related vulnerabilities during flood.

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I. INTRODUCTION

During the year 2015, a total 376 natural disasters were recorded all around the world and from 2005-2014, a total of 380 natural disasters registered worldwide (Thomas, 2017). However, the death toll due to natural disasters in 2015 was 22,765, which shows a largely below the annual average number (76,416) compared to previous ten years and caused 110.3 million victims worldwide which was also below the annual average (199.2 million) (Thomas, 2017). Among the victim countries, Bangladesh is situated in South Asia which at present lies under the most threat ended categories of land for natural disaster. Between 1970 and 2005 a sum of 171 natural disasters were recorded in Bangladesh which caused highest natural disaster mortality rate in the world, with over half a million men, women and children lost to disaster events (Dankelman, 2008). The geographical location of Bangladesh and low-lying terrain have made it particularly vulnerable to two major forms of natural disasters and flood is one of them (Juran & Trivedi, 2015). On the other hand, damages and/or number of affected people due to flood was also higher than any other disasters (Bern et al., 1993; Dankelman, 2008; Doocy, Daniels, Packer, Dick, & Kirsch, 2013; Haque & Blair, 1992; Juran & Trivedi, 2015; Nasreen, 1995). Prior studies showed that the majority of the people of the flood-prone areas lived under poverty line and among all population women passed their life under distressed situation due to lack of proper social services (Azad, Hossain, & Nasreen, 2013; Enarson, 1999; Tom Mitchell et al., 2007; Nasreen, 1995). Disaster magnifies existing gender based inequalities and underpin disparity between men and women in respect to vulnerability and to cope with natural disasters (Azad et al., 2013). In Bangladesh, women and girls have less access to disaster risk reduction mechanisms as well as institutional services due to their socio-economic and cultural background than men which make them vulnerable and they experience higher fatality rates (Enarson, 1999; Tom Mitchell et al., 2007; Nasreen, 1995). Furthermore, women and girls have less access to response and recovery benefits (Enarson, 1999; Tom Mitchell et al., 2007; Nasreen, 1995). The cyclone and flood of 1991 was remarkable in disaster induced deaths in the country where the death toll was 1.4million and out

of the total deaths, 90% were women (Bang et al., 1989; Enarson, 1999; Tom Mitchell et al., 2007; Nasreen, 1995). Among all other problems encountered by women during flood, problems regarding their sexual and reproductive health were most crucial which has got less importance by the policy makers all around the world till date. Most of the girls and adolescence of Bangladesh usually suffer from various types of reproductive health problems (e.g. irregular menstruation, frequent birth giving, malnutrition, etc.). Women in rural areas suffer from several reproductive health problems in a certain time of their life span (Callaghan et al., 2007; Rahman, 2013). Women of the flood prone areas undertake extreme work load to survive or to lead their livelihood (Nasreen, 1995), which put them into fragile reproductive health conditions. Nonetheless, women and adolescents have unique health concern in the aftermath of flood (Islam, 2018). The women of flood prone areas have limited access to adequate food and nutrition, education and health facilities (Mitchell, Tanner, & Lussier, 2007; Nasreen, 1995; Parkinson, 2011; Rashid & Michaud, 2000). National and international communities who are dealing with reproductive health of women can't ensure their services during flood due to fragile communication system. Even the reproductive health issue has not been considered as the basic concern under flood management policy and/or act in Bangladesh yet (Rashid & Michaud, 2000). Over the past four decades, many extensive research have been carried out in Bangladesh on reproductive health of women. But no efforts have been undertaken to explore the condition of reproductive health of women during flood prior to this study.

II. METHODOLOGY

This study has provided insights into the dimensions of sexual and reproductive health related vulnerabilities encountered by women of northern Bangladesh during flood. Both quantitative and qualitative research methods were used to collect data regarding women's sexual and reproductive health. We used semi-structured survey questionnaire (46) to explore the socio-demographic information of the respondents, the nature of women's vulnerabilities and impact of flood on women's sexual and reproductive health. The closest contact (both participatory and non-participatory observation) with flood-affected women and direct observation of their challenging life enabled great objectivity of our research. Moreover, we conducted key informant interview (5) with the health care providers, focus group discussion (5) with the flood prone community people and exit interview (10) with the health care seeking women. We tried to understand the status of sexual and reproductive health problems of women under disastrous condition, especially during flood. We selected six most flood affected villages (Baliadangi and Amirabaj village of

Faridpur district, Tarabunia and Madhu Sarkar Gram village of Shariatpur district and South Khashkaulia and Bilshuvogasa of Shirajgonj district). We purposively selected eight flood affected women from each village and six from one village for questionnaire survey. In addition, we conducted focus group discussion in each of the five villages; 10 exit interviews in two union community clinics. However, we also selected five local health service providers (two quacks, two healers' and one religious priest) to understand the existing health care services of the study areas.

III. ETHICAL CONSIDERATION

The protocol was approved by internal Faculty of Institute of Disaster Management and Vulnerability Studies (IDMVS), University of Dhaka. Information has been collected in a neutral investigator.

IV. RESULTS

The findings of the study revealed women's sexual and reproductive health related vulnerability during flood and institutional responses to mitigate the vulnerability of the flood affected women in the study area. The followings are the overview of the status of sexual and reproductive health and institutional responses for the flood affected women.

a) *Socio-Demographic Background of the Respondent*

Geographically the study areas were located in char (char is a tract of land which is surrounded by waters of an ocean, sea, lake, or stream and isolated from the main land) (Parkinson, 2011), area where the respondents passed their life under continuous risk of flood. According to the respondents, flood visited the study area seven times between 2002 and 2013. The findings of the study showed that the mean age of the respondents was 29.98 (ranging between 15-55). Majority of the respondent's (87.27%) occupation was housekeeping. Besides their household activities, a significant number of the respondents (56.56%) said that they were involved in rearing livestock and some respondents (41.50%) were involved in home yard vegetable gardening. Most of the respondents (61.23%) were illiterate; 14.13% respondents passed their secondary level education (class VI-X). The findings of the study also demonstrated that 13% of the respondents had their own income and the income level ranged from 500-1400 BDT. Moreover, family income of the respondents ranged between 2000 and 4000 BDT; 7% respondents mentioned that their monthly family income was approximately 4000 BDT. All the respondents said that they faced trouble to get reproductive health service during flood. Furthermore, 68.13% respondents mentioned that the mean distance of nearby health care centre was 3.5 km.

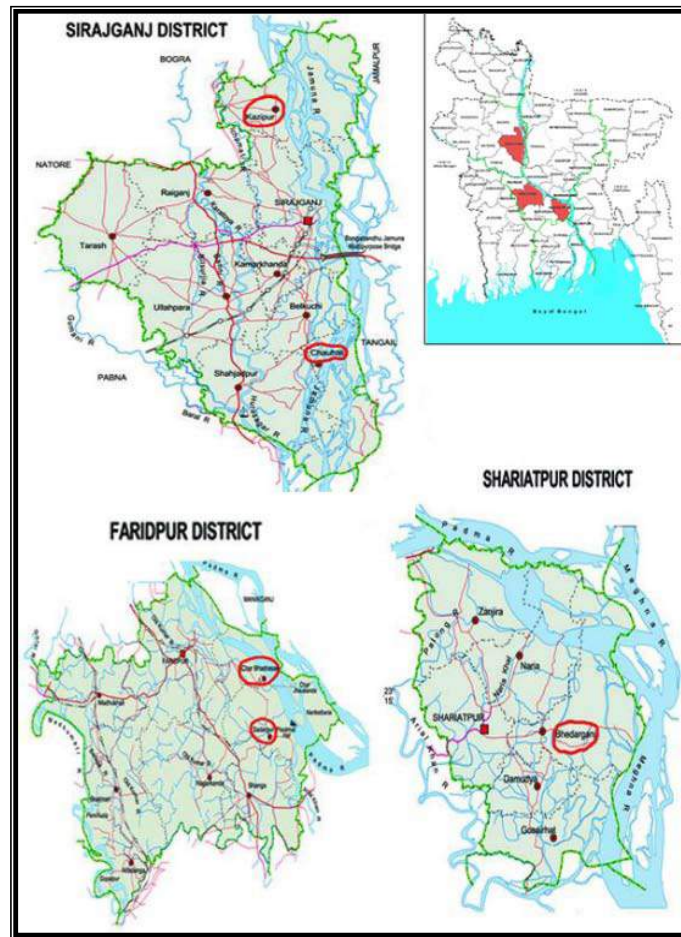


Fig. 1: Map of the Study Area

b) *Disaster and Prevalence of Sexual and Reproductive Health Problems*

During disastrous situation women pass their life under distress situation (Sánchez-Hernández, Castellanos-Vázquez, & Rivera-Tapia, 2013). Furthermore, disaster makes the life of women more complex, especially in respect to their sexual and reproductive health (Chen, Liu, Zeng, Ma, & Zhang, 2006), The findings of the study revealed that in pre-flood period 17% respondents suffered from Leucorrhoea TID (discharge of thick, whitish or yellowish substance from uterus) (Nelson, Meadows, Cannon, Morton, & Martin, 2002). Some respondents also mentioned that they suffered from Menorrhoea (7%) (extreme or over days bleeding during period) (Shabir, 2013), waist pain (6%) and urinary infection (4%). On the other hand, the findings of the study also showed that all the respondents said that they suffered from Leucorrhoea TID and urinary infection during flood. Besides, a significant number of respondents mentioned that they suffered from malnutrition (65%), pregnancy related complexity (47%), involuntary abortion (23%) and waist pain (12%) (see: figure-2).

One of the FGD participants faced severe problems regarding her reproductive health during the

flood of 2012. According to her description:

"Flood causes immense problem for the women and teenage girls of this area in respect to their reproductive health. Sanitary goods and reproductive health care services are not available here. Moreover, we live in a char area and during flood it becomes much more difficult for women like us to survive. We remain under water and in wet cloth most of the time which causes skin disease and urinary infection."

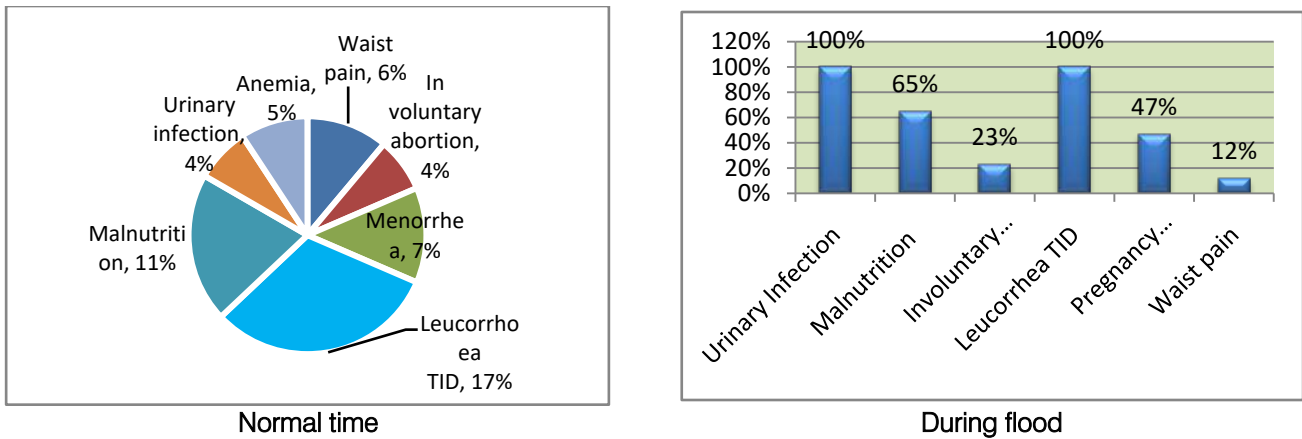


Fig. 2: Reproductive Health Status of Women

Source: Field Data 2013

c) *Reproductive Healthcare Service during Flood*

One of the major problems during flood according to the participants was to move from one place to another. Flood affected people (especially women) faced difficulties to move from one place to another. All the respondents mentioned that there was no specialized health care service for sexual and reproductive health in their locality. They added that it was almost impossible to get access to health care services due to their geographical scattered location, their poor economic condition and socio-religious dogma. One of the village doctors of the study area mentioned that the key problems to get access to reproductive health care for the female was socio-religious superstitions. He said that:

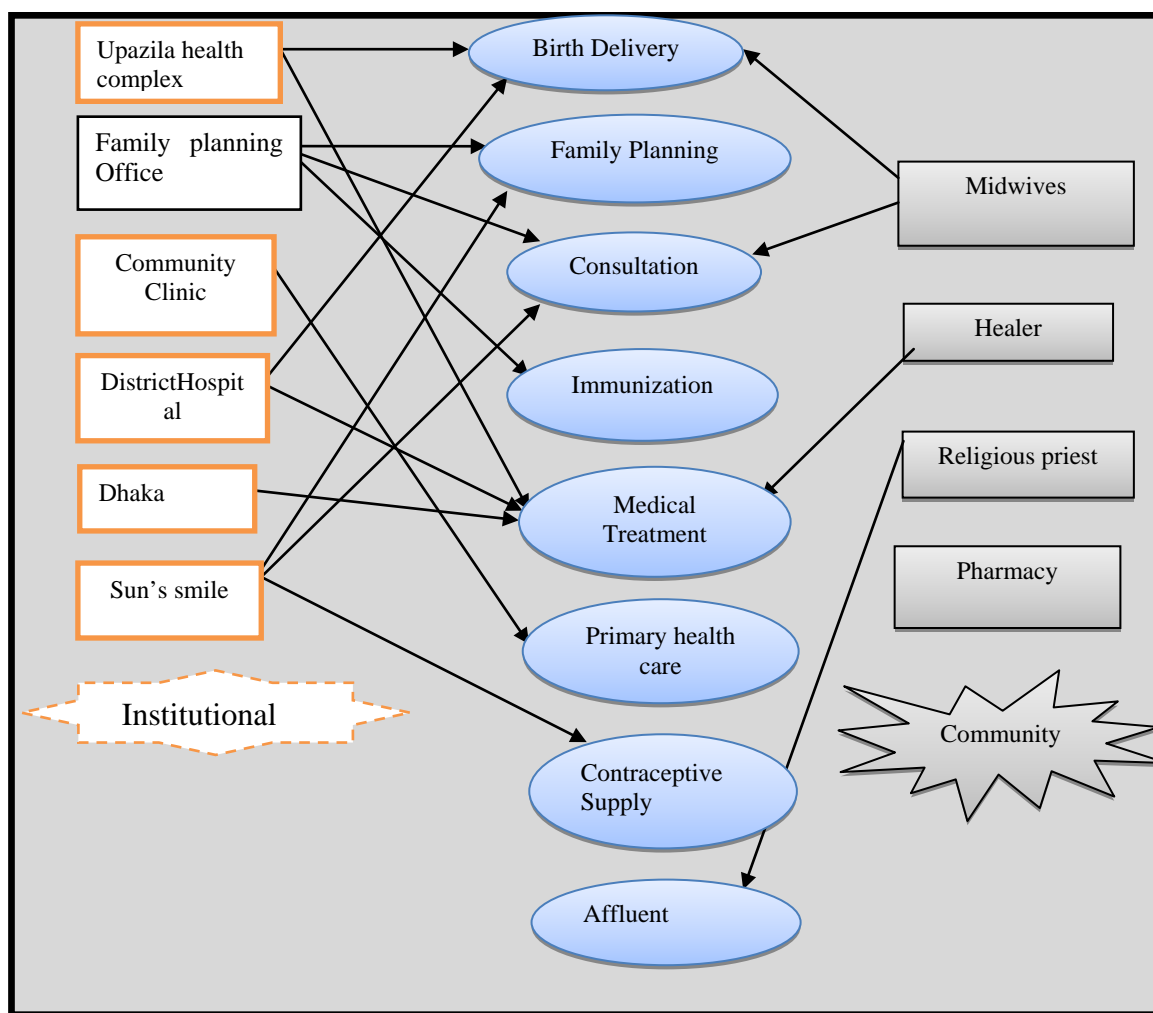
"...women feel ashamed to visit male physician for their reproductive health problems; they even think that it as a sin to share their problems with male person (locally called porpuras). But there is no MBBS doctor in our area and if we want to visit those doctors we need to cross 10 kilometres from here this becomes almost impossible for women. So, women of our area either stay at home or collect enchanted water ('panipora') from local religious priests."

There were two available sources for reproductive health care services in the study area as the findings revealed. In broader sense, first one was institutional, and second one was non-institutional services. The institutional service providers involved Upazila Health Complex, family planning office, community clinic, district hospital and Sun's Smile clinic. On the other hand, according to the description of the study participants, non-institutional service providers involved- midwives, healer, religious priest and local pharmacy. A majority of the respondents (93.5%) mentioned that the services provided at the institutional level were not enough to mitigate vulnerabilities of women during flood. One the other hand, all the respondents mentioned that during last flood they relied

mainly on midwives, traditional healer, and religious priests for reproductive health care services. Some respondents (58.54%) mentioned that they took services from local pharmacy. The participants who depended on institutional services reported that they had taken help for emergency birth delivery, to get contraceptive, consultation and immunization. On the other hand, all the participants said that they mainly relied on reproductive health services from community level institutions, like midwives, healer, religious priests and drug house. One of the participants said that:

"We do not get proper support from any institutions. So, we mainly rely on services from our community level. ...we mainly share our problems with aged women of our family or sometimes outside of our family. Sometimes we also go to 'Maulana' (religious priests) of the local mosque to have solutions for our personal problems. Besides, we also call midwives for pregnancy related complications and birth delivery during flood."

Three other participants mentioned that due to insufficient reproductive health care services women faced tremendous problems during their menstruation period. One of the participants added that during flood most of the time women stayed under water, even during their menstruation period, but they did not have any access to sanitary goods. Besides, they remained with their wet clothes which caused urinary infection. They concluded that most of the time they did not get cured with the treatment received from their community level but they did not have any other alternative to get access to better treatment.



Source: Field Data, 2013

Fig. 3: Institutionalization of Reproductive Health Care Services

d) Dynamics of Reproductive Healthcare Services During Flood

Access to reproductive health care services was hindered by various socio-economic issues during flood, as the respondent mentioned. A majority of the respondents (88.70%) reported that due to long distance they failed to get access into existing health care services. On the other hand, 87.30% of the total

respondents noted that due to their poor economic condition they did not seek health care services. Moreover, a significant number of respondents (83.60%) also mentioned about guardian's prohibition and religious barriers to take health care services from outsiders and especially from male service providers and or from distant places(See:Table-1).

Table 1: Problems Encountered by Women taking SRH Services

Reasons of not taking RH Service	Percent
Long Distance	88.70%
Unpleasant Service Provider's Behavior	10.60%
Lack Of Service Provider's Expertise	67.10%
Long Waiting Time	13.60%
Inadequate Drug Supply	23.60%
Too Expensive Service	21.40%
Religious Dogma	83.60%
Economic Problem	87.30%
Prohibition by Guardians	83.60%

*multiple responses

Source: Field data, 2013

One of the participants described her personal experiences during last flood while she was passing her menstruation period. She said that:

"My menstruation period (locally known as 'mashik') started during the last flood which made me to suffer a lot. From the very begging I ignored the problems, I mean secretion of white fluids ('sadaseraf') and severe lower abdominal pain. ...I had to stay in wet clothes almost all the day and I could not dry my clothes even at night as there was no proper space to do so. I passed 15 days through this situation and till now during my menstruation period excessive blood comes out with the menstrual rags."

Another vulnerable woman reported that women's dress code became problematic during flood. She reasoned that generally women used to have more clothes compared to their male counterparts. But during flood they remained long time with their wet clothes. And thus due to traditional dress codes women became more vulnerable compared to their male counterpart.

The local health service providers faced multifaceted problems as they mentioned. All the health care providers participated in this study reported that they did not have proper resources, like skilled doctor, especially female doctor, adequate supply of drugs and sanitary goods, to serve the health care seeking people. Moreover, they also mentioned that during flood due to fragile communication service women form long distances failed to go to community health clinic. In addition, they also said that women of the villages felt shy to discuss about their personal reproductive health related issues with male person. One of the local quacks said that:

"Most of the people of our area are Muslim and they maintain strong veil (purdah) system. Besides, male persons of the family do not allow them to go to health complex, especially for reproductive health care service."

Participants of this study asserted that due to collapse of communication, women became more vulnerable in respect to their reproductive health care services. Nonetheless, they also mentioned that there was lack of strong social structure to ensure proper services for women.

V. DISCUSSION

Disaster is gender neutral, not vulnerability (Kshirsagar, Shinde, & Mehta, 2006; Tom Mitchell et al., 2007). Flood causes enormous problem for women in respect to their reproductive health. From our study it has been observed that the study participants lived in a geographically scattered area where they had poor socio-economic settings. A small number of the respondents had their own income. This finding suggests that in order to have access to better access

to health care services women had to depend on their family. In addition, their family incomes were also below moderate. Again, the findings of the study also revealed that during normal time they faced problems regarding their reproductive health but those problems increased to a large extent during flood. Similar type of problems was faced by women during the Pakistan flood in 2010 (Ruth, 2009) and Mumbai flood in 2005 (Ali, 2014). However, the findings suggested that women's dress code was a passive cause behind their reproductive health related problems. Research has consistently revealed that women's traditional clothing, like- sari, causes difficulties to run or swim during emergency situation (Ali, 2014; Ruth, 2009).

The participants of this study reported that they mainly depended on non-institutional or community level services for their reproductive health related problems. They also mentioned about their socio-religious constraints to get access into reproductive health services. Geographical locations, lack of strong social structure, collapse of communication services, prevalence of diseases, lack of sanitary goods and nutritious food supply and socio-religious dogmas were some other reasons behind the reproductive health related vulnerability of women during flood, as the findings suggested. The study conducted by Zarqa S. Ali (2014) is also suggestive of similar findings (Ali, 2014). The study finally suggested making the governmental and non-governmental organizations to be proactive about providing reproductive health care services for women and taking it as the key concern of disaster health governance.

VI. CONCLUSION

Bangladesh is recognized as one of the most vulnerable countries in the world in terms of frequency and intensity of natural disasters. Due to the geographical location, the country faces several disasters almost every year. Natural disasters like cyclone, flood, drought, landslides, etc. have been causing huge impact on economy, infrastructure and life over the decades. The findings of the current study revealed that flood disrupts the normal life style of the women of the northern part of Bangladesh. They become vulnerable in respect to their reproductive health care services. In general, women are regarded as the household manager and the burden of managing both household chores and health care issues of her and the other members of the family is also shouldered on women. Besides, due to traditional socio-cultural structure women fails to share the problems of their own, especially problem regarding reproductive health care related problems. Rather than sharing these types of problems with others, women try to solve the problems using indigenous coping mechanisms or taking the help from the community

people, like religious priests, midwives, local pharmacy and very few people go outside to have better treatment facility. The people of the villages of Bangladesh still believe that it is uncomfortable to share their physical problems with outsiders and or with male persons. Due to flooded situation, it becomes almost impossible to go from one place to another. So, it could be another reason of women's sexual and reproductive health related complications. The participants of the current study mentioned that arranging mobile health care services and using boat for the flood affected people would be a very good initiative to mitigate vulnerabilities of the affected people. Besides, raising awareness for women and adolescents through health education would help to reduce vulnerability during flood or any other disasters. The participants also recommended reducing cost for health care services so that they may get easy access to health care services in the future. To conclude, it can be said that in Bangladesh women are half of the total population and most importantly women are regarded as better disaster manager compared to their male counterpart. So, it is important to ensure good health care services for women so that they can manage other disastrous situation and in order to ensure good physical condition for women it is necessary to consider and/or incorporate reproductive health care issue into mainstream disaster management policy.

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