

The Uttarakhand Disaster 2013 and Its Psychological impact on the life of young children

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Introduction: Uttarakhand is an enchanting region with abundance of natural resources like glaciers; snow covered mountain peaks and a profound system of mighty rivers. The topographical terrain and typical geomorphic conditions of this state increase its susceptibility to natural disasters like earthquakes, landslides, flash floods, avalanches etc. in varying degrees of severity. There is ample recorded scientific evidence to suggest that Uttarakhand is prone to severe natural and human induced disasters, more particularly, earthquakes, landslides, floods, epidemics, fire, hailstorm, lightening, road accidents, etc. The state falls in the highest seismic risk zones and has attained a position among first five states in respect of natural hazards in the disaster map of the country.

As per the earthquake zoning map of India, the entire State can be divided into two zones, i.e. Zone V and Zone IV. The vulnerability of the region to earthquakes is characterized by the fact that during the last century, the region had experienced 11 earthquakes of magnitude greater than 6.0 on the Richter scale. During the rainy season, the landslides are very common and frequent, which take a considerable toll of human lives and cause irreparable loss to roads, agricultural land and damage to buildings, houses and other built-up structures. Subsequently, the whole of state is affected as there is no other means of transport except roads. The geological, topographical and climatic conditions of the area along with human factors such as deforestation, unscientific road construction (blastings carried out for road cuttings), constructions of dams or reservoirs, housing schemes, roads, terracing and water intensive agricultural practices on steep slopes etc., have increased the intensity and frequency of landslides. A flash flood is the fast-moving type of flood. It happens when heavy rain collects in a stream or gully, turning the normally calm area into an instant rushing current.

The **Uttarakhand Disaster 2013** has been termed as the country's worst natural disaster since the 2004 Tsunami. According to the Indian Meteorological Department, the heavy rains in the northern region exceeded by over 37 per cent in the state and led to extensive flooding, landslides and destruction to property and lives. The event of cloudburst and subsequent occurrence of flood happened in the night of 16 and 17 June 2013. The resultant heavy rainfall on the three consecutive days led to heavy runoff with loads of debris, moraine and boulders. This heavy precipitation resulted into the swelling of rivers, both in the upstream as well as downstream areas. Besides the rain water, a huge quantity of water was probably released from melting of ice and glaciers due to high temperatures during the month of May and June. This gave rise to flash floods in Mandakini, Alaknanda, Bhagirathi, Pindar and Kali rivers. The furious rivers destroyed the buildings and other infrastructure that came in their way. Thakkar (2013) claimed that the tragedy was unprecedented as hundreds of buildings were washed away, roads destroyed in nearly 800 places, 147 bridges sluiced away, and more than 10 hydropower projects damaged or destroyed.

However, beneath the load of these statistical figures, the mountainous communities of Uttarakhand suffered at various levels. Social, economic, mental and physical sphere of their lives suffered immediate and sustained impacts of these events. Extensive media coverage of human loss and sufferings, pictures of the unprecedented damages to buildings and structures under the torrents of rivers, especially in Mandakini valley, generated an enormous 'information impact' on affected people, concerned agencies and people across country.

Studies in disasters have focused on two broad areas: pre-disaster hazard vulnerability analysis and mitigation, and post-disaster emergency response and recovery. These studies have served to highlight the differentials in the impact of disasters and the corresponding recovery process within and between societies, communities and social groups. The study of social structure in disasters helps to move the focus of disaster research away from 'hazards' or disaster agents to different levels of social systems such as individual, group, organizational, community, society and international. This also helps in advancing the view of disasters as geophysical events or natural happenings to that of viewing them as social occasions, where responses from various social levels are required to understand the consequences (Drabek, 1986; Dynes and Drabek, 1994).

Although, determining the social impacts of disasters calls for a lot of intricacies, it is nonetheless important to monitor them to comprehend the problems associated with the long-term functioning of specific types of households, institutions, services and business in an affected geographical area. It can also provide a sound basis for pre-impact prediction and the development of strategic plans for early intervention and minimization of adverse consequences on specific target groups. It is essential that researchers continue to investigate the impact of natural disasters in different cultures in order to optimize effects to promote recovery, care and treatment programs.

A closer examination of literature on disaster reveals that any disaster event has multiple and differential impact on the affected population. The hardest hit communities are poor people, racial and ethnic minorities, single parents, old, disabled and women (Enarson, 1998). Given the fact that the very physical fabric of the disaster struck area is shattered, in addition to unimaginable psychological and social sequelae, it is of vital importance to study the impact of such natural disaster on the pre-existing disparities and vulnerabilities of the weaker and marginalized sections of the community, in addition to their access and utilization patterns of the relief and interventions measures.

It is important to recognize that due to multiple factors, certain groups of people become more vulnerable in a disaster situation with diminished ability to recover from setbacks, and thus need special attention and care in the aftermath of disaster. By identifying the highrisk groups for traumatic symptoms and factors associated with increased symptoms in survivors, interventions can be targeted to those groups. There is an acknowledged need to mainstream gender within disaster planning, management and research, as well as to take advantage of the windows of opportunity that are opened up (see, for example, Peacock, Morrow and Gladwin, 1997; Enarson and Morrow, 1997; 1998; Enarson, 1998; Fordham, 1998). It has been illustrated that women are more vulnerable to disasters than men (UN/ISDR, 2002). More significantly, pregnant women and the lactating mothers along with their young children constitute a vulnerable section of society in terms of access to resources and rehabilitation measures with

their specific needs being not catered to and largely ignored in the interventional plans. Natural disasters can be especially traumatic for these vulnerable groups. Experiencing a dangerous or violent flood, storm, wildfire, or earthquake and the devastation to a familiar environment (i.e., home and community) can be long lasting and distressing. Often an entire community is impacted, further undermining a child's sense of security and normalcy. These factors present a variety of unique issues and coping challenges, including the need to relocate when home and/or community have been destroyed, the role of the family in lessening or exacerbating the trauma, emotional reactions, and coping techniques etc. Young children are also less equipped to deal with deprivation and stress due to their particular physical, social and psychological characteristics. This makes them particularly vulnerable to the effects of disasters (Barrett, 2008).

This study, funded by the Indian Council for Social Science Research, was conducted a year after the Uttarakhand disaster of 2013, and sought to gain a holistic understanding of the various kinds of problems arising in a disaster situation and the resultant vulnerability specific to young children. To meet the research questions and generate verifiable evidences, the **specific objectives** were outlined as follows:

1. To study the social and psychological impact of the Uttarakhand disaster on the lives of young children.
2. To explore the critical impact of nonavailability of necessary services on young children.
3. To assess the post-disaster resilience and coping patterns of young children.
4. To delineate areas of concern pertaining to socio-psychological impact of disaster and to suggest possible implications for policy development specifically for the disaster prone areas in the country

Sampling & Tools: Three districts, falling in the Garhwal Division, Rudraprayag, Chamoli and Uttarkashi were selected for the study. Rudraprayag houses 2.4 percent of the state population with a density of 122 persons per sq km in a total geographical area of 1,987.46 sq km. Child population (0 - 6 years in age) of the district is 32,046 (Census of India, 2011). This district is inherently vulnerable and fragile and has suffered repeated disasters. It has 688 villages across 3 blocks. In the disaster of 2013, the areas adjacent to Kedarnath shrine and Mandakini valley were the worst affected. Chamoli is the second largest district in Uttarakhand and lies in the central Himalayas with a total area of 7520 sq km. It houses a population density of 49 persons per sq km spread across 9 blocks and 1246 villages. Most of the high mountain ranges like Nanda Devi, Trishul and Kamet are located in this district. The Alaknanda River flows through this region. In this district, areas of Ghagharia, Pulna, Govindghat and Badrinath were most severely affected by the 2013 disaster. Uttarkashi lies in the north west corner of the state and is the largest district with a total area of 8016 sq km. It has a low population density of 41 persons per sq km and comprises of 707 villages in 6 blocks. Both, Gangotri and Yamunotri glaciers are located in this district. Across this district, consequent to the disaster of 2013, areas beyond Gangani were cut off and most of the upstream roads were washed off. One-third of the Blocks in each of these three districts were purposively selected for the study based on the intensity of disaster impact. One block from Rudraprayag (Augustmuni), two from Uttarkashi (Bhatwari and Dunda) and three from Chamoli (Joshimath, Karanprayag and

Narayanbagad) were hence, chosen for the study. The villages were chosen based on the presence of a functioning Aanganwadi. It was also ascertained through the data provided by Community Health Centres that the selected village should have pregnant or lactating women residing there in considerable numbers. The lists of pregnant and lactating mothers and children (0-8 years) were obtained from Primary Health Centres and Community Health Centres, wherever available.

Data was collected using an interview guide and standardized tools like Children's Trauma Checklist, the Children's Impact of Event Scale (CRIES-8), the Kids Coping Scale and Resilience Checklists for children aged 3-5 years and 6-8 years. A total of 1,262 children were covered in the study.

Early childhood, which is a period of very rapid growth and development, encompasses at least three distinct stages – infancy and toddlerhood (birth to 3 years), the preschool years (3 to 6 years) and the transition to school (6 to 8 years). Young children in the age group birth to eight years are the ones who are likely to suffer the most from the effects of disasters because of their unique vulnerabilities and their physical and psychological dependence on their caregivers. It was found that out of 573 children in the age group of 0-2 years, 319 were being breast fed at the time of disaster. Their average age ranged from 6 months in Bhatwari to almost 11 months in Augustmuni. The mean age of the selected breast-fed children was computed to be 8.32 months. This age group reflects infancy, when although children cannot understand that a trauma is happening, but they know when their caregivers / parents are upset. The mothers reported that these toddlers cried uncontrollably and showed more than usual anxiety and clinging behavior at the time of disaster.

Children's Awareness of the Disaster and Behavioural Change: It was found that overall, 23.7 per cent of the selected children were aware of the disaster, although all of them bore the adverse impact of the disaster in one form or the other, both, immediate and longer term. This awareness among children least in Narayanbagad, where there were significant percentage of children (58.2 per cent) in 0-2 years age group. Both, awareness as well as behavior change were apparently high in Joshimath block. Maximum number of children showing signs of behavior change were found in Augustmuni (65.3 per cent), which could be attributed to this block being maximally affected.

This direct exposure of children to disaster in this block - being evacuated, seeing injured or dying people, being injured themselves, and feeling that their own lives are threatened temporarily, resulted in change in behavior. From certain villages in Chamoli district, the entire communities were rehabilitated at new locations, mostly in Joshimath. The new settings, losing contact with their friends and neighbors, losing their houses and belongings, parental job loss, and the increased financial costs led to a lot of strain for young children.

It is significant to note that children can feel very frightened during a disaster and afterwards they might show temporary changes of behavior, varying from mild, that diminish with time to stronger reactions of being upset. Preschool and kindergarten children can feel helpless, powerless, and frightened about being separated from their caregivers. In terms of noticeable behavioral changes, a greater number of children exhibited fearfulness (31.8 per cent) and clinging behavior (26.1 per cent). In hypervigilance, which was shown by 21.9 per cent child

respondents, there is a perpetual scanning of the environment to search for sights, sounds, people, behaviors, smells, or anything else that is reminiscent of threat or trauma. These children reportedly overreacted to loud and unexpected sounds and had sleeping problems. In consonance, it was revealed by mothers that the younger children returned to bed-wetting, had difficulty in sleeping, and showed a lot of separation anxiety. A seven year old child at Chandrapuri village in Augustmuni block, recalled “*It was raining very heavily. I heard people screaming and shouting. My mother untied the cows, held my younger brother on her chest and pulled my hand...we all ran uphill, I could only hear the sound of gushing water but did not look behind. Now, I don't go to the river front alone*”. Thus, children repeatedly exhibited fear in their conversations. They also acknowledged fear of rain and river in their day to day activities and avoided venturing out as often as they did prior to the disaster.

Some children (8.8 per cent) also showed regression, which is a form of retreat, going back to a time when the child felt safer and where the stresses in question were not known, or where an all-powerful parent would take them away. In post disaster situations, children often feel insecure, angry or scared, and lack the communication skills to share these feelings with the adults in their lives. As a result, children revert to behaviours that they know will attract the attention of these adults. The mothers also hinted at thumb suckling, crying, disobedience and fear of strangers in preschoolers.

Older children can understand the permanence of loss. They may become preoccupied with the details of the traumatic event and want to talk about it continually. This preoccupation can interfere with their concentration at school and affect their academic performance. In the study, in case of school going children (aged 6-8 years), 5.6 per cent children reported difficulties in problem solving, 14.8 per cent had difficulty in concentrating, 7.9 per cent faced problems in remembering and recalling, and, 8.8 per cent reported learning difficulties. The mothers also confirmed that the older children showed more anger than usual and found it harder to concentrate at school.

Impact on Children's Health and Nutrition: Early childhood between 0-8 years is a critical period of development, especially 1,000 days from conception to 2 years are most critical. The extent to which a child is vulnerable depends on the level of socio-emotional, physical and cognitive development and the vulnerability of their families and caregivers. Infants and toddlers aged 0–3 years are particularly susceptible to harm because of the inherent lack of skills to help themselves and their total dependence on adults. There was a noticeable impact on the health of children in the study locale which was attributed to the disaster. In the field data, no case of disaster led disability came to sight, though physical injuries and incapacitation were reported in case of seven children. No case of premature delivery was reported and 75.4 per cent women confirmed having institutional birthing. Also, the weight of their child born at the time of or post disaster was inquired. The study results indicated that the average neonatal weight was 2.70 Kgs for the studied child respondents who were born during or post disaster, which is within the normal range.

Bodily discomforts and minor physiological illnesses in older children: Minor illnesses like headaches, stomach aches, constipation, diarrhea and vomiting were reported in several children (7.54 per cent) aged 3-8 years. Children are more vulnerable to the effects of agents

that produce vomiting or diarrhea because they have less body fluid reserve than adults do, and this characteristic increases their risk for rapid dehydration. Also, altered sleep patterns were reported in case of 14.1 per cent children.

Effect on growth and development: It was ascertained from the mothers whether the disaster led to any setback with regard to their children's growth and development. Almost 28.7 per cent women in all (N= 586) gave an affirmative response. The symptoms such as lack of energy, increased fatigue and decreased appetite were often cited.

Changes in appetite - Malnutrition and micronutrient deficiencies have a significant impact on child mortality and morbidity. In the study, several mothers were reportedly occupied with normalizing their livelihoods, leaving lesser time and attention for children. Thus, decreased appetite was reported in case of almost 7.9 per cent infants.

Effect on Weaning - The effect of disaster on this initiation of solid foods or weaning of infants was enquired from the mothers. The women reportedly gave dal/dalia, mashed rice, boiled and mashed potatoes, pureed fruits and biscuits to infants. It was reported by 27 per cent women in all that the availability of infant food got affected. The women also cited that the supply of fruits stopped for months altogether due to the effect of floods and landslides on transportation and broken roads. They however continued feeding dalia, dals and rice to infants which were available in household ration stocks.

Effect on Immunization: In the study it was found that majority of child respondents (95 per cent) in 0-2 years age groups were vaccinated. Only, in case of Tetanus Toxoid, 80.2 per cent and a lesser percentage of children (33.3 per cent) were vaccinated for Influenza (HIB). Considering that there were greater institutional deliveries (75.4 per cent), a great majority of the children were vaccinated at the PHC or the respective Government hospitals soon after birth.

Impact on Education: It was also observed during field visits to villages like Chandrapuri, Vijaynagar, Tilwara and Falai Ganganagar in Augustmuni block, that there were partial or full damage to school buildings. In other blocks, schools reportedly became inaccessible due to destruction of road networks and landslides. It was revealed by several mother respondents that many children were traumatized, being witness to the damage wrought on schools and parts of villages and, in some cases, on their own families and homes, which resulted in school absenteeism for a long-time post disaster.

Psychological Impact: The psychological impact of disaster on children is mediated by many factors including personal experience, developmental competency, parental reaction, gender and the level of disaster response. Children are particularly vulnerable to disaster trauma, and this manifests in a variety of complex psychological and behavioral manifestations. Depending upon the developmental stage, level of cognitive and emotional maturity, and limited coping strategies, the psychological reactions in children are expected to be different from those in adults. After catastrophic natural disasters, post-traumatic reactions in children may reach epidemic proportions, remain high for a prolonged period, and jeopardize the well-being of the children in the affected region.

Common post-disaster psychiatric morbidities among children are acute stress reactions, adjustment disorder, depression, panic disorder, PTSD, anxiety disorders specific to childhood, and phobias. Comorbidities and subclinical psychiatric syndromes are also common (Kar et al., 2001). Following natural disasters, acute PTSD symptoms comprise of physiological hyperarousal, re-experiencing and sleep problems; the chronic variety presents with dissociation, restricted affect, sadness and detachment (Famularo et al., 1996). Dissociative symptoms may take the form of hallucinations or disorganized thinking and behavior (Spiegel, 1984). Numbing or avoidance may take the form of restlessness, hyperalertness, poor concentration and behavioral problems (Malmquist, 1986). Children show symptoms of PTSD in subtle and different ways from adults, and tend to be much more somatic and behavioral in nature.

In the study, a systematic screening for psychological problems was carried out for children aged 6-8 years. PTSD and children's trauma were measured through a checklist comprising of 18 items, which were rated on five-point Likert scale. Cluster scoring was carried out and three subscales were used viz a viz re-experiencing, avoidance and numbing; and increased arousal. A composite score for items 1-18 was also determined for all respondents to ascertain clinical attention and probable diagnosis cut offs. Clinical attention (cut off 10) meant that they may not have enough symptoms for the diagnosis but would still benefit from treatment, while probable diagnosis (cut off 20) signified that they probably had enough symptoms to meet the full PTSD diagnosis.

Conclusion: The study confirmed that disaster induced stress resulted in behavioral changes such as exacerbated fear of rain and river, hypervigilance, regression, social alienation and difficulty in social interactions. It was found that clinical attention was required for children in Augustmuni. In Bhatwari, Joshimath and Karanprayag, multiple adversities like economic loss, destruction to home, relocation, and disruption of school and peer relationships as well as family disorganization and dysfunction largely affected children and caused them immense trauma. However, it was ascertained across all blocks, that children's positive relationships with significant others enhanced their resilience.

The basic premise of this study is that the unique needs and concerns of children in a disaster situation must get integrated into policy, planning and implementation right from the start. In accordance, it was attempted to chart out a set of recommendations such as, involving children in the disaster management processes embracing both, child focused and child led activities and interventions. The study suggests that an appropriate level of involvement and engagement can give children a sense of competence and control in stressful situations, where they might otherwise feel helpless. In this regard, restoration of children's routines, networks and activities through creation of child friendly spaces or child resource centres was seen imperative. For ensuring optimal health of the newborns, continuation of prenatal care and provision of obstetric health care facilities, specific evacuation plans for pregnant and lactating women as well as formation of indigenous social learning groups were deemed important. Besides, provision of mental health services, appropriate counselling and anticipatory guidance were proposed to be provided to assist mothers and children tide over negative psychopathology and disaster induced distress.

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