

Epidemiological Study of the Causes of Deaths and Injuries in Nepal Earthquake

September 2015—August 2016



Project Summary

Project Objectives:

- To understand the causes of deaths and injuries due to the earthquake.
- To provide evidence to validate, and also advise on any refinements and changes necessary for a new approach on consensus-building for public education on earthquake (and all-hazards) safety.

Team Members:

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On Saturday, April 25, 2015, an earthquake of 7.8 magnitude struck Nepal northwest of the capital of Kathmandu. It was the worst earthquake to hit the region in more than 80 years. The area was hit with a second 6.7 magnitude quake on May 12, causing further damage and suffering for those who had survived the initial disaster. Approximately 9,000 people were killed and nearly 22,000 were injured. This study was conducted in 5 of the hardest hit districts of Nepal: Sindhupalchowk, Nuwakot, Kavrepalanchowk, Kathmandu and Bhaktapur. The results inform education and training for the Nepalese population on risk and mitigation strategies to take, to avoid fatal outcomes in the future. The topics covered in the study are: i) injury severity and the risks associated; ii) building type and construction causing highest fatalities; iii) type of risk mitigation strategies to adopt; iv) behavioural changes needed to keep safe; v) survivors' opinion on feasibility of preparedness measures.

Methods:

Semi-structured household questionnaires were administered in the 5 chosen districts. In each district, 10 of the hardest hit VDCs, municipalities and wards or those with the largest fatalities were purposefully selected. To identify households accessible by road in each ward, field researchers conducted social mapping with input from local key informants. A household was replaced with the following household if it was locked or no members were found after the 3rd visit. In cases where multiple families occupied the same building, one household was defined as members sharing a meal. For multiunit buildings (similar to an apartment block), units were listed clockwise from the top floor to the ground floor. Individuals were eligible for an interview if they were present in the VDC during the earthquake. If a potential respondent was not of level age (under 18 years), unavailable for deceased, proxy interviews were conducted with another household member who was with the individual during the earthquake. A total of 500 households were visited where 1855 was present in the VDCs at the time of earthquake; 1403 completed surveys were obtained.

Findings

- There were no significant differences between deaths and injuries because of gender, level of education or age.
- Physical and sensory disabilities, health and mental health problems more than doubled post-earthquake.
- Individuals were more likely to be injured/killed if they were in or near a building; the most dangerous buildings were totally collapsed buildings or heavily damaged buildings.
- The most dangerous structural aspect of buildings were walls and roofs; the most hazardous non-structural aspects were staircases, doors, windows, tiles and sinks.
- Significant damage to building contents was highly correlated with deaths and injuries.
- The most common causes of injuries and deaths were being trapped under a falling object and being struck or hit by a piercing/ cutting object.
- The majority of deceased were trapped.
- Injured/killed individuals were trapped for an average of 128 minutes. Individuals were primarily rescued by those around them or themselves; no one reported to be rescued by professionals.
- 2/3 injured went for medical treatment, of which 1/2 went to public health facilities. 1/3 respondents reported emotional; 1/2 of which stated they have recovered a year post-earthquake.
- Running outside in fifteen seconds was the only activity perceived as possible and safe by more than half of respondents.
- 1/3 of families had a family safety plan during the survey.
- Only 9% of respondents had constructed hazard-resistant homes and only 26% planned to retrofit.
- The vast majority of respondents reported any hazard disaster risk measures were or would have been effective but did not take them because they did not know what to do.
- 59% individuals learned about what to do during shaking from the radio.