

## Knowledge, Attitude and Practice of Disaster Preparedness Among Health Care Workers in a tertiary care center of Central Nepal

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### ABSTRACT

**Background:** An increase in the number of natural disasters and consequently the rate of disability has been also increased. So, purpose of this study is to assess the knowledge, attitude and practice about disaster preparedness among health care workers at a tertiary care center of a disaster-prone developing country like Nepal.

**Methods:** This is a descriptive cross-sectional study. A total of 135 participants were included. Self-administered multiple sets of questionnaires with four sections i.e., Demographic information, Knowledge Questionnaire, Aptitude Checklist, and Practice based questionnaire were used for study. The study was conducted in Kathmandu Medical College Teaching Hospital and the study period was two months, from December 2021 to February 2022. The respondents were the staffs working in Kathmandu medical college teaching hospital with or without formal training and work-related experiences of disaster preparedness and management in the past. The data was entered into the Microsoft Excel software and analyzed using the statistical package for social studies (SPSS) software 23.0 version and P-value was set at 0.5 with 95% CI.

**Results:** Among 135 participants, female participants were 90 (66.7 %). There were 41 Doctors (37.0%) and 45 nurses (37.8%). Equal participation from every department was ensured. Their overall knowledge, attitude, and practice in disaster preparedness were good. 80.7% of the participants had knowledge of the disaster, and 7.0% agreed with the necessity to have a disaster plan.

**Conclusions:** Health Care professionals have a significant level of knowledge. Attitude is a significant predictor of readiness to practice. Educators and health policymakers should build a robust curriculum in disaster medicine management and preparedness for the future of competent health care professionals in our country Nepal.

**Keywords:** Attitude; Disaster preparedness; Knowledge; Nepal; Practice

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## INTRODUCTION

A disaster is defined as an event that causes more than 10 deaths, affects more than 100 people, or leads to an appeal for assistance by those involved<sup>1</sup> and a storm, flood, earthquake, drought, fire, explosion, building collapse, or other situation that causes human suffering is termed as a disaster.<sup>2</sup> In the context of Nepal, the recent most devastating natural disaster was an earthquake on 25<sup>th</sup> April 2015 in Nepal, killing more than 8500 people.<sup>3</sup> Hospitals and health care workers are at constant risk of confronting both internal and external,<sup>4</sup> and a holistic approach targeted towards health care workers need to ensure adequate preparedness of hospitals to tackle such situations.<sup>5</sup> The aims of a disaster management plan in the hospital are to reduce or prevent loss of life and to provide immediate and appropriate assistance to the victims. Ministry of Home Affairs, had carried out different simulation programs to strengthen Nepal's capacity for disaster response in 2009, 2013, and 2014. However, the preparedness for disaster response was found to be inadequate during 2015 earthquake.<sup>6</sup>

Major accidents and disasters can only be mastered and controlled by intelligent planning.<sup>7</sup> Emergency preparedness refers to the readiness of political jurisdiction to react constructively to threats from the environment and minimizes the negative consequence of impact on the health and safety of individuals and systems.<sup>8</sup> Preparedness assessments include (1) elements of disaster planning; (2) emergency coordination; (3) communication; (4) training; (5) expansion of hospital surge capacity; (6) personnel; (7) availability of equipment; (8) stockpiles of medical supplies; and (9) expansion of laboratory capacity.<sup>9</sup> There is need of evidence-based disaster training, guidelines for health workers as a high priority.<sup>10</sup> Therefore, this study aim to elucidate the knowledge, attitude about disaster preparedness among health care workers in a tertiary care center in central Nepal.

## MATERIALS AND METHODS

Kathmandu Medical College (KMC) is one of the territory level teaching hospitals of Nepal. A descriptive cross-sectional study was done in Kathmandu Medical College in Kathmandu valley of Nepal during Dec. 2021 to Feb. 2022. All staffs of the College, either technical or administrative were the study population for this study. Staffs who were absent during the study period and reluctant to participate in the study were excluded from the study. Out of total staffs of college, 135 of the staffs were randomly selected for the study. A set of data collection tool was developed, pretested and finalized. Data collection

tools were self-administered which incorporate four sections like Demographic information, Knowledge Questionnaire, Aptitude Checklist and Practice-based questionnaire.

Official permission and written approval were taken from the College administration to conduct this study. Ethical approval was obtained from KMC-Institutional Review Committee prior to the study. In addition, the subjects were offered a brief explanation about the purpose of study and written informed consent was taken. The research participants were explained that they do not necessarily have to have attained any disaster program training for participation in this study nor should have had prior work-related experiences. A coding system was used to process the data, and each participant unit was assigned a unique code. A time and date were appointed for a workshop on disaster preparedness. Before the workshop, all the participants were oriented, and details about the research tools were given. The data collection was carried out in a single session of about 45 minutes, followed by the workshop. Confidentiality of their information was maintained by anonymity. Respondents were instructed to return the questionnaire after completion. For completeness, the collected data were edited, reviewed, and checked. To assure anonymity, code numbers were given on completed questionnaires after they were returned to the investigator. The data were entered into Microsoft Excel software and analyzed using Statistical Package for the Social Sciences (SPSS) software version 23.0. The P-value was set at 0.5.

## RESULTS

### Socio-demographic domain

Among 135 participants, two third of the participants were female (66.7 %) and one third (33.3%) were male. Around half of the participants (41.6%) were working in this hospital for more than 5 years followed by 34.8 for less than 1 year and 23.6% for 1-5 years with mean work duration being 2.05 +/- 0.957 years and median working duration being 2 years. (Table 1)

Table 2 illustrated that 40.4% were nursing staffs, 36.9% were medical doctors and 4.5% were allied medical staffs. Overall, 77.8% of the respondents were clinicians followed by 10.4% administrative staffs, and 11.9% support service staffs.

### Knowledge domain

Almost all the participants (80.7%) knew the definition of disaster and answered the right option when asked about what disaster is, whereas, 19.3% didn't know the definition of disaster (Table 3).

**Table 1:** Distribution of respondents by gender and working duration

Variables /Category	Frequency	Percent
<b>Gender</b>		
Female	90	66.7
Male	45	33.3
<b>Working duration</b>		
Less than 1 year	47	34.8
1-5 years	32	23.6
More than 5 years	56	41.6
Mean $\pm$ SD = 2.05 $\pm$ 0.957		
Median = 2 years		
<b>Total</b>	<b>135</b>	<b>100.0</b>

**Table 2:** Distribution of respondents by designation

SN	Designations	Frequency	Percent
1	Medical doctor	50	36.9
2	Nursing staff	55	40.5
3	Allied Medical	6	4.5
4	Pharmacy	1	0.9
5	Logistics	2	1.8
6	Patient affairs	4	2.7
7	Attendant	9	6.3
8	Housekeeping	5	3.6
9	Security	2	1.8
10	Logistics	1	0.9
	<b>Total</b>	<b>135</b>	<b>99.9</b>

**Practice domain**

Participants were asked “who would be responsible for disaster management? A large majority of them (85.9%) pointed that disaster management is only for

nurses and doctors with significant differences (one sampled 2-tailed t-test,  $t=61.953$ ,  $p \leq 0.000$ ) as shown in the Radar graph 1.

**Table 3:** Knowledge distribution of respondents

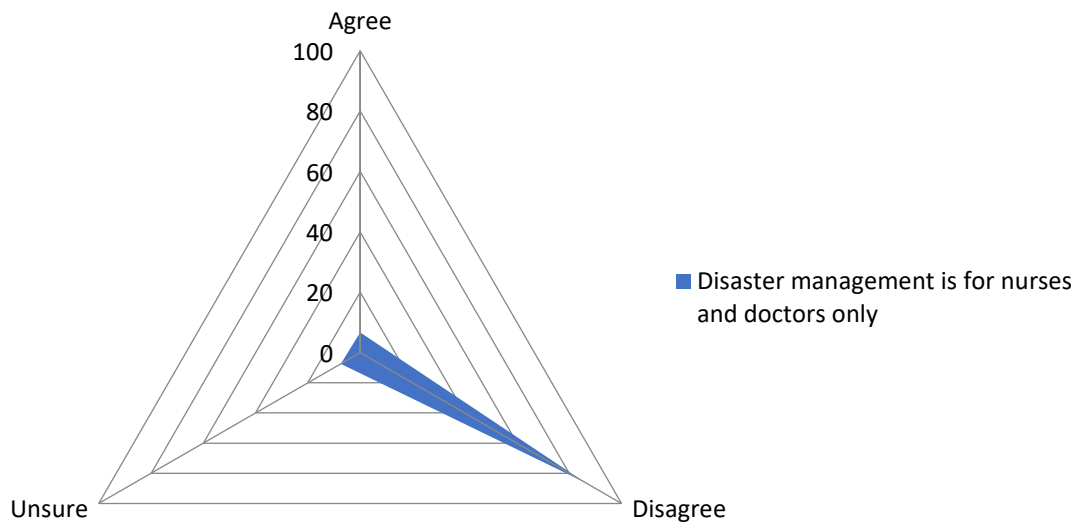
Variables	Category	Frequency	Percent
Know the definition of disaster	Yes	109	80.7
	No	26	19.3
<b>Total</b>		<b>135</b>	<b>100</b>

**Attitude domain**

Table 4 illustrates the disaster preparedness attitude of participants. A significant majority (97.0%) agreed to the necessity to have a disaster plan ( $t=39.797$ ,  $p \leq 0.000$ ) and 96.3% of them believed that the training is necessary for all health management. Similarly, 90.4% of them agreed that disaster simulation should occur frequently in the hospital with little significant difference ( $t=24.521$ ,  $p \leq 0.000$ ) and 88.1% of them also stated that drills should be conducted in the hospital. In addition, 85.2% responded pointed that the management should be adequately prepared for disaster, and 84.4% respondent agreed about the potential hazards likely to cause disaster should be identified and dealt with. A large majority (85.9%) disagreed with the need for a disaster plan with a highly significant difference ( $t=60.687$ , 2-tailed  $p \leq 0.000$ ), 85.9% said that disaster management is only for nurses and doctors with a significant difference, 81.5% agreed that disaster planning is only for few people in the hospital and 69.6% responded that disasters are unlikely to happen in our hospital

**Table 4:** Distribution of disaster preparedness attitude

Attitude related variables	Agree	Disagree	Unsure
I don't need to know about disaster plans	8.9	85.9	5.2
Management should be adequately prepared for Disaster	85.2	11.1	3.7
Disaster planning are for few people in the hospital	14.1	81.5	4.4
Potential hazards likely to cause disaster should be identified and dealt with	84.4	4.4	11.1
Do you think it is necessary to have a disaster plan?	97.0	.7	2.2
Disaster plans should regularly be updated	90.4	5.2	4.4
Disasters are unlikely to happen in our hospital	18.5	69.6	11.8
Disaster management is for nurses and doctors only	6.7	85.9	7.40
Disaster simulation should occur frequently in the hospital	90.4	1.5	8.1
Training is necessary for all health management	96.3	.7	3.0
Drills should be conducted in the hospital	88.1	5.2	6.7



**Radar graph 1: Practice variable radar graph**

## DISCUSSION

This study concerns the threats of the complex nature of the disaster in hospitals, and health care delivery organizations. It must be prepared to care about the need for medical services and protect individuals from being exposed to any additional risk.<sup>11</sup> Our study was conducted to find the relative preparedness among the health care workers for disasters. WHO emphasized that hospitals and other healthcare facilities should play a critical role in national and local emergency responses.<sup>12</sup>

Our study findings indicated that the knowledge was excellent. In a study in Saudi Arabia, Nofal et al. evaluated hospital staff's knowledge, attitudes, and practices about disaster and preparedness. They reported that the knowledge level of physicians and nurses was satisfactory.<sup>13</sup> where a study in Iran showed that the nurses' knowledge was moderate.<sup>14</sup> The studies also demonstrate a significant relationship between knowledge score and

respondent's age and job experience. A study in Malaysia was carried out to evaluate the knowledge of medical personnel. Which shows most of them have adequate knowledge of disaster management.<sup>15</sup> Naser and Salem studied the role of healthcare professionals who are considered the first responder towards disaster preparedness, their overall knowledge was found insufficient. According to them, the poor knowledge was due to a lack of teaching programs.<sup>16</sup>

In terms of attitude, our study showed that the respondents' perspective was high, and the majority agreed in showing interest in educational classes on disaster medicine preparedness. These results were inconsistent with the previous Yemeni study, where 82.5% indicated an interest in educational activities.<sup>17</sup> Nofal et al. discovered that the attitude of the hospital staffs in Saudi Arabia was neutral.<sup>13</sup> Far et al. suggested that the level of perspective of the nurses in Iran was just moderate.<sup>14</sup> Ahayalimudin and Osman, in their study findings in Malaysia, showed that the

physicians, nurses, and assistant medical officers' attitudes towards disaster management were optimistic.<sup>15</sup> A study in Yemen illustrated that healthcare professionals' attitudes were surprisingly positive.<sup>17</sup> All these findings showed that the level of philosophy of the healthcare personnel was between low and satisfactory.

The readiness to practice level of our respondents was high. However, Nofal et al. discovered that the practice of the hospital staff was neutral.<sup>13</sup> Far et al. studied the performance of the nurses related to disaster management. They mentioned that it was moderate, and gender, age, marital status, and job experience were significantly related to the performance aspect.<sup>14</sup> In another study, the researchers found out that the practices among medical staff were adequate. The staff's working experience and training in disaster management programs were associated with higher positive scores.<sup>15</sup> Overall; these studies illustrated a moderate readiness to practice among the healthcare staff. Thus, we firmly believe that improving the attitude and enhancing competency may strengthen the willingness to practice during a disaster. The overall knowledge, attitude, and practice towards disaster preparedness in our subjects were excellent. Nepal faced a major disaster of the earthquake in 2015. The incident might have increased the knowledge about domains in disaster management mentioned above.

## Limitations

One of the limitations is that the results are related to Nepalese culture, environmental, and educational context, which may not be consistent with other countries. Therefore, we cannot generalize the findings to other low-income countries. In addition, this study targeted only the central region of Nepal. The study should be carried out in different areas too. Additionally, the hospital structure and availability of staff at a particular time may alter the findings. Additionally, because the study relied on a survey, self-reported data and self-perception might have caused biases. Further, this study contributes another critical perspective regarding healthcare professionals in a low-income country like Nepal.

## CONCLUSION

This study illustrated that the healthcare professionals in our study have a significant level of knowledge, a high attitude level, a moderate readiness to practice group, and an average level of overall ability, attitude, and practice regarding disaster preparedness. Attitude is a significant predictor of willingness to practice. Therefore, we firmly believe that educators and health policymakers should build a robust curriculum and apply it in disaster medicine management and preparedness for the future of competent healthcare professionals in our country Nepal.

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