

DISASTER RISK MANAGEMENT: FROM PREPAREDNESS TO RESPONSE IN THE CHO OF KATHMANDU VALLEY, NEPAL

Sony Maharjan¹ & Shova Shrestha²

Abstract

Disaster preparedness is one of the component of disaster risk management among Prevention, Mitigation, Preparedness and Response (FAO, 2008) . Earthquake is one of the most destructive natural hazards, which occur at any time causing disaster. The current study explores the status of earthquake disaster awareness and preparedness in ward number 12 of Godawari Municipality (previously, Thecho VDC). The study is based on pre and post-earthquake disaster survey of 25 April, 2015 through household questionnaire survey, KIS, FGD and field observation. The study found that although majority of households are aware and have knowledge of earthquake, preparedness at both household and community level was very low before the earthquake. Saving money was the most practiced emergency preparedness whereas only five percent households have emergency kit for the disaster. The knowledge on awareness and preparedness rose from eighty percent before earthquake to ninety-two percent after the earthquake. Similarly, perception on vulnerability of human loss and physical property rose from seventy-three percent to ninety-five percent. Individual household and community role was identified as key for disaster risk reduction and survival strategy (e.g. arrangement of emergency kit) which rose from five percent to ninety-five percent after earthquake. The study revealed that people were aware and have knowledge on earthquake disaster but preparedness strategies are not implemented neither existed any disaster response plans at household or community level. People's risk acceptance and preparedness is determined by direct event experience in contrast to risk perception of potential disaster. Earthquake risk reduction and implementation of the action plan at community

1 Ms. Maharjan is a Master's Student, Central Department of Geography, T.U. Kirtipur,

2 Dr. Shrestha is an Associate Professor, Central Department of Geography, T.U. Kirtipur,
Email: shova216@gmail.com

level is important. It is concluded that media and local organizations could play major role in awareness on preparedness whereas individual household and community are key for implementing the preparedness strategies to reduce disaster loss and damage. Knowledge, awareness and preparedness at individual household level are key and most effective for reducing earthquake vulnerability at local level.

Keywords: Earthquake, risk reduction, awareness, preparedness, emergency,

Context

Disaster preparedness, in general, refers to the preparation prior to any disaster. Disaster preparedness refers to the capacity and knowledge to anticipate and respond to the impact of likely or imminent hazard event or condition (Vordzorgbe, 2006). Preparedness includes actions taken in anticipation of the event and special activities both during and immediately after the event. Emergency response plan is one of adjustment (White, 1945). Conceptually, preparedness is one of the component of disaster risk management among: Prevention, Mitigation, Preparedness and Response (FAO, 2008). Preparedness is crucial for effective response and recovery at all levels (WCDC, 2005). Earthquake is one of the most destructive natural hazards, which occur at any time causing disaster. Most of the human death and casualties are caused by falling down of built structures during an earthquake or triggered events like landslides and flood which are unavoidable. Emergency preparedness is one of the approaches to reduce or avoid effect of natural disaster. It aimed at minimizing the loss of life and property during a natural disaster. Preparedness includes actions taken in anticipation of the event and special activities both during and after the event. Degree of disaster and losses from earthquake hazard depends on factors like population density, construction standards, and emergency preparedness (Nelson, 2002). Emergency response plan is one of such preparedness strategies (White, 1945).

Historical records show that major earthquakes in Kathmandu valley were reported since 1255 AD, and 1934 AD causing most damages and recently in 2015AD which caused 8019 human death and destruction of thousands of residential as well as institutional and cultural buildings. Nepal was ranked eleventh in the world in terms of vulnerability to earthquake and Kathmandu valley was identified as one of the most vulnerable cities (UNDP/ERRRP, 2009). Though Kathmandu Valley is highly vulnerable to earthquake and people are aware of the risks of a potential earthquake, there is very low effort for preparedness (Laursen, 2015). Government has formulated Disaster risk reduction Acts,

Plans and programs during past 20 years but existing disaster management activities has not been effective (MoHA, 2005). In this context, people's knowledge, awareness and preparedness are most valuable for reducing earthquake vulnerability. The current study is an attempt to explore the status of earthquake disaster awareness and preparedness in Thecho VDC currently ward number 12 of Godawari Municipality of Lalitpur district.

Methods and Study Area

Thecho VDC currently ward number 12 of Godawari Municipality is selected as the study area (Figure 1). The earthquake which occurred on 25 April 2015 at 11:56 am at a depth of approximately 15 km with its epicenter at Barpak, east of Gorkha District, Nepal, also caused destruction in Thecho VDC. The earthquake was initially reported as 7.8 magnitude lasting for approximately twenty second by the United States Geological Survey (USGS, 2015).

The study area is located in Lalitpur district of Nepal and lies between $27^{\circ}, 36'30''$ to $27^{\circ}, 37'30''$ latitude and $85^{\circ}, 18'30''$ to 85° east longitude. It is about 4500 feet high from the sea level and covers an area of 3.32 square km. The total population of this study area is 10,086 among which 4942 are male and 5144 are female and total household is 1635 (CBS, 2011). A majority of the people belong to Newar ethnic community followed by other ethnic and caste group like Brahamin,

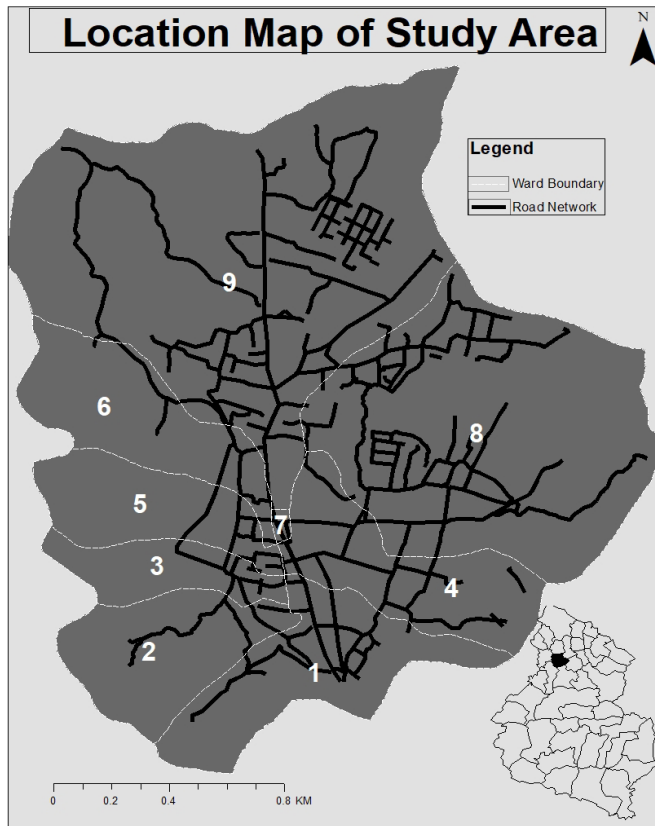


Figure 1: Location Map of the study area

Chhettri, Tamang, Rai and Magar. Majority of people in this VDC practice Hinduism followed by Buddhism.

This study is based on pre and post surveys of destructive earthquake of 25 April, 2015. A field survey was carried out before and after the earthquake. Household questionnaire survey and key Informant survey are the two methods adopted for data and information collection. Random sampling method was applied for selecting sample population Representative sample of five percent household (83 household out of total 1635 households) was selected and data collected through questionnaire survey before the earthquake of 25 April. Twenty-four key informants from different sectors: academia, community based organizations such as user committee and youth club, non-government organizations such as red cross society, government organizations such as VDC and ward officials were also interviewed using standard checklist. The some key informants were interviewed after the earthquake and 117 residential household were surveyed using questionnaire. Besides informal discussions with locals, document and literature review and field observation was also carried out. Field observation was carried out to explore the condition of existing land use, building, infrastructure and open space in the VDC before and after the earthquake. The collected data from primary and secondary sources have been processed and analyzed using descriptive statistical techniques.

Result and Discussion

Awareness of disaster preparedness

Local level awareness campaigns by number of institutions and development of disaster risk reduction plan for a VDC, electronic media are the means of awareness and knowledge on earthquake risk in Thecho. Number of local awareness campaigns such as school safety, street drama shows, information dissemination through videos are some of the awareness and knowledge dissemination strategies implemented by local authorities in the VDC. However, only five percent of the locals participated in these events and think that these type of programs are neither sufficient nor effective. According to them, electronic media such as radio (FMs) and television has been the most effective source of knowledge at household level because such media sources are regular. Eighty-five percent of the people have learnt about earthquake risk from these media sources. After the earthquake event, the ninety-four percent of people have realized the risk of earthquake disaster while more than eighty percent have seriously discussed the potential effect within family and community and identified the need of preparedness at household and community level (Figure 2). Studies show that audio-

visual media play a key role in disasters, with respect to early signaling, definition and understanding. The media is omnipresent in current society and has increased the visual nature of disaster events, which has shaped and influenced how people understand the disaster (Haddow & Haddow, 2009).

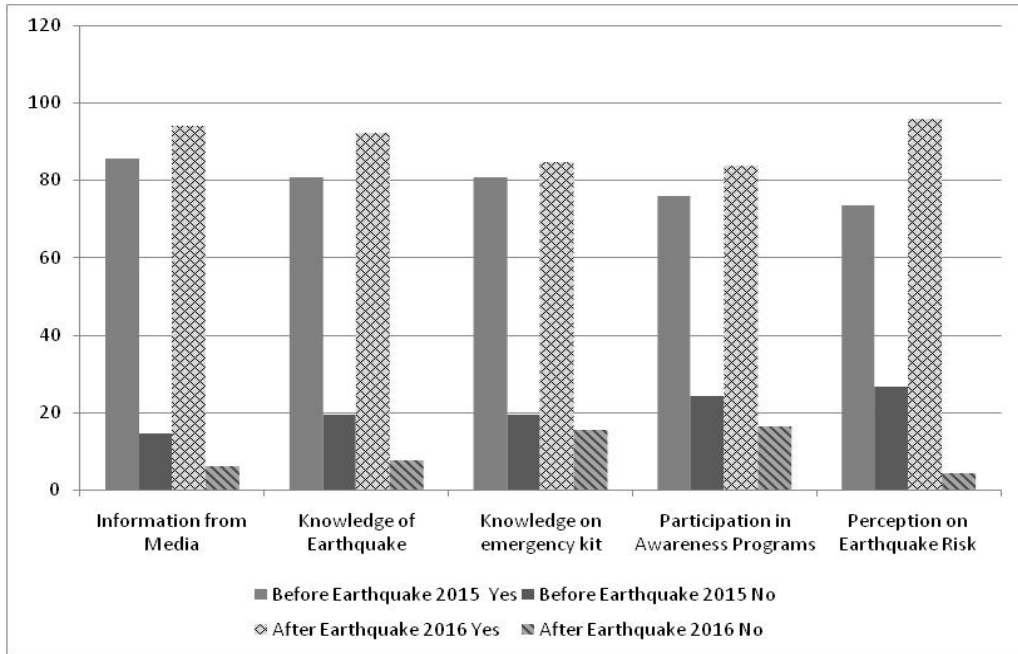


Figure 2: Awareness on Earthquake

Culture of disaster preparedness

Number of studies show that several factors affect preparedness such as risk perception, available resources, societal norms, sense of community, previous experiences etc (Najafi et. al., 2017). Russell, Goltz, and Bourque (1995) have defined major components of preparedness (*readiness*) as structural (eg. securing building foundations), survival (eg. ensuring water supply, securing emergency kit) and planning (eg. household hazard plan, self-protection knowledge, saving). In Thecho, survival regarding preparing emergency kit and planning regarding self-protection knowledge has raised from 80 percent before earthquake to nearly 85 percent after the event. Ratio of community participation and group discussion has also increased after the earthquake. Participation on structural and survival components such as relief, recovery and reconstruction has increased from 76 to 84 percent after the earthquake. This shows that experience of the actual event prompt the awareness and preparedness. People’s perception on the vulnerability and risk of

losing life and property by earthquake was 73 percent before earthquake but after the event the percentage (95) increased significantly (Figure 3). Not specific to the disaster but respondents are doing some preparedness activities under Planning component like life insurance and savings in banks and cooperatives. Percentage of households with life insurance increased from 84 to 86 after earthquake whereas percentage of household with savings increased from 31 to 51 percent. This shows that people are moving from traditional to modern form of preparedness. The study also reveals that people could be aware and prepared for the damage and loss through education and media without experience of the disaster event (e.g. more than 80 percent) but being aware doesn't reflect taking actions for preparedness (Kapucu,2008). In the study area, households preparation of emergency kit raised to 66 percent after event in contrast to 6 percent before the earthquake. Correspondingly, 94 percent households have been identified safe place for emergency evacuation whereas 21 percent acknowledged the early warning system installed at Ward Office.

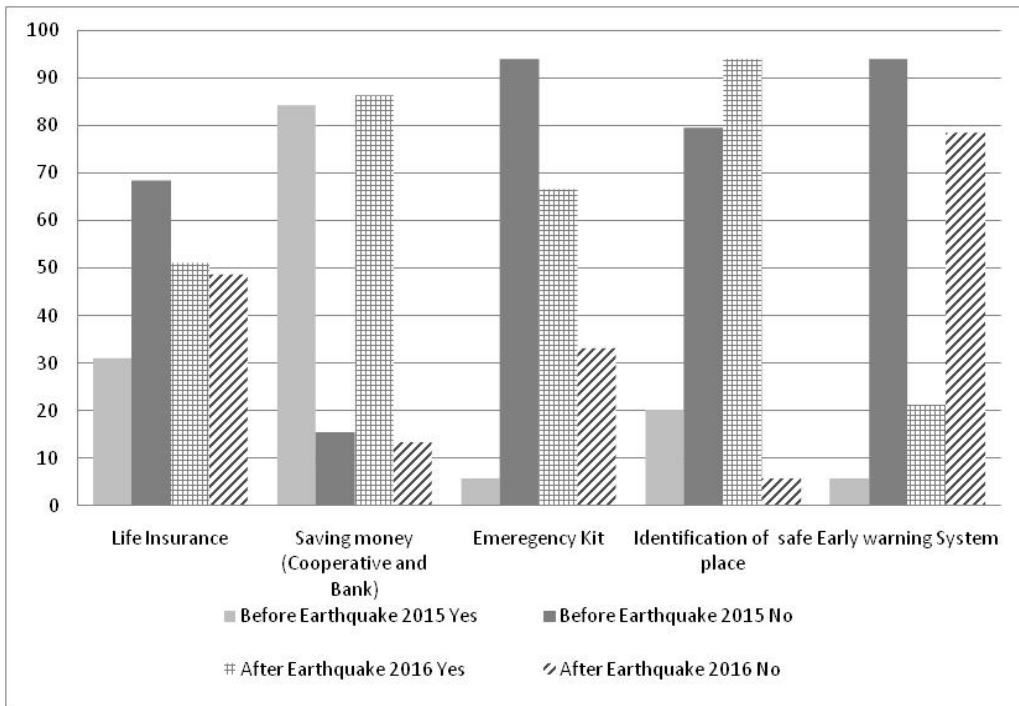


Figure 3: Preparedness on Earthquake

Source, Field Survey, 2015 and 2016

Increased level of awareness and preparedness after the earthquake exemplify that level of people's risk acceptance and preparedness is determined by direct event experience in contrast to risk perception of potential disaster. Anticipation of future disaster and awareness and preparedness is complicated by several influencing factors such as cognitive biases, people's perception of the risk and motivating factors (Paton & McClure, 2013) whereas direct exposure to disaster means that people know what can occur, what they need to know and able to do during disaster, preparedness is important and matters most during and after the disaster.

Role of Stakeholders

Number of stakeholders of different sectors is involved in disaster awareness and preparedness at local level. In recent decade there is a paradigm shift from post-disaster relief and rescue to pre-disaster mitigation efforts through empowerment of local governments, involvement of non-governmental (NGOs) organizations and civil societies and community in the decision-making as well as preparedness programs (Shaw & Okazaki, 2004). In the study area, there are number of formal and informal organizations comprising government, non-government and traditional community organizations. There are 14 cooperative organizations, 9 schools, 7 *Guthis*' (traditional community organization) 5 youth clubs, a health post, a telecommunication office, electricity authority and VDC office with DRM unit first aid training, awareness). Among these, neither government and non- organizations nor community organizations have any earthquake disaster risk management plan or strategies though they participate in awareness and preparedness program organized by others such as VDC office. However, VDC office has disaster risk management unit which carries out awareness and preparedness programs like media campaigning and first-aid trainings to locals and community organizations. Besides, two schools have preparedness and response plan under school earthquake safety program and have developed evacuation plan.

Perceptions of local people on role of stakeholders have changed before and after the event. Before the earthquake event most of the locals acknowledged that major role should be of government and non-government organizations followed by community. Individual and household role is minimal. Whereas after the event, the perception has changed. Role of individual/households and community is regarded as most significant in contrast to government and non-government organizations. Statistics have also shown that more than 80 percent people were either self-evacuated or were rescued by neighbors indicating the significance of participation of locals during and after the disaster event.

Unlike the physical reconstruction which largely depends on the development level of country or the external support, preparedness and recovery process through local participation is key for sustainable disaster risk management.

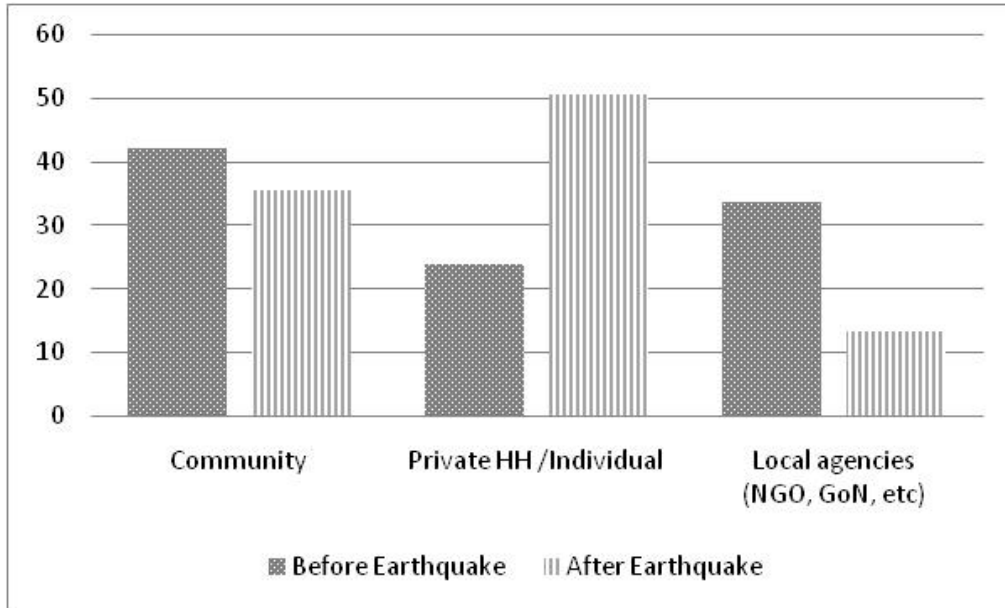


Figure 4: Role of Stakeholders perceived by locals

The study found that individual household and community approach have highest effectiveness during and after the event for immediate rescue and recovery local agencies and in reducing the risk of earthquake. Less role is assigned to external agencies like NGOs/INGOs and government. Perception on individual and community level awareness and preparedness is found crucial in the case of earthquake risk reduction work after the earthquake. People began to take responsibility individually and household level in preparedness on the reduction of disaster risk rather than looking towards NGOs and Government. Most of people have seriously taken about earthquake awareness, preparedness and response after earthquake and have realized that NGO/INGOS role as external and have less expectation on rescue and recovery. However, they have not minimized their role on major reconstruction works of infrastructure and utilities. Thus as Paton (2016) has emphasized, it is factual that levels of people's risk acceptance and their willingness to take responsibility for their own safety are increased with the event experience, and decisions to manage their risk more likely, if they believe that their relationship with formal agencies is fair and empowering and each has role to play.

Conclusion

Communication Medias were found much popular sources of information on earthquake which have played important roles in raising awareness. Similarly local level awareness programs were found crucial to disseminate information to remaining portion of population which have no effective access to those media. Despite, people have perception that it is individual and community to take major responsibility to reduce risk and damage, but in case of emergency preparedness, people initiatives were at lower level. It is concluded that media and local organizations could play major roles in awareness on preparedness whereas individual household and community are key for implementing the preparedness strategies to reduce disaster loss and damage. Knowledge, awareness and preparedness at individual household level are key and most effective for reducing earthquake vulnerability at local level.

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