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Original Research Article

Effects of earthquake on senior citizens of Shankharapur municipality, Kathmandu district of Nepal

Nigam Koirala[1]*, Sushmita Mukhiya Sunuwar[2]

[1]Department of Public Health, Nepal Institute of Health Sciences, Jorpati, Kathmandu, Nepal
[2]Department of Nursing, Nepal Institute of Health Sciences, Jorpati, Kathmandu, Nepal

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***Correspondence:**
Nigam Koirala,
E-mail: nick.koirala245@gmail.com

ABSTRACT

Background: Senior citizens can face difficult situation in the immediate consequences of unpleasant disaster because of their physical vulnerabilities. Mortality rate of elderly is comparatively higher than younger individuals and are at risk of social isolation following natural disasters, as their reactions are not fast and they might be unable or unwilling to evacuate from their homes. To assess the effects of earthquake on senior citizens of Shankharapur municipality, Kathmandu district of Nepal.
Methods: A descriptive cross sectional study was conducted. A semi structured questionnaire was used to collect the data from 115 senior citizens, Data were analyzed in SPSS version 20 and the descriptive statistics were reported.
Results: The study found that majority (94%) of the senior citizens stayed outside in temporary shelter after earthquake for more than a month (35%) with less than 5 minutes distance (70%) from an original house after earthquake. 35% of the respondents faced problem due to leakage of rain water and suffered cold while staying in temporary shelter after earthquake. Among the total respondents majority (92%) of the respondent's house was cracked or collapsed after earthquake where only 30% of the respondents went for reconstruction or maintenance and majority 91% spend their own money from pocket for maintenance.
Conclusions: This study found that shifting to temporary shelter after earthquake and loss of economy due to cracked or collapse of house after earthquake as a major effect on senior citizens of Shankharapur municipality, Kathmandu district after earthquake.

Keywords: Senior citizen, Effects, Earthquake, Shifting to temporary shelters

INTRODUCTION

United Nations Principles for Older Person 1991 defines senior citizens are those who reached 60 years and above. Age of senior citizens can be classified into two clusters: (a) active life and (b) care life, which has been classified by demography. Active life is considered productive age recognized up to 75 years and care life is 75 and beyond this. The population aged 60 and over is projected to triple from 473 million in 2009 to 1.6 billion in 2050 in the developing world. At the same time accelerated rate of ageing of older population with the population aged 80 and over projected to increase four-fold, to reach 395 million in 2050.[1]

Earthquakes are sudden turning over and over on axis or shaking events caused by movement under the earth surface, resulting in more or less severe damage to buildings, sources and living beings. A destructive 7.8 magnitude earthquake on April 25, 2015 disturbed the lives of nine million people, almost a third of the population in Nepal. A second destructive earthquake with magnitude 7.3 occurred on May 12 further complicated getting aid to survivors mainly in the central Nepal including Kathmandu Valley. Senior citizens were more affected by the devastating earthquake and its

successive aftershocks compared to other age groups, a statement issued by the National Senior Citizens Federation Nepal.[2]

Shortage of fuel, cooking gas and other essential commodities has ruined the normal life of senior citizens. Due to overcrowding of public vehicles, which are few in number, senior citizens are not able to travel from one place to another. Moreover, shortage of cooking gas has left them without digestible foods and they have not been able to receive emergency health services.[3]

After the immediate unpleasant event of a disaster, older people can struggle because of their physical vulnerabilities, Klapow said. Needed medication may get lacking after disaster. Older people may be at risk of dehydration. Health problems which have troubled in past can make it harder to deal with additional stresses. Older adults can become "silent victims," after disaster gradually diminish and rebuilding begins said John Toner, a professor of medical psychology at Columbia University who was the chief editor of a book on disaster preparedness and mental health in older adults.[4]

In earthquakes, risk of death and injury increases in older people and people with disabilities because they are often less mobile and therefore cannot flee from shaking buildings; they can also face mobility or visual or hearing challenges.

There are approximately 2.2 million people aged over 60 in Nepal, with a higher percentage of older people in the areas affected by the earthquake in Nepal as a whole 10% in affected areas and 8.1% nationally.[5]

Older people face particular challenges that need to be taken into account during a humanitarian emergency. For example, If older people are suffering from arthritis then the condition become more worsen after exposure to cold, making mobility difficult and food packets difficult to open, and chronic diseases, such as diabetes or heart diseases if not treated can quickly become life-threatening.[5]

Life in the temporary shelters, without regular support networks, proved highly challenging for older people.[6] Basic items were often distributed inappropriately or difficult to access, and respondents were challenged with new food item, ill-fitting clothes and water supplies too difficult to carry.[7]

“Bichalan” (variation in mood and feeling), "ekohoro” (becoming single minded), “athmabiswasko kami” (low self-esteem), and “bina karan rune” (crying without any reason) were all common terms in local language for elderly people's psychosocial and mental health issues.Physical injury, disability, family conflict, and economic problems were cited as the leading causes of problems among the elderly. Forgetfulness, tiredness, loss of concentration, restlessness, and isolation were observed in older people since the 2015 earthquake.[8]

This study will help to reveal and explore the effects of earthquake on senior citizens and thus can help to minimize or solve the problem resulting due to earthquake. This study will help program manager as well as implementer to reduce those effects among senior citizens so that problem will be minimized and create healthy environment.

METHODS

For this study a non-experimental, quantitative research design was used to collect the data from the respondents.

Study design

A descriptive cross sectional study was conducted in Shankharapur municpality of Kathmandu district of Nepal.

Study period

The study was conducted from February 2016 to August 2016.

Study population and sample

The study was conducted among an elderly person who has attained the age of 60 and above and was victims of earthquake of Sankhu VDC, Kathmandu district. With the proportion of target population of 10% i.e., older people in affected area, 5% degree of accuracy, the sample size was 138. After addition of 10% non-response rate the total sample size was 152. But due to non-response and unreachable due to climatic condition and geographical difficulty only 115 respondents was completed and analysed. The municipality of Kathmandu District highly affected with earthquake was selected using purposive sampling technique and the respondents were selected using convenience sampling technique. Those senior citizens age 60 and above and who were victims of the earthquake in Kathmandu District were included. Senior citizens who were not the victims of earthquake and did not respond to the questionnaire were excluded from the study.

Inclusion criteria

Those senior citizens who experienced the earthquake in Kathmandu district.

Exclusion criteria

Those senior citizens who did not experienced the earthquake and who do not respond to questionnaire.

Data collection process and analysis

Face to face interview with senior citizens who were the victims of earthquake of Shankharapur municipality of Kathmandu District. Semi-structured questionnaire was used for the tools to collect data. No enumerator was hired for data collection. After data collection, the data was checked for completeness, compiled and coded. All completed questionnaires were entered into database after manual coding and validation. The data was entered in computer by using Microscoft Excel and was transferred into SPSS for analysis. A simple statistical tool such as mean, median, frequency, percentage was used. For association, bivariate analysis such as chi- square test was used.

Ethical consideration

Approved by the Institutional Review Board (or Ethics Committee) of SRM Institute of Science and Technology. Verbal consent was taken from the respondents. Confidentiality and privacy was mentioned. The dignity of individual personally was highly considered.

RESULTS

Table 1 demonstrates the socio-demographic characteristics of respondents. Out of 115 respondents interviewed, majority of the respondents (53%) were within the age group of (60-69). Majority of the respondents are married (61.7%). Majority (71.3%) of respondents with no formal education, about 8.7%, 7% and 9.6% attended primary, lower secondary and secondary school respectively. 2.6% completed higher secondary and only 1% with university degree. Out of 115 respondents involved in this study majority (82.6%) are living in joint family and 17.4% living in nuclear family.

Table 1: Socio demographic characteristics of study population.

Characteristics	Category	Frequency	Percentage (%)
Age group (years)	60-69	61	53
	70-79	31	29
	80-89	22	19.1
	90-99	1	1
Sex	Male	64	55.7
	Female	51	44.3
Marital status	Single	4	3.5
	Married	71	61.7
	Widow	32	27.8
	Widower	8	7
Religion	Hindu	108	93.9
	Buddhist	5	4.3
	Christian	2	1.7
Educational status	Primary (class 1-5)	10	8.7
	Lower secondary (6-8)	8	7
	Secondary (9-10)	11	9.6
	Higher secondary	3	2.6
	University	1	1
	No formal education	82	71.3
Family Type	Nuclear	20	17.4
	Joint	95	82.6

Table 2 shows the social impact on the respondents after earthquake. When earthquake occurred majority (44.3%) of the respondents were with their family members at home, 20.9% said others (i.e at cultivating land, in field to graze cattle, in shop and near riverside). Similarly 16.5% in street, 12.2% were alone at house and 4.5% were at relatives' house. Out of total respondents, 93.9% of the respondents stayed outside in temporary shelter after earthquake. Those who stayed outside in temporary shelter 35.2% of the respondents stayed outside for a month. Majority (64.8%) of the respondents stayed in temporary shelter less than 5 minutes from original house. Similarly, majority (76.9%) of the respondents stayed in tent after earthquake. Those respondents who stayed outside in temporary shelter majority (35.2%)of the respondents faced problem due to leakage of rain water, 11.1% faced lack of basic facilities, 10.2% faced worried about collapse of house and to reconstruct it and 11.1% of the respondents didn't faced any problem while staying in temporary shelter. Out of total respondents of 115, 87% of the respondents said they got support and care by family after earthquake while 13% said they didn't get any support from family members after earthquake.

Table 2: Social impact of earthquake on senior citizen.

Characteristics	Category	Frequency	Percentage (%)
Place when earthquake occurred	With family members at home	51	44.3
	At relative house	5	4.3
	In street	19	16.5
	At neighbours	2	1.7
	Alone at house	14	12.2
	Others	24	20.9
Helped to evacuate to safe place	Yes	72	62.6
	No	43	37.4
Stayed outside in temporary shelter	Yes	108	93.9
	No	7	6.1
Duration of staying outside from house after earthquake	For a week	19	17.6
	For a month	31	28.7
	More than a month	38	35.2
	Still staying out from house	20	18.5
Temporary shelter from original house	Less than 5 minutes	70	64.8
	5-8 minutes	28	25.9
	More than 8 minutes	10	9.3
Type of temporary shelter staying after earthquake	Tent	83	76.9
	Zinc roof sheets	22	20.4
	Open spaces	1	1
	Others	2	1.9
Problem faced while staying in temporary shelter	Lack of basic facilities	12	11.1
	Problem due to leakage of rain water	38	35.2
	Worried about collapse of house and to reconstruct it	11	10.2
	Didn't face any problem	12	11.1
	Others	35	32.4
Support and care by family after earthquake	Yes	100	87
	No	15	13

Table 3 shows the economic loss of respondents after earthquake. 55.7% of the respondents said felt difficulty in running daily house financial activities after earthquake while 44.3% said they didn't faced difficulty. Out of total respondents, 39.1% of the respondents said reason for struggling after earthquake is due to loss of business due to destruction of building, 6.3% of the respondents said due to loss of valuable assets and goods. Majority (53.1%) of the respondents said other reason for struggling after earthquake (i.e., due to collapse of house, crops were destroyed, goods in shop were destroyed). Majority (92.2%) of the respondents said their house was cracked or collapsed during earthquake. Those whose house was cracked or collapsed only 30.4% of the respondents said they went for reconstruction or maintenance of their house while majority 61.7% didn't went for reconstruction or maintenance of their house. Majority (91%)of the respondents spend their own money from pocket for reconstruction or maintenance of their house.

Relationship between two dependent and independent variable

There will be relationship between level of effects of earthquake and social impact i.e., problem faced while staying in temporary shelter after earthquake

Among the total respondents (n=108), who stayed outside in temporary shelter after earthquake, 12 respondents faced lack of basic facilities, 38 respondents faced problem due to leakage of rain water and suffered cold, 11 respondents worried about collapse of house and to reconstruct it, 12 respondents didn't face any problem whereas 35 respondents faced other problems like problem due to cold and fever, fear due to after shake of earthquake, problem in sleeping due to fear of snake, joint problem due to cold. Similarly, among the total respondents who faced problem while staying in temporary shelter 45 respondents suffered from acute effect while 63 of the respondents suffered from chronic effect after earthquake.

Table 3: Economic loss by earthquake on senior citizens.

Characteristics	Category	Frequency	Percentage (%)
Felt difficulty in running daily house financial activities after earthquake	Yes	64	55.7
	No	51	44.3
Reason for struggling after earthquake	Loosed income maker of family	1	1.6
	Loss of valuable assets and goods	4	6.3
	Loss of business due to destruction of building	25	39.1
	Others	34	53.1
House cracked or collapsed during earthquake	Yes	106	92.2
	No	9	7.8
Reconstruction or maintenance of house	Yes	35	30.4
	No	71	61.7
Any financial assistance given from the following for reconstruction of house	Private bankers	1	2.9
	Debt from relatives	2	5.7
	None(used from own pocket)	32	91.4

Table 4: Relationship between level of effects of earthquake and social impact.

Problems faced while staying in temporary shelter	Effects of earthquake(n=108)		Correlation Coefficient r value
	Acute effect (%)	Chronic effect (%)	
Lack of basic facilities	7 (58.3)	5 (41.7)	0.263
Problem due to leakage of rain water and suffered cold	16 (42.1)	22 (57.9)	
Worried about collapse of house and to reconstruct it	6 (54.5)	5 (45.5)	
Didn't face any problems	8 (66.7)	4 (33.3)	
Others	8 (22.9)	27 (77.1)	

Table 5: Relationship between level of effects of earthquake and psychological problem

Worry too much about different things after earthquake	Effects of earthquake(n=108)		Correlation coefficient r value
	Chronic effect (%)	Acute effect (%)	
Yes	21 (87.5)	3 (12.5)	0.316
No	42 (50)	42 (50)	

Table 6: Relationship between level of effects of earthquake and economic loss.

Difficulty in running daily house financial activities after earthquake	Effects of earthquake		Chi-square value
	Chronic effect (%)	Acute effect (%)	
Yes	43 (68.3)	20 (31.7)	0.013
No	20 (44.4)	25 (55.6)	

In order to examine the relationship between level of effect of earthquake and social impact, the correlation coefficient test was performed.

There will be relationship between level of effects of earthquake and psychological problem i.e., worry too much about different things after earthquake

Among the total respondents (n=108), who stayed outside in temporary shelter after earthquake, 24 respondents said they worry too much about different things after earthquake while 84 respondents said them do not worry too much about different things after earthquake. Similarly, among the total respondents who faced worrying about different things after earthquake, 45 respondents suffered from acute effect while 63 of the respondents suffered from chronic effect after earthquake.

In order to examine the relationship between level of effect of earthquake and psychological effect, the correlation coefficient test was performed.

There will be relationship between level of effects of earthquake and economic loss i.e., difficulty in running financial activities after earthquake.

Among the total respondents (n=108) who stayed outside in temporary shelter after earthquake, 63 respondents said they faced difficulty in running financial activities after earthquake while 45 respondents said they didn't faced difficulty in running financial activities after earthquake Similarly, among the total respondents who faced after earthquake, 45 respondents suffered from acute effect while 63 of the respondents suffered from chronic effect after earthquake.

In order to examine the relationship between level of effect of earthquake and economic loss chi square test was performed.

DISCUSSION

There is only few research data about effect of earthquake on senior citizens. According to the report of age UK, Nepal earthquake 2015 older people face particular challenges during a humanitarian emergency. For example, if older people are suffering from arthritis then the condition become more worsen after exposure to cold, making mobility difficult and food packets difficult to open, and chronic diseases, such as diabetes or heart diseases if not treated can quickly become life-threatening.[9] This study on Shankarapur municipality found that elderly people face challenges like exposure to cold, problem in sleeping due to previous health problem, worsen arthritis making movement difficult. Distribution cash grants by help age international's partner in Nepal to help thousands of older people and their families buy much-needed food, water, medicine or other goods, and working to make sure that older people can effectively access the healthcare they need. The current study found that 66.1% of the respondents received free health services organized and 91.3% received food distributed by NGOs in a Shankharapur municipality. Highest proportion of older people i.e., over 23% of the population is 65 years and older was there in a country when Great East Japan Earthquake occurred. When the earthquake struck, the majority of older people in the survey (69%) were at home and their time for evacuation was slowed down as a consequence of power failures, physical frailties and being alone. In this research study it is shown that 44.3% of the older people were at home with family members and 12.2% were alone at home when earthquake occurred.

Limitations of the study

The study was limited to only one municipality affected with earthquake in Kathmandu District. The reliability of the study entirely depends upon the honesty of the respondents. The study may not represent the overall situation of earthquake on senior citizens in Nepal due to small size.

CONCLUSION

As we saw earlier that due to devastating earthquake in Nepal, senior citizens in Shankharapur municipality of Kathmandu District were suffering more due to collapse of house and forced to live outside in temporary shelter after earthquake which worsens their health condition. In this situation there is need to understand the different effects of earthquake on senior citizens. Most of the senior citizens were living outside home in temporary shelters where they faced different problems like lack of basic facilities, problem due to leakage of rain water, worried about collapse of house and to reconstruct it, problem like fever, headache, diarrhoea and problem of joint pain etc. Though majority of the respondent's house was collapsed they felt difficulty in running daily house financial activities after earthquake. This study found that shifting to temporary shelter after earthquake and loss of economy due to cracked or collapse of house after earthquake as a major effects on senior citizens of Shankharapur municipality, Kathmandu District after earthquake. This study is an initial step in understanding about the effects of earthquake on senior citizens of Kathmandu District of Nepal.

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