

Natural Disaster and Women's Mental Health

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Abstract

Based on a case study in the Himalayan state of Uttarakhand, this article examines women's vulnerability to the June 2013 floods in constructing mental health outcomes. By means of qualitative research and diverse vulnerability approaches such as entitlement, livelihood and political economy, the study draws attention to the initial well-being, livelihood resilience, self-protection, societal protection and social capital of women and underlines how their lack of capacity to avoid, cope with and recover from disasters increased mental health exposure to risk. To this point, women's vulnerability and mental disorders are reciprocally related to each other. In conclusion, while physical exposure to the flood was a necessary element, it was women's pre-existing symptoms and developmental processes that were most influential in generating mental health consequences after the disaster.

Keywords

Vulnerability, mental health, natural disaster, Uttarakhand, gender inequality

I Introduction

Over the course of several decades, the concept of 'disaster' has been a subject of discussion among social scientists (Kreps, 1984; Quarantelli, 1989). Although no clear conformity has been accomplished regarding the definition of disasters so far, there is wide agreement that they are inherently sociological processes (Bolin, 1998; Quarantelli, 1989, 2000). Quarantelli (2000) defines disasters as occurrences when 'the routines of collective social units are seriously disrupted and when unplanned courses of action have to be undertaken to cope with the crisis' (p. 682). Bolin (1998) echoes this view when he stated 'disasters are

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fundamentally social phenomena; they involve the intersection of the physical process of a hazard agent with the local characteristics of everyday life in a place and larger social and economic forces that structure that realm' (p. 27). In the same vein, scholars in disaster research also discover collective stress situation that interferes with everyday life and disrupts social systems in a particular geographic area (Barton, 1969; Taylor, 1989; Tierney, 1989). Although a range of research concerning risk factors for psychological problems after disaster suggests the importance of individual characteristics (e.g., gender, ethnicity and coping), disaster-related factors (e.g., injury and relocation) and environmental factors (e.g., social support) (Norris et al., 2002), there is, nevertheless, no consensus regarding the specific nature, degree and persistence of mental health¹ effects of disaster (Perry and Lindell, 1978).

No Agreement in Disaster Mental Health Research

In entering hazard exposure research, three essential models have been evolved to understand the psychological consequences of natural disasters—the medical model, the psychological model and the sociological model. The trait of the medical model argues that mental disorder is a disease or a disease-like unit with a physiological, genetic or chemical base that can be taken care of through medical means (Cockerham, 1996; Kirk and Kutchins, 1992). Thus, based on the above arguments, mental and behavioural disorders have been shown to be associated with disruptions of neural communication within specific circuits. In turn, troublesome thoughts, feelings and actions are seen as signs and symptoms of underlying pathology.

According to the psychological model, an individual's psychological factors are responsible for the development of mental and behavioural disorders. Psychological science has shown that certain types of mental and behavioural disorders, such as anxiety and depression, can occur as the result of failing to cope up with a stressful life event. So, disasters promote higher occurrence of post-traumatic stress disorder (PTSD) among the victims (Frederick, 1985). Other psychological effects attached with disaster include 'a wide range of negative feelings, somatic symptoms, upsetting thoughts, and dysfunctional behaviours' (Hartsough, 1985: 23).

Sociological research talks about the social background of mental ill health and accepts a structural approach of understanding. The causes of disorder are developed in the essential social arrangements that constitute society (Aneshensel and Phelan, 1999). Thus, there is no agreement in disaster mental health research as yet. Against this background, I argue that the influence of disasters on an individual's well-being can best be understood by employing the vulnerability approach that places individuals in the context of complex social systems (Hewitt, 1983; Oliver-Smith, 1986; Wisner et al., 2004). This approach emphasises the various ways in which social systems operate to generate disasters by making people vulnerable. As reported by Tierney (2000), 'disasters are experienced by individuals who by virtue of their social positions, socially

structured life experiences and coping capacities, already are differentially vulnerable to psycho-social stress' (p. 185). From this perspective, body, mind, society and disaster events are inextricably intertwined.

Although substantial research has been devoted to understanding victims' mental disorders following natural disasters (Barton, 1969; Norris et al., 2002; Taylor, 1989; Tierney, 1989), very little effort had been made to study women's mental health and their gendered vulnerabilities. Thus, based on a specific case study, an attempt has been made to understand how the saliency of social structure, social processes and the disastrous event played diverse roles in shaping the lives of women, as well as, in generating disproportionate mental illness subsequent to the flood. In the light of these debates, this study aims at taking one step forward in posing several important questions: Why are women vulnerable to natural disasters? How are they vulnerable? And, importantly, does vulnerability matter in developing mental health outcomes? In this way, this article implants the discussions of disaster trauma within much broader historical, social and cultural contexts.

The rest of the article is divided into the following sections: The second section reviews various literatures related to gendered vulnerability and mental health. The third section outlines three approaches—entitlement, livelihood and political economy—related to women's vulnerability to disaster and their mental health consequences. The fourth section explains the nature of the June 2013 flood disaster in the Himalayan state of Uttarakhand. The fifth section draws the methods for data collection. The sixth section illustrates the causes of vulnerability from exhaustive illustrations of risks explaining why a given individual and household developed mental health problems before, during and after the flood. The seventh section summarises with policy implications.

II

Gendered Vulnerability and Mental Health: Beyond Disaster

As I develop the viewpoint of vulnerability on gender and the association of social relations, my goal in this section is to put a specific argument about social processes that I claim are central to the persistence of gender vulnerability. To build this case, I reviewed the contemporary disaster and gender scholarship and the broad range of theories of gender in sociology and psychology.

Scholars in disaster mental health research have identified the differences between men and women on the subject of various identical tests for post-impact psychological patterns and disorders (see, for example, Green et al., 1990). In that case, mental health literature supports that catastrophes are experienced differently by men and women as natural disasters result in an array of impact that are gendered and tend to carry uneven suffering to women (Enarson and Morrow, 1997; Fisher, 2010). Studies also indicate that although women exhibit higher levels of stress than men after disaster (Melick and Logue, 1985–86), most often these are controlled by a number of factors such as the composition of the family

unit, age, level of social attachment, and socio-economic status (Madakasira and O'Brien, 1987). Therefore, it is commonly assumed that disasters in many ways are gendered. Thus, Enarson and Morrow (1998) rightly point out that 'the social experience of disaster affirms, reflects, disrupts, and otherwise engages gendered social relationships, practices and institutions. Disasters are unfolded in these highly gendered social systems' (p. 4).

Significant empirical evidence shows that in more unequal societies, females suffer more than males and more often struggle with a sense of loss, hopelessness and feelings of helplessness to improve their conditions (American Psychiatric Association, 1994). This suggests that females are more dependent interpersonally and more emotionally reliant on others than males (Rosenberg, 1989). Hence, while thinking about disasters and their stress-producing potential, though it is difficult to draw conclusions, it appears that women, in general, are at higher risk of mental health disorders than men.

III

Linking Vulnerability to Disaster: Theoretical Framework

Throughout the 1970s and early 1980s, the vulnerability approach to catastrophe began with a denial of the assumption that disasters are caused by external natural events. The origin of vulnerability frame was traced when researchers across disciplines questioned the 'naturalness' of natural disaster (O'Keefe et al., 1976). They delineated the causes of vulnerability from specific instances of risk explaining why a given individual, household, group, nation or region is at risk of a particular set of events. If research from several disaster scholars were to be considered collectively, it appeared that there was a degree of support for the above view of vulnerability. By utilising vulnerability literature, my focus here is to present three most similar approaches—entitlement, livelihood and political economy—that link disciplines and connect scholars to understand behavioural patterns in disasters.

In the entitlement approach, Sen (1981) (see also Dreze and Sen, 1989) established the groundwork for studying causes of vulnerability to starvation and famines. This approach focuses on 'the ability of people to command food through the legal means available in the society, including the use of production possibilities, trade opportunities, entitlements vis-à-vis the state and other methods of acquiring food' (Sen, 1981: 45). Entitlements are the total rights and prospects by which a family can control diverse collections of commodities. In this light, vulnerability in an entitlement frame can grow for several groups of people as their endowment crumples. There are myriad descriptions of such endowment malfunctions on the part of sections of the poor rural inhabitants in developing countries (see, for example, Griffin, 1976).

Much like the entitlement approach, the livelihood approaches (Bebbington, 1999; Blaikie et al., 1994) talk about people's livelihood strategies that are embedded in the larger ecological and political-economic environment. Here,

the focal point is shifted from single vulnerability based on hunger to multiple vulnerabilities, for instance, risk of starvation, displacement and financial loss. Being much broader than the entitlement approach, this framework argues that vulnerability variables are connected with people's livelihoods. A livelihood is 'the command an individual, family or other social group has over an income and/or bundles of resources that can be used or exchanged to satisfy its needs. This may involve information, cultural knowledge, social networks, legal rights as well as tools, land, or other physical resources' (Blaikie et al., 1994: 9).

To a great extent, the political-economy approaches to vulnerability emphasise the sociopolitical, cultural and economic factors that mutually portray a degree of difference in exposure to hazards, diverse impacts and significantly differential capabilities to recover from past impact and/or to deal with and acclimatise to future risks (Blaikie et al., 1994). Grounded in the structuralist and the neo-Marxist thought (Liverman, 1994), this approach on disaster vulnerability framework highlights the magnitude of politics, economic and social processes in shaping human-environmental interactions and outcomes. Therefore, vulnerability is considered as a 'space' demarcated by political economy, entitlements and empowerment (Bohle et al., 1994).

Thus, diverse approaches to studying vulnerability with reference to women's mental health issues can be viewed basically as complementary and even necessary to address the full complexity of the concept and its relation to social-environmental systems.

IV

The Present Study

The Himalayan state of Uttarakhand² faced a flood disaster of unprecedented proportions in the month of June 2013. From 15 to 17 June 2013, cloudbursts accompanied by heavy (64.5–124.4 mm) to very heavy rainfall (124.5–244.4 mm) struck several parts of the state of Uttarakhand (Government of Uttarakhand, 2013). The record rainfall created an unexpected increase in water levels generating flash floods in the Mandakini, Alakananda, Bhagirathi and other river basins and also caused extensive landslides at various locations. Compounding to this, the melting of the Chorabari glacier made the Chorabari Lake vulnerable to the devastating flood situation. As a result, the fragile supporting wall of the lake collapsed and a massive amount of water along with large frosty boulders came down to the east destroying Kedarnath town, Rambara, Gaurikund and other places in its wake. Subsequently, the Uttarakhand disaster left horrific sights of death and devastation in its wake. The fact of the matter is that Uttarakhand barely had any time to recover from the three days of extreme rains and accompanying floods and landslides that annihilated buildings, bridges and roads, leaving many dead. According to official sources, over 900,000 people have been affected by the event. Over 5400 people were reported missing. A total of 4200 villages were affected, 9200 cattle/livestock were lost and 33,120 houses fully damaged. This event also left over 70,000 tourists and 100,000 local inhabitants stranded in the mountain terrain (Government of Uttarakhand, 2013).

Among the 13 districts, the districts of Bageshwar, Chamoli, Pithoragarh, Rudraprayag and Uttarkashi were most affected by this disaster. This region is among the country's most important pilgrimage paths and as the disaster coincided with the peak tourist and pilgrimage season, it significantly increased the number of casualties, missing and affected population. Moreover, it is well known that the Himalayas, the world's youngest mountain range, is always prone to frequent landslides and flash floods. For several years, this region has witnessed a wide range of disasters from landslides to earthquakes of increasing intensity. For example, in 2008 and 2009, the state faced severe drought conditions. In 2010, people struggled with floods, flash floods, landslides and cloudbursts. These are accompanied by irregular winter rains and drying up of recurrent streams. It is also located in a highly seismic zone, which makes the ecologically sensitive region very vulnerable. Therefore, without a doubt, this is a disaster-prone area needs explicit attention and focus.

In the post-disaster situation, even though governments and the army worked on rescue and relief work, questions were asked—is this only a natural disaster or has human action, inaction and the issue of vulnerability exacerbated the scale and magnitude of the tragedy? This extraordinary situation also presented a possibility to study the social construction of gendered vulnerability and mental health issue of women.

V

Data and Methods

In the beginning, 150 households were randomly selected from the worst-affected districts of Chamoli, Rudraprayag and Uttarkashi of Uttarakhand. I also selected 40 dwellings randomly where there was no damage from the above districts. Victims (women) were approached by the interviewer and invited to participate in the mental health screening. As a preliminary step, 314 victims showed interest to participate in the mental health screening. Initial screening was done to identify whether the victims developed mental health problems after the flood. An extensive screening questionnaire was prepared by means of Self-Reporting Questionnaire-20 (SRQ20)³ recommended by the World Health Organization (WHO, 1994) which was used in several studies to identify individuals with emotional problems. In this way, 207 women were identified with signs of mental health problems. However, by using purposive sampling methods, 68 respondents out of the above three worst districts were selected in terms of their regular status, ethnicity and caste background. As such, the intention was to capture a varied set of mental health issues after the disaster. The respondents had a wide age range (between 20 and 75 years old). After selecting the respondents, I explicitly employed the qualitative method by using in-depth interviews and three focused group discussions (FGDs), involving 12 people in each group to understand specific mental health problems, their causes and consequences. Essentially, Sofaer (1999) says qualitative study 'allows people to speak in their own voice, rather than conforming to categories and terms imposed on them by

others' (p. 1105). The in-depth interview lasted nearly one hour and twenty minutes, whereas each FGD took only about four hours and fifty minutes. The interviews and FGDs were held in the language preferred by the respondents, particularly Hindi and the local *Garhwali* language. Field notes were written immediately following each interview and group discussion. Besides, the interviews and FGDs were tape-recorded with the permission of respondents. The taped interviews were transliterated correctly for the analysis. The fieldwork was undertaken between September 2013 and November 2013.

For understanding the construction of gendered susceptibility and whether women's vulnerability played any role in producing mental health problems, this study considered to scrutinise the vulnerability apparatus developed by Cannon (2000) who says:

Vulnerability can be considered in terms of five components: Initial well-being, Self-protection, Social protection, Livelihood Resilience, and Social Capital. It should be noted that each one of these is crucially linked to the likely severity of impact of a given hazard, and yet primarily they are all determined by political, economic or social processes. Each of these contains the possibility of both vulnerabilities and capabilities, with these varying over time (as individuals and groups subsist and compete within given livelihood possibilities), and being affected in regard to different types of natural hazards. (p. 48)

Consequently, respondents were asked questions about their (a) initial well-being, (b) livelihood resilience, (c) self-protection, (d) social protection and (e) social capital. As mentioned earlier, these are regarded as the components of vulnerability (Cannon, 2000). By examining these factors in depth, it will be easy to comprehend the complex interaction between the actions (or inactions) of individuals, and of higher-level institutions which produced mental health disorder among the disaster victims.

VI

Results and Discussion

The Uttarakhand flood disaster 2013 encompassed a massive amount of short- and long-term mental health outcomes both at the individual and the community level. As planned, I demonstrate the findings by presenting representative quotes from the interviews and FGDs, which are discussed under five broad themes: (a) initial well-being, (b) livelihood resilience, (c) self-protection, (d) social protection and (e) social capital.

Initial Well-being

This indicates the primary nutritional and health status (both physical and mental) of people in their daily life before the impact of the hazard. It is the reflection of their ability to deal with illness and some types of injury resulting from a hazard. Thus, initial well-being is a sign of their potential for mental disturbance and recovery in the wake of a disaster (Cannon, 2000).

Uttarakhand is an impoverished area, characterised by disproportionate numbers of persons below the poverty line, high levels of unemployment, low educational attainment and substandard housing. Besides, this area provides fewer local health, mental health and social services. Therefore, this area is poorly equipped to cope with natural disasters (Balasubramanian and Kumar, 2014). Regarding women's general health, it was found that their increasing domestic and income-based workload made them mentally nervous and physically weak, and, as a result, they got less time to recover from the flood which ultimately led to higher incidences of morbidity. For example, every morning, most women walked quite a distance to fetch water and firewood. With routine household work, this regular practice amplified their difficulty of accomplishing almost all domestic tasks. In this way, most women got little time to relax and address their health concerns. Moreover, while men could rest at the end of their day, women still had a house to care for. It was also reported that within households, shortage of food items and nutritional problems were common occurrences among women and girls leading to comparatively higher rates of acute malnutrition even before the disaster. Therefore, as a coping strategy, women decreased food consumption to manage the household food security which was largely dictated by social norms. Compounding to this, after the floods, the loss of livestock (for meat and sources of dairy products), agricultural commodities and forest products reduced the nutritional intake of victims, which unequally affected women and girls. In the FGDs and personal interview, I found gender dimensions in cases of PTSD. Women and households with no source of income, which were disproportionately female/female-headed, exhibited more PTSD symptoms. Some *anganwadi* workers argue that:

Uttarakhand is much worse in nutrition-related indicators such as the proportions of undernourished children, low birth weight babies and pregnant women with anaemia. The proportion of females to males in the population is also low in Uttarakhand when compared to the overall rates in India. A large percentage of children are undernourished, and the proportion of pregnant women with anaemia is high. Important reasons for gender inequalities in health comprise—discrimination against girl children in health and general care; women's workloads which not only exposed them to health hazards but also made it hard for them to take time off for healthcare; lack of autonomy by women leading to lack of decision-making power and access to independent income; and early marriage which showed women facing the difficulties of early and disproportionate childbearing.

Thus, gender disparity in health was one of the social dimensions in which mental health of women was manifested. The fact of the matter is that gender inequality as a form of differential vulnerability was reflected in the mental health of women. With much frustration and anxiety, women in the FGDs astutely stated:

Pre and post-flood disaster domestic experiences played a major role in determining the level of mental health problems, as did the presence of family networks and the social, educational and cultural resources. Every day stresses such as malnutrition, torture, and trauma developed PTSD even much before the disaster. After the post-disaster, mass

unemployment in the new environment and separation from family sharply increased the risk of mental illness.

Moreover, women also expressed increased incidence of depressive illness, anxiety disorders, somatisation and frustration related to the care they were provided before the disaster. The following narration is a case in point:

Anything related to our health care was given least priority as society had too little insight into the effects of gender issues on the status of health. The son preference and daughter neglect pattern was reflected in poorer health care for girls during illness. Such attitudes and habits had important health implications to harm females significantly. The exposure to risk of health impairment and the ailing effects of poor or lack of treatment had tremendous impact on the mental health issues and disaster preparation.

Significantly, some scheduled caste (SC) women in the FGDs noted with acute psychiatric illness:

The multiplicity of social categories in our village made us most disadvantaged. We always faced extreme degrees of gender inequality. For us, the hardships associated with living in a 'low-income' and the deprivations associated with minority status are compounded by a patriarchal value system. The above issues increased our mental health problems in the wake of flood disaster in 2013.

Therefore, although gender has been shown to be a significant factor in predicting stress levels, it is the cumulative effect of family environment, care-taking roles, health and mobility that more clearly defined issues for women. In this way, women's psyche has been constructed as inferior to men's within the gender dichotomy which was widely noted in the evacuation process. Thus, the same psyche continued during and after the flood.

Livelihood Resilience

Livelihood resilience usually determines the capacity of an individual and/or their household to cope with the aftermath of a given disaster impact and to restore their earning or livelihood pattern. This includes continued employment, level of savings, loss of welfare benefits, loss or injury of supportive family members and hazard damage to their normal livelihood activity (Cannon, 2000).

Women's activities in the mountainous state of Uttarakhand were spread over various sectors of society, and this included being productive as well as reproductive. Since men in most of the families worked outside the state due to lack of industries or other sources of employment, women had to take double responsibility. As always, women are hard workers because they work throughout the day starting with the family work, nurturing children and livestock, going out for fodder, obtaining fuel and drinking water for sustaining livelihoods, etc. Agriculture was considered to be the prime basis of resources. Mostly, their responsibilities ranged from field preparation, sowing, weeding and harvesting to

ploughing the field. Despite this, they had little legal rights to land. Importantly, these factors strengthened the historically patriarchal nature of the hilly society in which men developed control over productive resources and over all the important decision-making processes. In some cases, it was also found that high-earning women, even those who earned much more than their husbands, were bound by the cultural logic of rigorous mothering to shoulder more of the family work. Therefore, the capacity of these women to cope with the severe flood and restoring their livelihood was insufficient. Likewise, after the flood and landslides, the loss of women's possessions and their essential role in supporting households was marginalised. To put it simply, while the landowning women farmers faced heavy losses, the landless wage labourers got an even harder time finding jobs. Some middle-aged women say, 'there are no jobs at the moment. We have no other options but to borrow if we have to feed our children. Many of us are in heavy debt.' Here, it is important to note that women, who were the sole breadwinners after losing family members during the floods, took up odd jobs in the tourism sector or engaged in daily-wage labour of cleaning the debris without an assured source of income. The following is a case that clarifies the situation:

Honestly speaking, we are poorer than our male counterparts. Our poverty raised from the roles that we were allocated and the restrictions societies placed on our access to and control of resources. Inheritance laws and customs, marriage provisions, banking systems and social patterns etc. compelled us to depend on fathers, husbands and sons. The health hazards that resulted from multiple births contributed to interrupted work and low productivity. Moreover, conventional anticipations and home-based tasks limited our mobility and also limited our opportunities for political involvement, education, access to information, markets, and a numerous of other resources, the lack of which strengthened the cycle of our vulnerability. Hence, all these factors ultimately led to the adverse mental health outcomes.

Respondents' pre-disaster employment and levels of savings appeared to be more vulnerable, and, as a result, they developed acute exposure and chronic psychological effects. Speaking of current challenges, an unmarried woman aged 31, says:

Where is the source of income? Where is the employment? I am considered a parasite in my family; therefore, my preparation to the flood was nothing except believing in God's mercy.... She then started crying.

Echoing the plight of the previous woman, another middle-aged woman reported with apprehension:

I am developing symptoms of mental illness in terms of sleep disruption as stressors are revolved around my troubled interpersonal relationship. Most stressors are work related, such as occupational stress and financial stress, whereas others emerged from physical environment, such as environmental worry and ecological stress. These outcomes are themselves influenced by acute disaster stressors such as trauma or loss.

During the FGDs, women from the Deoli-Bhanigram village in the Rudraprayag district of northern Uttarakhand made shocking revelations. In fact, the 15–16 June torrential rain killed all 57 men from this hamlet; therefore, this village in the Kedar valley is also called the ‘village of widows’. During the interview, I noticed heightened grief among the widows as well as a deep sense of loss and disbelief that prevailed in their eyes. Choking with hopelessness, a widow aged 29, reported:

My husband was the only source of income in my family. I lost everything after his death. After that I found no other alternatives except going to my father’s house. However, my father now says I am a burden to him as he doesn’t have enough money to run the family. My brother told me to leave the house as if I did not have any right over my parent’s property. After that, I left my father’s house and am now staying in a hut here. My livelihood is completely gone. Nobody is here to help me. How can I run my family with my three year old daughter? I do not want to live in this world.

Another widow aged 38 from the same FGDs narrated with grief:

I spoke last time with my husband on June 15. He said there was a lot of water all around. He, along with a group of people, had taken shelter next to a rock.... Now, I believe he is no more. God only saved my life and the lives of my two daughters. What shall I do now? I am not from a rich family. Every day, at night my daughter starts crying thinking that we cannot survive in this world.

Hence, the loss of livelihood, financial losses and personal losses were seen to be closely connected to depression, anxiety, somatic complaints, general stress and traumatic stress.

Self-protection

Self-protection signifies the skill of an individual or household to provide them adequate protection or to be able to avoid living or working in hazardous places. It is controlled by the level of the knowledge of physical measures, and the capacity of the people to implement these (Cannon, 2000). With the de-recognition of women’s ‘productive capabilities’—as evident in Uttarakhand—it should not come as a surprise that their needs for adequate protection were not met. At any point of time, they were not provided logistical assistance and the skills required to prepare for the impending disaster. Hence, those women who lived in hazardous mountainous terrain faced maximum casualties. The following is a case that explains the situation:

The prevalence of emotional and psychiatric problems was due to our lack of awareness of the environment, i.e., the hazards we were exposed to, the recognition of the conditions that made us vulnerable and the lack of individual or collective preparedness. Lack or insufficient information channels made us depend on our past experiences. The fact of the matter is that we were not prepared to a flood of such magnitude in our life.

In view of the disproportionate impact of disasters on elderly women, and their relative lack of social and economic resources, it was found that aged women exhibited inexplicably high incidence of physical and psychological outcomes after the flood. Since the life expectancy for women is longer than men, aging and gender issues are interconnected. Low-income seniors, the home bound and those with physical and cognitive disabilities faced compounded barriers that made self-evacuation highly improbable or impossible. Some of the frailest seniors expressed how they faced additional challenges during the evacuation. For instance, evacuation for them potentially involved significant financial (e.g., use of vehicle, fuel, cost of staying in a new place), emotional (e.g., reluctance to leave property or possessions) and social (e.g., dependence on relatives and stigma) costs. Furthermore, the poor or low-income and especially older-minority women were unable to increase the preparedness for the impending disaster—by storing food, purchasing emergency first-aid equipment and medicines—which made them at special risks in times of floods. So, for these seniors, the risks of leaving was balanced with risks of staying. A number of elderly women commented:

The economic situation all through our lives from the teenage, joblessness to the loss of monetary support, when divorced or widowed were aggravated all over and left many of us with little or no economic security before the flood. Moreover, the location of housing made our condition worse.

However, one elderly woman made a fascinating revelation while reflecting on various changes the body underwent right from puberty, pregnancy and through menopause. She remembered her difficult times by saying:

It was not easy to stay focussed on fitness routines or pay attention to health and physical appearance for disaster preparation. Hormonal shifts at menopause can throw anybody off their sound mental health. I have been developing forgetfulness and other mental setbacks before the floods...this flood is just another stressor for me.

The story of Ketki, a 26-year-old woman, is interesting to cite here. She was married but was separated and then divorced by her husband before the flood. She belongs to a lower-income group and now barely manages to survive by selling various products to scanty tourists. Currently, despite her limited contacts, she developed stress, anxiety and depression. Experiencing severe incapacitating emotional breakdown from her daily life as well as from the flood, she cites:

Life has been a big struggle for me...the moment I think about my previous life, I become restless.... I get nervous and feel a burning itch sensation all over my body... my sleep gets disturbed every night. For me, life was a disaster. Nobody helped when I went to my relatives or other friends for my daily survival. Thus, this flood is nothing for me.

One may deduce at this point that in a disaster of such a magnitude, the total loss experienced by many of the survivors was nothing in comparison with the daily

struggles the likes of Ketki faced before the disaster. Thus, there is a consistent tendency for socio-economic status (SES), family surroundings and age to be more powerfully related to anxiety disorders after the disaster. It is evident from this study that the observed gender differences in depression are consistent with a differential vulnerability to the impact of the flood disaster

Social Protection

Social protection (SP) is generally considered a 'safety net' for the poor and vulnerable groups that provides income security for individuals. Access to SP instruments tends to make the vulnerable groups more risk-taking and thus provides the opportunity to gradually move out of danger. In other words, SP refers to the capacity or willingness of social and political structures at political or social levels above the individual or household, to provide protection (especially structural and technical preparations) from particular hazards (Cannon, 2000). For instance, the sources of protection mostly come from the local government, national government, relevant organisations (e.g., fire department, civil defence) or community-based initiatives. As discussed elsewhere, the vulnerable groups are typically most exposed to diverse risks, whether they are natural or man-made, and they have the fewest instruments to deal with these risks.

The respondents stated that Uttarakhand has always been prone to floods and landslides; however, what happened in the June 2013 flood was a result of utter insensitivity by the state and Central government. Terming the calamity as a man-made disaster, they said the disaster had been caused by unplanned development. It is the result of mechanical misuse of the state's natural resources. The dams, barrages and tunnels were built in the name of hydel power projects, which have impacted the course of the rivers resulting in tragedy. In addition, the state government in particular offered least concern for disaster preparation and mitigation plans. Most of the educated respondents who completed their graduation asserted with anxiety:

The cloudburst-induced flood in our area was a disaster waiting to happen. The state's draft action plan on climate change was full of such warnings. It captured vulnerability assessments on Uttarakhand, people's awareness of climate change and how they were getting affected by the change. The document was also a comment on the development model in the State and raised several points about how development should not be done in an ecologically fragile region.

It was revealed that although people offered designs and proposals based on their past disaster experiences for particular social protection policies, the state government did not deal with any of these issues. While people faced serious problems like lack of permanent houses, poor sanitation, social alienation and indebtedness before this massive disaster, the state government paid little attention to address those. There was little effort expended for inclusive and comprehensive programmes on poverty, relief, social protection, employment services and social welfare. As a result, after the floods, the state government faced an irresistible

task because the number of people needing social protection programmes increased significantly. A woman aged 60 made a vital statement with grief when she noted:

After the floods, there was an increase in male alcohol consumption, financial problems and feelings of uncertainty which escalated conflicts and cases of abuse against most of us in the home. We believed that the violence resulted from men's frustration/anger, compounded by their unemployment and lack of counselling to overcome grief and frustration, their consumption of alcohol or drugs, the husband's suspicion or mistrust and dowry demands and poverty. All these problems converted to domestic and sexual violence which ultimately led to mental illness.

After the devastating floods, nearly all of the respondents lost their homes as well as their livelihood. Most of them viewed dislocation and resettlement as unjust matters. In this light, disaster assistance was viewed as inadequate or unfairly distributed, which developed prolonged bitterness and grieving. In the interview and FGDs, victims affirmed with nervousness:

We faced various obstacles to access aid resources in the aftermath of the flood. Generally relief was given only to the 'head of household' which was defined in terms of traditional customs. There is a frame of mind that men are the breadwinners and that money given to a man would be used to sustain 'his' household.

In another case, it was found that disaster assistance was routed through traditional panchayats, which failed to reach women. However, the governmental authorities believed that women are taken care of by their family (which was not true) and, therefore, did not need direct relief in their own right. Thus, from the governmental relief process, it was apparent that women as a group were not only affected by the male-centred method of delivery but the method of delivery also caused distress to all single, widowed, divorced and elderly women, in particular, who were in urgent need of relief for their daily survival. Moreover, in a disaster-prone state like Uttarakhand, women were often not consulted on resource allocation and role assignment in the preparedness and the recovery processes which resulted in disasters aggravating pre-existing inequalities. Furthermore, interviews exposed the fact that women were largely excluded from participating in the processes of formal community decision-making, which made their needs invisible.

The above findings underline the high prevalence of health problems which could be interpreted as a consequence of a hectic and stressful period immediately after the disaster. However, prior trauma, prior adjustment, lack of gender-incentive policies, material loss and relocation after the disaster and perceived social support was vital in understanding mental health problems among women.

Social Capitals

Although there are diverse definitions of social capital (see, for instance, Forbes and Wainwright, 2001), this article employs the ideas of Lynch and Kaplan (1997) who portray social capital as the 'stock of investments, resources and

networks that produce social cohesion, trust and a willingness to engage in community activities' (p. 307). In other words, social capital possesses a structural module (networks, connectedness, associational life and civic participation) and a cognitive module (perceived support, trust, social cohesion and perceived civic engagement).

During the FGDs and personal interviews, it was found that victims experienced a wide range of psychological responses of flooding (i.e., an increase in depressive symptomatology) both directly, through immediate damage and exposure to trauma, and indirectly, through deterioration of perceived support and sense of embeddedness. The main social risk factors for mental ill health were long-term difficulties, negative life events and lack of social support. Examples of long-term difficulties included poverty, inadequate education, living in a hazardous physical environment and high levels of insecurity (violence and accidents). Examples of negative life events included separation from partner, loss of employment and forced migration. The following is a case that elucidates the situation:

In fact, we lacked the resources required to cope with the demand occasioned by the flood. So, we tried to take the support from parents, other family members and relatives in our locality. When assistance was unavailable or inadequate, we turned to other interpersonal networks such as friends from whom we could find some help. However, some of our friends got enough help as their associational life and civic participation was good before the flood.

In other FGDs, respondents narrated in the midst of depression:

Sadly, the June 2013 floods followed by landslides removed significant supporters from our networks through death. Temporary and permanent relocation disrupted our neighbourhood patterns. Decline in social participation and embeddedness have been the main reason of our acute nervousness and anxiety. Moreover, our keen supporters who supported us at the time of grief are now victims themselves.... In this way, social networks, which was previously supporting in times of crisis are no more existing.

Respondents who hailed from SC background stated with immense concern:

While all members of caste groups faced disadvantages as a result of minority status, we were more disadvantaged. For women like us, caste disadvantage interacted with our subordinate status created a 'double minority' status. Moreover, at the lowest levels of the stratification hierarchy in Indian society, we worked for wages because the income of our husbands was insufficient for family support. In these situations, how can social networking be developed? The fact of the matter is that we did not receive any support from any sources except government's relief for couple of days after the flood. This is because we could not develop good networking and trust among members of the society.

So, the prevalence of physical and mental health problems was much higher and severe among those respondents who developed pre-disaster mental disorder symptoms as well as the event's casualties than those who did not. Along these lines, social capital could reduce the stressors, or risk factors for mental

ill-health. Thus, different components of social capital influenced mental health in different ways. Based on the various outcomes that are described above, it is now clear that social capital could reduce negative life events (e.g., preventing the loss of a job) and lessen long-term difficulties (e.g., promoting good physical and mental health).

Thus, differential exposure and differential vulnerabilities contributed to higher prevalence of mental health problems among the women in this area. The variety of psychopathologies associated with disaster was broad, and incorporated different types of psychiatric disorders and behavioural problems. In this manner, the major findings illustrated how micro and macro-level power relations of gender, caste and class shaped the contexts for health and well-being among women.

VII

Conclusions and Policy Implications

As the preceding discussion makes clear, mental health effects of disaster are established by a variety of impacts that are gendered and have a tendency to bring uneven misery to women. Women's lack of ability to fulfil their own needs during the flood or even before the catastrophe was determined by their incapability to access resources on a routine basis which created a considerable increase in psychological problems in the short term and amplified noteworthy negative physical and mental health consequences in the long-term period. The key mental health consequences were depression, anxiety, PTSD, medically unexplained somatic symptoms (e.g., fatigue, severe headaches, muscle and joint pain) and increased hazard intrusiveness (e.g., frequency of thought and discussion about the hazard). On the whole, the factors for mental health disorder following the floods were threefold: (a) the severity or extent of the flood itself (e.g., level of destruction and loss of life), (b) individual vulnerability factors during the pre-disaster period (being poor, aged, mother of young children, having a history of psychiatric problems, and having inadequate practical and emotional support due to institutional structures) and (c) level of social disorder and adversity in the post-disaster surroundings, such as lack of disaster assistance, lack of medical care and ambiguous information from public officials about the scope of exposure and the degree of threat to population and personal health. Thus, the collective brunt of the elements of floods, and social and gender issues generated considerable influence on the psyche of the women. More importantly, these psychological effects were not uniformly distributed all through society, but occur more thickly within some social strata such as widows, female-headed households, minority women and single and elderly women, than others. Certainly, this study demonstrates how the social and/or the vulnerability model of mental health offers modest hope when it comes to designing prolific input to improve women's negative psychological responses following natural disasters.

Within the realm of disaster reduction policy designed for the preparedness of the disaster in India, the focus has principally been on the recovery of place

rather than identifying or developing vulnerable person (Parida, 2008, 2010). Therefore, for a comprehensive understanding of mental health outcomes and gendered vulnerabilities, it is necessary to divide the notion of vulnerability into a number of components, such as, physical, economic, political, institutional, social, educational, cultural and environmental variables, among others, which are combined together to portray the condition of women and their inability to recognise the impact or recover from the effects of disasters. Along these lines, this study suggests the following policy implications:

- Although the entire population in the disaster-prone state of Uttarakhand are in need of firm attention, it is indispensable to identify and care for those who are vulnerable to the psychological and social consequences of disaster exposure, whether measurable or perceived.
- Disadvantaged groups such as poor women, widows, female-headed households, minority women, single and elderly women and those in violent relationships should be acknowledged as special-risk populations prior to the disaster, during disaster and at the time of relief and recovery services. This study reveals that it is always helpful to work with community organisations to identify these groups.
- Community-based emergency preparedness and awareness programmes should include and address the needs and concerns of disaster-prone women and men.
- Since gender inequality was present in the disaster prevention, preparedness and response, as well as in the distribution of power in the various sectors of social life, pre-disaster actions such as risk mapping and structural vulnerability analysis should incorporate equality and sustainable development agenda.
- The fundamental issue of the societal-induced differential vulnerability should be considered in the realm of development planning. In other words, policy makers should recognise the need for long-term and a gender-equality approach to address the primary issues of structural vulnerability that affect the resilience of an individual to disasters. The fact of the matter is that gender vulnerabilities are historically deep rooted through deprivation, inequality and discrimination. Hence, the component of development has to be based on equality, freedom and justice for all.

With these points of emphasis, this study suggests extensive future research at the local, regional, national and international levels on the structural processes and factors that increase vulnerability among women across different social groups to further strengthen the argument that vulnerability matters in generating mental health outcomes following disasters.

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Notes

1. Mental health is defined as a condition of well-being in which every individual understands his or her own potential, can deal with the usual pressures of life, can work productively and fruitfully and is able to make a contribution to her or his community. Also see Aneshensel and Phelan (1999).
2. The state of Uttarakhand is located at the foothills of the Himalayan mountain ranges; it is predominantly a hilly state, having international boundaries with the People's Republic of China in the north and Nepal in the east. On its north-west lies the state of Himachal Pradesh, while on the south it is bounded by Uttar Pradesh. The state has a very fragile terrain that is prone to natural disasters. The entire state falls within Zone IV and Zone V (Zone V represents the highest level of seismicity) of the earthquake zoning map of India. The districts of Bageshwar, Chamoli, Pithoragarh, Rudraprayag and Uttarkashi fall within the Seismic Zone V.
3. The SRQ-20 signifies that anybody who scores positively is likely to develop mental health problems even if the specific nature of the disturbance cannot be determined. Victims were identified by the SRQ-20 as suffering from emotional distress if they had a positive score of eight or more on the 20-item neurotic scale. See the following SRQ-20 table:

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1. Feel nervous, tense or worried
 2. Easily frightened
 3. Feel unhappy
 4. Find it difficult to make decisions
 5. Often have headache
 6. Have trouble thinking clearly
 7. Find it difficult to enjoy daily activities
 8. Lost interest in things
 9. Easily tired
 10. Poor appetite
 11. Sleep badly
 12. Have uncomfortable feelings in your stomach
 13. Hands shake
 14. Feel tired all the time
 15. Cry more than usual
 16. Daily work/study suffering
 17. Thought of ending your life been on your mind
 18. Unable to play a useful part in life
 19. Poor digestion
 20. Feel worthless
-

Source: WHO (1994).

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