

## Mini Review

# Disaster Preparedness among Nepalese Residing in Japan: a Mini-Review

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The rate of natural disasters has shown prolific increment in last few years with Asia being one of the regions with highest occurrence of disasters like earthquakes, tsunamis, floods, landslides and so on. Nepalese immigrants are highly increasing in Japan hence the objective of this study was to identify the Knowledge, Attitude and Practice (KAP) of disaster preparedness among them. A structured questionnaire was used and bivariable and multivariable logistic regression analysis was performed to identify the determinants of knowledge, attitude and practice. Total of 404 Nepalese participated in this study and we identified that Nepalese immigrants has lower practice of natural disaster preparedness. We also identified that Japanese language is the biggest barrier for Nepalese to seek correct information on disaster preparedness. Thus, Japan government in light of growing immigrant population should think about policies to include information related to natural disasters in Nepali language into their official websites in order to increase their KAP on disaster preparedness.

**Keywords:** Natural disaster; Nepalese; Preparedness; Japan

## Background

Disasters are any unforeseen events which leads to various destruction into our society and to mankind [1,2]. Millions of people have been affected by various forms of natural disasters in past few decades [3]. Several studies emphasize Asia to be the region with highest number of disaster occurrence [4-6]. Meanwhile, Japan has been hit by countless number of natural disasters like earthquakes, volcanoes, snow-storms, typhoons, landslides, floods, and so on in the past centuries [7]. The white paper on disaster management in Japan, has clearly mentioned that the low and middle income countries are at high risk of adverse health outcomes related to disaster situations [8-10].

Nearly hundred thousand Nepalese immigrants are residing in Japan and most of them are blue collar workers with low health seeking behavior [11,12]. However, the protocols of national and international level organizations working for disaster management in Japan have not been able to involve Nepalese immigrant's population needs into their policies as evidenced by limited number of Japanese government websites prioritizing Nepali language in their websites for information dissemination related to health [13].

Hence, the major objective of this study is to identify the perceived knowledge, attitude and practice regarding natural disaster preparedness among Nepalese immigrants residing in Japan and to identify the possible factors and barriers to assess the information on disaster preparedness among them so that we would be able to understand the situation of Nepalese in Japan and prevent any human or materials loss during a disaster situation.

## Methodology

We conducted a cross sectional survey among Nepalese immigrants more than 18 years of age using a structured questionnaire

to collect information on knowledge, attitude, practice and perceived barriers regarding natural disaster preparedness. The questionnaire was validated and then utilized for data collection process. The questionnaire was prepared in English and then translated into Nepali language. The minimum and maximum score for the knowledge and attitude was zero and 40 respectively. Whereas the minimum and maximum practice score was zero and 39 respectively. We used "Question Pro", online software which helps in the dissemination of survey questionnaires to mass population to distribute our survey. The link to the survey questionnaire was shared via various social networking sites of organizations which are actively involved in maintaining the welfare of Nepalese immigrants residing in Japan.

An online based written consent was taken from each participant to participate into this study. We analyzed three multivariable logistic regression models to identify the factors associated with knowledge, attitude and practice respectively. We got ethical approval from St. Luke's International University Ethical Review Board to conduct this study with approval number "20-E001". Sample size for this study was calculated to be around 384. The detailed process of questionnaire development and validation, sample size calculation, statistical analysis has been published elsewhere [14].

## Results

Out of 542 respondents only 404 respondents were included in this study. More than 60% of the respondents were in between 26-45 years of age. About 60% of the respondents were male. Similarly, the majority of respondents were residing in Kanto area of Japan. We found that there were higher number of respondents who uses Facebook and other social networking sites or applications to receive information regarding disaster preparedness. The detailed classification of the respondents has been published elsewhere [14].

The results showed that the mean knowledge score of disaster

**Table 1:** Mean score of perceived knowledge, attitude and practice among Nepalese immigrants residing in Japan (N = 404).

	Mean	95% confidence interval of mean
Knowledge of disaster preparedness	21.30 ± 5.75	20.74 – 21.86
Attitude regarding disaster preparedness	29.12 ± 5.83	28.55 – 29.69
Practice of disaster preparedness	15.86 ± 5.52	15.32 – 16.40

**Table 2:** Frequency distribution of perceived barriers to assess information on disaster preparedness among Nepalese immigrants residing in Japan.

Perceived barriers*	Frequency	Percentage
Language	230	38.27
Information deficit	173	28.78
Not having enough time	149	24.79
Work pressure	41	6.82
**Others	8	1.33

\*=multiple responses were allowed \*\*=Other perceived barriers which includes low risk perception regarding disaster situation and not having training opportunities in their native language.

preparedness was 21.30 ± 5.75. Similarly, the mean attitude was slightly higher than the knowledge with 29.12 ± 5.83 however; the mean practice score was 15.86 ± 5.52. (Table 1) We also found that Japanese language was one of the major perceived barriers in accessing information regarding disaster preparedness followed by not having enough time to seek health information. (Table 2) Use of some social networking sites like Twitter and YouTube were associated with the knowledge and attitude level however, it didn't have any associations with their practice level. The detailed multivariable logistic regression model has been published elsewhere [14].

## Discussion

This study observed the perceived knowledge, attitude and practice of Nepalese immigrants on disaster preparedness and found that they have a low level of knowledge and practice. We identified Japanese language as the major barrier in assessing the knowledge and practice on disaster preparedness followed by difficulties in seeking health information.

Having higher knowledge has been found to be associated with higher practice rate however, the increment in practice level was lower compared to other countries [15]. Similarly, previous studies have shown that the knowledge regarding disaster preparedness is more than 50% in China and Japan while conducting a household survey however, the observed knowledge level was much lower among Nepalese in our study [16,17]. We also identified that Nepalese do not participate in community drills and practice sessions probably because of the lower Japanese language skills that they mentioned as the perceived barrier to access the health information in Japan [18]. Nepalese immigrants residing in other English speaking countries like the United Kingdom, The United States, Canada, etc. have higher information seeking behavior compared to those in Japan because people coming to Japan are mostly the blue collar workers with poor Japanese language abilities [19,20]. Hence, availability of health information related to disaster prevention in Nepali language might be better to increase the knowledge of Nepalese regarding disaster preparedness and which will eventually increase their practice skills.

This is the first study of its kind to assess the knowledge, attitude and practice regarding disaster preparedness among Nepalese immigrants residing in Japan. This study provides an insight on need of better language translation services at the government websites of Japan regarding disaster preparedness. This study also has some limitations like the study participants were recruited from Social Networking Sites (SNS) hence, non-SNS users and their perspectives might not have been included in this study. However, we believe that we were able to get information from representative sample based on the sociodemographic distribution of our respondents.

## Conclusion

Nepalese residing in Japan don't have enough knowledge and practice of disaster preparedness hence in order to increase their preparedness skills Japanese government should provide better language translation services in their government websites and also focus on involving people who have good hold of Japanese and Nepali language in providing necessary disaster preparedness training to the Nepali community. Working along with some Nepalese organizations regarding this issue might help in positive response from Nepalese community residing in Japan.

## Availability of Data and Materials

The questionnaire used in the original study has been published elsewhere.

## Competing Interests

The authors declare no competing interests.

## Funding

The authors received no specific funding for this research.

## Author Contributions

Conceptualization AB; Methodology AB, OT; Validation AB; Formal analysis AB; Investigation AB; Resources AB, OT; Data curation AB; Writing - original draft preparation AB; Writing - review and editing AB, OT; Visualization AB; Supervision OT; Project administration AB, OT. All authors have read and approved the final manuscript.

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