

Impact of Improper Shelters on Women on the Aftermath of Jajarkot Earthquake in West Rukum, Nepal

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Abstract

Disasters and emergencies affect each individual in different way based on age, sex, disability, community, geographic regions, etc. Women and children are disproportionately affected during and after disaster. The situation becomes pathetic when they loss their houses and live in tarpaulin tents. Lack of proper shelters influence daily life directly or indirectly viz. food and nutrition, mental and reproductive health, WASH, protection, education, etc. They often lag behind during preparedness, search and rescue, evacuation, response and recovery. The Government of Nepal has taken an initiation to make the temporary shelter of the Jajarkot earthquake, 6.4 ML, Nov 2023, affected families affected districts. For this, Government of Nepal (GoN) is providing housing grant to such affected families in two tranche amount of 25,000 NPR. This paper assesses the impact of improper shelters on earthquake affected women and their limitations to make their temporary shelters independently in West Rukum district, Karnali province of Nepal. This study is based on descriptive as well as explanatory research design. Primary sources for information collection based on questionnaire were Key Informant Interview (KII), Focus Group Discussions (FGD), household survey, field observation and interview whereas secondary sources for data collection were literatures review, articles and government offices. Both the qualitative and quantitative approaches were applied. The assessment shows that the improper shelters after earthquake disproportionately affects women. The disaster hits harder if comes to intersectionality of being marginalized, single and having disability. Need identification of such women is essential during the construction of their temporary shelters.

Keywords: *Beneficiaries, grant, migration, volunteers, vulnerability*

Introduction

An earthquake is an unpredictable disaster event occurring around the globe, and Nepal lies in a highly earthquake-prone area because it lies above the Indian and Eurasian tectonic plates, where the Indian plate and the overriding Eurasia plate to the north (USGS, 2024). The Gorkha Earthquake 2015 was the last major earthquake, greater than 7 magnitudes, in the central part of Nepal, and the Jajarkot Earthquake 2023 was the recently occurred earthquake. It affected people and infrastructure, including private properties, injured people, destroyed numbers of houses and public infrastructure, displaced hundreds of people, and impacted their livelihood. Nepal ranks 11th in terms of global risk for earthquake occurrence and impact (Maplecroft 2011, MoPE, 2016). The country is in the top 20 of all the multi-hazard

countries in the world (UNDRR, 2019) as it is located in a high seismic hazard zone. More than 80% of the population is exposed to the risk of natural hazards (MoHA, 2015), which include earthquakes, droughts, floods, landslides, extreme temperature, and glacier lake outburst floods. Disasters and emergencies affect each individual in different way based on age, sex, disability, community, geographic regions, etc. Women, children, senior citizens, persons with disability are disproportionately affected from disasters like earthquakes and other types of disaster (NDRRMA, 2022). Among the population, women are especially hard-hit by the social impacts of environmental disasters (Gokhale, 2008) if linked to lactating mothers, pregnant women, single mothers, women headed family in marginalized and indigenous communities, women with disability. Resources to meet basic needs, including water, food, cash and

fuel, are scarce in disasters, and culture dictates that husbands, children, and in-laws are prioritized, so it is women who do without (OXFAM, 2016). Women and girls face particular challenges in term of access to essential services and vital relief items, to remain safe and to cover their basic needs for appropriate shelter, hygiene and sanitation, healthcare and protection; particularly acute for women with specific needs such as those who are pregnant and breastfeeding, who are single and single mothers, with disabilities or from rural areas (UNWOMEN, 2023). Notably, women are often considered the most vulnerable during disaster because they are exposed to more dangers due to their various roles, such as taking care of children, older family members, and people with disabilities before, during, and after a disaster event (Fan., 2023). The situation becomes pathetic when they loss their houses and live in tarpaulined tents. Lack of proper shelters influence daily life directly or indirectly viz. food and nutrition, mental and reproductive health, WASH, protection, education, etc. Due to these factors, they often lag behind during preparedness, search and rescue, evacuation, response and recovery.

After 2015, western part of Nepal experienced a 6.4 magnitude earthquake event on 3 November 2023 at 11:47 PM local time with its epicentre at Ramidada of Jajarkot district of Karnali province. Majorly, it impacted to Jajarkot and West Rukum district. Additionally, it affected 11 districts causing severe damage to adjoining districts Salyan. The Government of Nepal (GoN) has taken an initiation to make the temporary shelter of the affected family in the earthquake affected districts viz. Jajarkot,

West Rukum, Salyan, Bajura, Bajhang and Doti. For this, GoN is providing housing grant to such affected families in two tranche amount of NPR 25,000. This paper assesses the factors that the impact of improper shelters on them on the aftermath of earthquake and also their limitation in making their temporary shelters on time.

Materials and Methods

Study area

West Rukum district of Karnali province was selected as the study area. It consists of three municipalities viz. Aathbiskot, Chaurjakari, Musikot and three rural municipalities (*palikas*) namely Sanibheri, Banfikot, Triveni. The district is connected to Jajarkot in the west, Salyan and Rolpa in the south, Dolpa in the north and East Rukum in the east. The district is located at 28.6° N, 82.4319° E covering 1,217 sq. km total area with population density 137/km² (Fig. 1). The total population residing in the district is 166,740 (NSO, 2021). Musikot, Khalanga is the headquarter of the district connecting to all the six palikas by road. The district has a good road

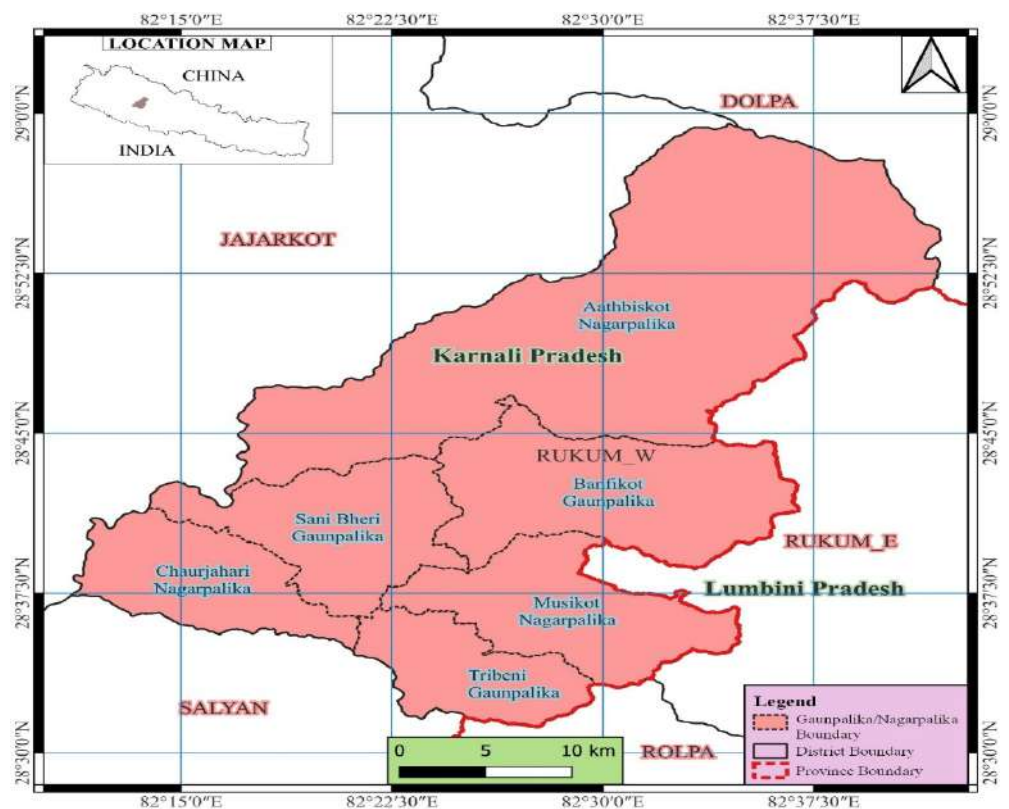


Figure 1: Municipalities of West Rukum (Study Area)

connectivity connecting the six palikas through motorable road, Rapti highway and mid-hill highway connecting East Rukum. The district hospital is located in Musikot, the headquarter of West Rukum district, which is located at the distance of 280 km west of country's capital Kathmandu. The hospital and is near to the small airport at Salle with the connection of blacktop road. The district has more than 40 health facilities including health posts. Aathbiskot municipality was severely affected in terms of the loss of physical infrastructure as the epicenter of the earthquake was adjoining area in Ramidada of Jajarkot district. But Sanibheri rural municipality has the highest number of human lives loss. Most of the houses in these areas were made up of rubble stone masonry.

Methodology

This study is based on descriptive as well as explanatory research design. The survey was carried out for 22 days with representing population from these 6 municipalities (colored marked Fig. 1). Primary sources for information collection based on questionnaire were Key Informant Interview (KII), Focus Group Discussions (FGD), field observation

and interview with women of six local levels of West Rukum district (Musikot Municipality, Chaujahari Municipality, Aathbiskot Municipality, Sanibheri Rural Municipality, Banfikot Rural Municipality and Triveni Rural Municipality) whereas secondary sources for data collection were literatures review, articles and government offices. Both the qualitative and quantitative approaches were applied. A purposive sampling method was used for the interview of women those who were living in tarpaulin tent. Questionnaire was prepared for the interview of affected women. KII of households in the six local levels of the district was taken. FGDs was conducted with women, mayors and president of all the six local levels and bureaucrats working in the field offices. Semi structured interview with relevant persons was carried out to acquire answers to the research questions. Representatives of the wards, Chief District Officer (CDO), employees of District Administrative Office, International Federation of Red Cross (IFRC) were the key informants. Data are expressed in chart. Quantitative data were analyzed through descriptive statistics and described in result and discussion. Geographic Information System (GIS) mapping was used to locate the study area (all the 6 municipalities).

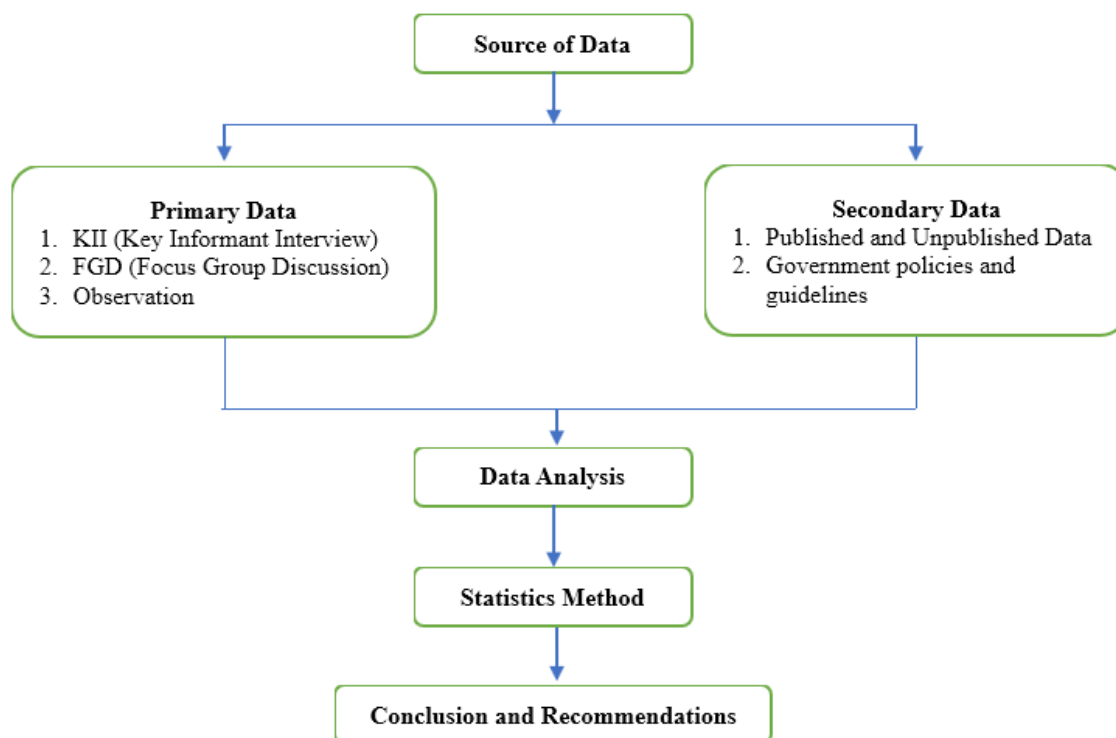


Figure 2: Methodology Chart

Results and discussion

Loss and Damage due to the Jajarkot Earthquake

The Jajarkot Earthquake resulted in the tragic loss of total 154 lives, 101 in Jajarkot and 53 in west Rukum (Fig. 3), and injured 366 individuals of varying degrees. Among them, the death of children and women was higher in number. Out of the total death in West Rukum, 11 men, 12 women and 30 children lost their live. Out of total 30 children, 15 were boys and 15 were girls. The number of death of children according to age group are shown in Fig. 4. According to the data, the children of age group 11 to 15 years old is higher i.e. 10.

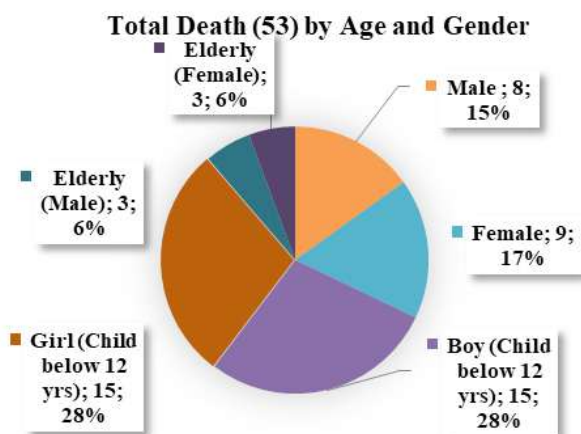
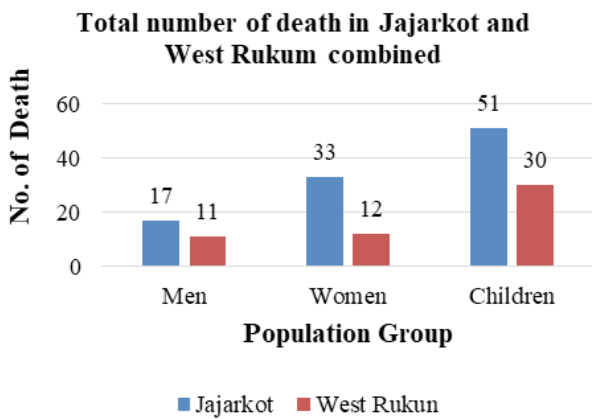


Figure 3: No. of death in Jajarkot Earthquake (Source: District Administration Office (DAO) of Jajarkot and West Rukum)

Child Death by Age and Gender

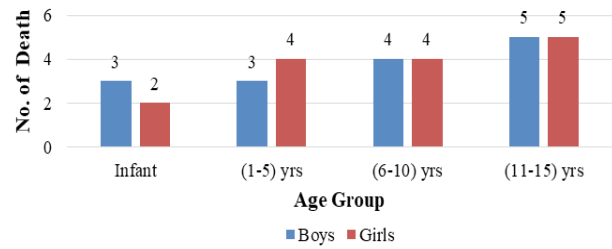


Figure 4: No. of death by age and gender (Source: DAO, West Rukum)

According to the Preliminary Damage and Needs Assessment (PDNA) of Jajarkot earthquake conducted by National Disaster Risk Reduction and Management Authority (NDRRMA), the earthquake affected across sectors and has significant impacts on Social Sectors (91.63%), Infrastructure Sectors (3.43%), Productive Sectors (1.76%), and Cross-cutting Sectors (3.18%). The assessment reveals that the overall need for reconstruction and recovery is estimated at USD 471,801,034 (471 million), cross-cutting Sectors, focusing on Gender Equality, Disability, and Social Inclusion (GEDSI), along with Employment and Livelihood, require a total of USD 15,000,000 (15 million) (NDRRMA). A total of 196 schools out of 308 were damaged only in West Rukum district.

The NDRRMA had preliminarily identified a total of 73,746 households eligible for receiving housing grant in the three districts i.e. Jajarkot, West Rukum and Salyan. Among them, 29,406 beneficiaries were identified in West Rukum district. But the number of affected households is in increasing trend (Fig. 5). Till date, 31,620 beneficiaries have been identified in West Rukum. The first tranche grant of NPR 25,000 had been started to provide from 64 identified beneficiaries in their personal account by Government of Nepal from 28 November 2023. Till date, 29,133 beneficiaries have received the first tranche grant of total amount NPR 72,83,25,000 (DAO, West Rukum). Out of the total grant recipients, only 24,726 temporary shelters have been completed and 5,493 temporary shelters are in the process of building (DAO, West Rukum). Rest of the 1,401 temporary shelters still remain to initiate (DAO, West Rukum).

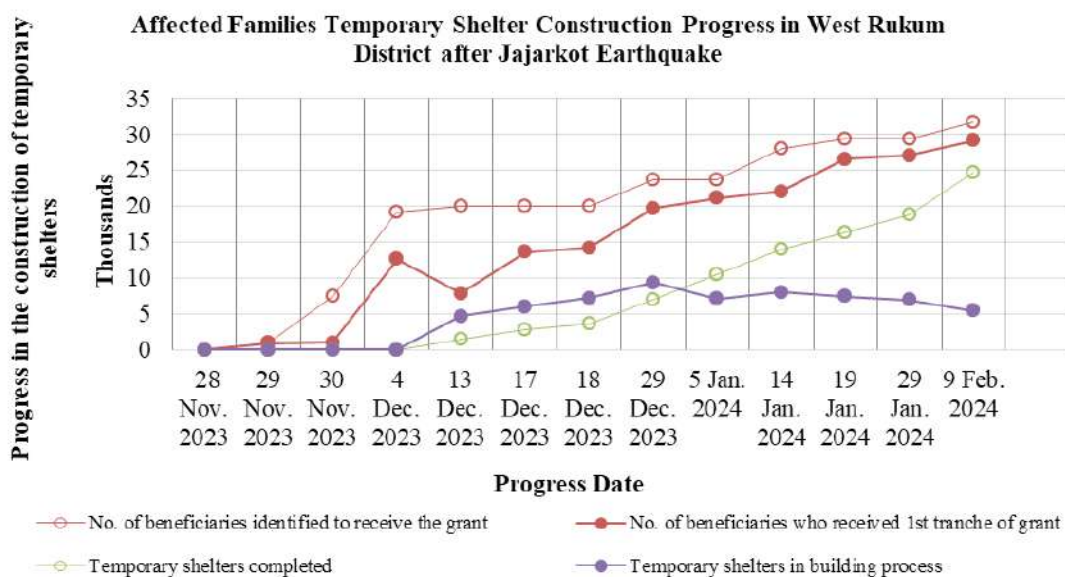


Figure 5: Progress of construction of temporary shelter. (Source: DAO, West Rukum)

The Jajarkot earthquake occurred at mid-night when people were in deep sleep and most of the houses were made up of rubble stone masonry. This led to massive loss of lives.



Figure 6: House made of rubble stone



Figure 7: Polyethylene Tarpaulin tent

Women facing challenges and problems on the aftermath of earthquake

The earthquake affected more than 3,147 women and 8,854 children unsheltered after Nov. 3, 2023 (DAO, West Rukum). They are compelled to live under tarpaulin tents in the winter night with their children and elderly. They face several problems and threat while living in the tarpaulin which is made of polyethylene tarpaulin and bamboo frame. A proper shelter links to security, privacy, food and nutrition, WASH and sanitation, reproductive rights and health, etc. Shelter is a basic human need crucial for survival in case of natural hazards and human-induced disasters, including conflict. Khosravi et al. (2021) explored similar challenges and problems faced by the 2017 Kermanshah earthquake survivors broadly categorized as physical, mental and psychological health issues, exacerbated economy, mismanagement of local, human and non-human resources, along with social and cultural disturbance. The study highlighted that the vulnerable groups suffered more; being neglected and dejected at the time of crisis. Shelter provides security, personal safety and protection from the weather, and prevents health problems and diseases (EU, 2021). A shelter is not just bricks and mortar, or a tent, but a means to protect those uprooted (Zhang et al., 2011). In emergencies, it is fundamental to provide shelter as part of the life-

saving responsibilities and mandate of humanitarian actors, so that forcibly displaced people can enjoy a secure and healthy living environment that protects them from weather conditions, and offer them privacy, dignity, comfort, and emotional security (UNHCR, 2024).

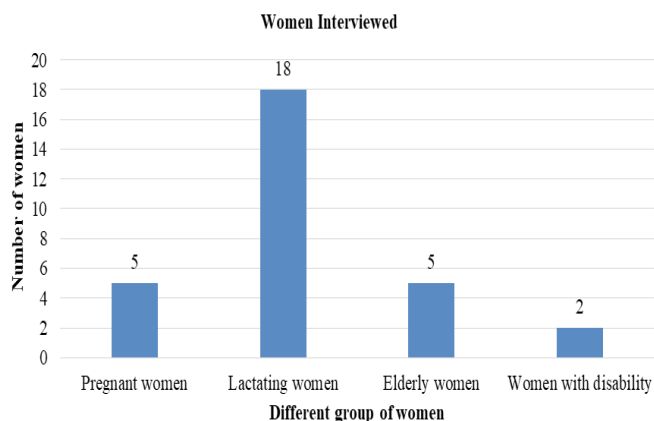


Figure 8: Group of women respondents

The representative Fig. 6 shows that almost the entire earthquake affected women had rubble stone masonry houses. Such infrastructures are fragile and weak and are highly susceptible to earthquake. Most of the women living under the tarpaulin had infants on their lap or breast-feeding babies or they were elderly. The lactating mothers face decrease in capacity of lactation since the night they started living under tarpaulin. It may be due to lack of nutrition and untimely sleep. Disturbed family functioning, and psychological impact of earthquake on the mental health of pregnant and postpartum women leads to mental disorders, some even long term (Ren et al., 2013). Poor diet and care to the lactating mother directly affects the breastfeeding practice and the infant. Breast milk insufficiency, disrupted social networks, and the availability of breast milk substitute add worries to the mothers; the quality of breast feeding is proportional to the health and growth of the infants (Dörnemann et al., 2013). Additionally, Lack of latrines have made the survivors compromise hygiene, adding vulnerability to faecal contamination and subsequent communicable diseases. A temporary toilet was made for a group of affected family due to which they face problem during bathing, washing or menstruation period.



Figure 9: A lactating mother living under tarpaulin tent



Figure 10: Interaction with lactating mothers

Temporary shelter construction and constraints

The population of women in West Rukum district is 85,649 out of the total population 166,740 (NSO, 2021) constituting 51.36% of the total population of the district. The average age for first marriage of women between 14 to 24 years is peak in the district (NSO, 2021) and so as the reproductive rate. Labour migration for men is comparatively very much higher than women in the district. Migration for education is also prevailing in the district. International migration has become an integral part of Nepali society and has touched almost every Nepali family due to the large number of Nepalis being engaged in transnational migration, primarily for work and education (IOM, 2019; Sharma et al., 2014).

According to the preliminary findings of the 2021 Census, there are more than 2.1 million Nepali citizens living outside the country, a figure that

represents 7.4 per cent of the national population (NSO, 2022). Men make up 81.3 per cent (or 1.8 million) of this migrant group. In the context of West Rukum district, the sex ratio for labour migration is 30:1 (Nepal Labour Migration Report, 2022). The data indicates that out of 30 migrating labour population, only one is female. This leads a significant imbalance among residing population in the district. Also, here is also a significant number of students going abroad for study. The population in rural municipality of Nepal has remained 33.83 percent (NSO, 2021) while the rest of the total population has reached urban areas. Most of young male population are migrated for foreign employment, leaving women and elderly at home. Some of the villages have a minimal number of young men. Consequently, all kinds of responsibilities are imposed upon women and the elderly people. They have to take responsibility for their family members. In post-disaster, constructing their temporary shelters become a challenging task for them.

The Government of Nepal is providing grant of NPR 50,000 to make temporary shelters so that the affected families could get a safe roof to protect themselves from the dropping temperature of winter. The grant has been sent to the beneficiaries' account in two tranches of NPR 25,000. Despite the grant provided, most of the vulnerable people especially women are lagging behind to make their temporary shelters. Regarding this, a survey was conducted among women in all the six local levels (three municipalities and three rural municipalities) of West Rukum district who were affected by Jajarkot earthquake. Interview was taken based on questionnaires among the women who were living under tarpaulin on the open space. Besides this, different clusters data was collected with the support of District Administration Office of West Rukum including the WASH and shelters. A total of thirty women (five in each local level) were selected for the interview from the wider age group between 18 to 75 years to know their situation while they live under the tarpaulin and to check the barrier factors that limit making their temporary shelters. Eighteen

young lactating mothers between the age group 18-23 years and five elderly women between the age group of 70-75 years were chosen. Early marriage under the age of 20 years old is still prevailing in the district.

In emergency situations such as those following natural disasters, women encounter significant hurdles in reconstruction efforts compared to men. This is largely due to gender disparities in resource access, decision-making authority, and societal expectations, which restrict their involvement in recovery initiatives. Consequently, women often face difficulties accessing financial aid, property rights, and job opportunities, hindering their ability to recover and reconstruct post-disaster (Fothergill, 1998). Almost all of the respondents responded that they need an additional human resource to support them making their temporary shelters besides receiving the grants from the Government of Nepal. Therefore, additional support beyond government grants is deemed essential for women to rebuild their lives, including assistance in constructing temporary shelters.

The data below, Fig. 11 shows that there are majorly four reasons behind the women are unable to make their shelters. Nearly, 76 per cent of the respondent's husband or the family member is out of the district or out of country. Labour migration factor is common for almost all the respondents and this factor drag behind to make their temporary shelters. According to the CDO of the district, mayors of municipalities and local level representatives, a few of temporary shelters are made with the support of local volunteers and volunteers of political parties. Vulnerable people e.g. single mothers, pregnant women, elderly, women with disability and marginalized women need support of trained human resources besides financial resources to make their shelters and they were kept in priority by DAO, West Rukum district. According to them, the affected district needed the support of Nepal Army and volunteers from Red Cross to build the shelters soon as possible.

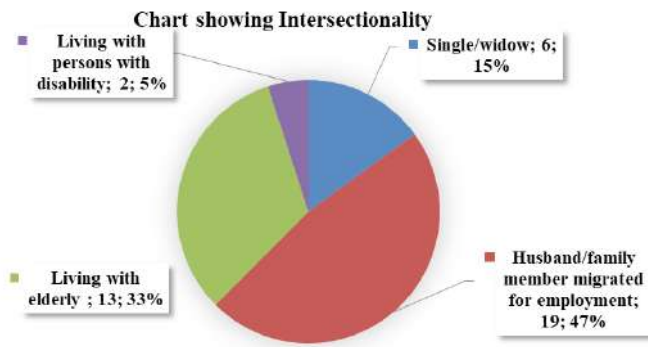


Figure 11: Intersectionality Chart

On the aftermath of the 2015 Gorkha earthquake, women, girls and the vulnerable groups endured multiple health and security risks; including domestic, sexual violence and trafficking (Tearne et al., 2021). Constraints in temporary shelter and latrine construction, including limited availability of resources; the concern regarding their physical well being and sanitation risks (unique to girls and women) still persists. The incorporation inclusive framework for gender mainstreaming is still lacking in risk reduction.

Conclusion and recommendations

Conclusion

KII and FGD were conducted with local representatives, local people and earthquake-affected women, mainly focused on women and old age groups. The disaster relief aid and subsidies were provided by GoN and different cluster lead and co-lead agencies to bring their livelihood on a normal track soon as possible. However, after receiving financial aid mostly women and old age people have faced barriers to constructing temporary shelter for themselves and their family members. Lack of human resources in the villages (especially male members) were not present with their family members. Because of foreign and domestic employment, they were migrated and could not contribute to reconstruction work as well as shelter making. Another reason is the early age mother faced difficulties in building temporary shelters for their family. The number of volunteers has been involved in the shelter from different

organizations including governmental agencies like the Nepal Army, but the limited number of volunteers was not sufficient to construct temporary shelter within a limited period.

The absence of male family members has been observed and its impact on women, children, and old age people is significant. Additionally, these groups of people have been facing risk in daily life and vulnerability is growing up.

Recommendations

- Pregnant and lactating women, single women, elderly and women with disability should be prioritized in the phase of earthquake recovery and reconstruction.
- Needs of such vulnerable group should be identified before reconstructing their homes.
- Trained human resources should be managed from government agency to support women, children, and old age group people to make their temporary shelters immediately aftermath of earthquake.
- During the reconstruction of earthquake affected houses, 'accessibility to all' concept must be considered.
- Awareness program for the reason behind prioritization of vulnerable groups in all phases of disaster should be conducted in local levels.

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References

- Dörnemann, J., & Kelly, A. H. (2013). 'It is me who eats, to nourish him': a mixed method study of breastfeeding in post earthquake Haiti. *Maternal & Child Nutrition*, 9(1), 74-89.
- European Commission. European civil protection and humanitarian aid operations. Shelter and settlements. Retrieved in 2/08/2024 from: https://civil-protection-humanitarian-aid.ec.europa.eu/what/humanitarian-aid/shelter-and-settlements_en
- Fan, J., & Huang, G. (2022). Are Women More Vulnerable to Flooding Than Men in an Aging Japanese Society? *International Journal of Environmental Research and Public Health*, 20(2), 1299. <https://doi.org/10.3390/ijerph20021299>
- Fothergill, A. (1998). The neglect of gender in disaster work: An overview of the literature. *The gendered terrain of disaster: Through women's eyes*, 11-25.
- Gokhale, V. (2008). Role of women in disaster management: An analytical study with reference to Indian society. A Paper presented to the 14th World Conference on Earthquake Engineering (2008), Beijing, China
- International Labour Organization (ILO) (2021). *Use of digital technology in the recruitment of migrant workers*. International Labour Organization.
- Khosravi, B., Xosravi, T., Ziapour, A., Fattahi, E., Chaboksavar, F., & Yoosefi Lebni, J. (2021). Challenges and problems facing 2017 kermanshah earthquake survivors: a qualitative study. *Community mental health journal*, 57, 340-348.
- Maplecroft. (2014). Verisk Maplecroft. Retrieved in 2/08/2024 from: <https://www.maplecroft.com/global-risk-data/climate-risk-dataset/>
- Ministry of Home Affairs (2015). *Nepal disaster report 2015*. Government of Nepal.
- Ministry of Labour, Employment and Social Security (2022). *Nepal labour migration report 2022*. Government of Nepal
- Ministry of Population and Environment (2010). *Climate Change Vulnerability Mapping for Nepal*, Kathmandu, Nepal
- National Disaster Risk Reduction and Management Authority (2022). *Gender inclusion, disability and social inclusion (GEDSI) integration in disaster risk reduction and management (DRRM) workshop report*. 14-15 September 2022, Kathmandu
- National Statistics Office (2021). *National population and housing census*. National Report, CBS
- Oxfam (2016). *'I am alone': Single women and the Nepal earthquake*. Women for Human Rights, Single Women Group
- Ren, J. H., Chiang, C. L. V., Jiang, X. L., Luo, B. R., Liu, X. H., & Pang, M. C. (2014). Mental disorders of pregnant and postpartum women after earthquakes: a systematic review. *Disaster medicine and public health preparedness*, 8(4), 315-325.
- Sharma, S., Pandey, S., Pathak, D., & Sijapati-Basnett, B. (2014). *State of migration in Nepal*. Centre for the Study of Labour and Mobility
- Tearne, J. E., Guragain, B., Ghimire, L., Leaning, J., & Newnham, E. A. (2021). The health and security of women and girls following disaster: A qualitative investigation in post-earthquake Nepal. *International Journal of Disaster Risk Reduction*, 66, 102622.
- UN WOMEN (2023). Brief on earthquakes in Türkiye: Impacts and priorities for women and girls. Retrieved in 2/08/2024 from: https://eca.unwomen.org/sites/default/files/2023-03/UN%20Women%20Brief%20on%20Earthquake%20in%20Türkiye%20Gendered%20impacts%20and%20response_0.pdf
- UNDRR (2019). *Disaster risk reduction in Nepal: Status report 2019*. United Nations Office for Disaster Risk Reduction (UNDRR), Regional Office for Asia and the Pacific
- UNHCR (2024). *Emergency shelter solutions and standards: Emergency handbook*. The UN Refugee Agency
- USGS (U.S. Geological Survey), 2024, Earthquake Lists, Maps, and Statistics, accessed February 6, 2024 at URL <https://www.usgs.gov/natural-hazards/earthquake-hazards/lists-maps-and-statistics>
- Zhang, Z., Shi, Z., Wang, L., & Liu, M. (2011). One year later: Mental health problems among survivors in hard-hit areas of the Wenchuan earthquake. *Public health*, 125(5), 293-300.