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AN EVALUATION OF DISASTER PREPAREDNESS PRACTICE AMONG HEALTH PROFESSIONALS IN HILLY DISTRICTS OF UTTARAKHAND: A CROSS-SECTIONAL STUDY

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ABSTRACT

Disaster preparedness is a set of measures taken by an organization to respond effectively during disasters and could minimize their effects. Hospitals are expected to prepare themselves for external and internal disasters. Health professionals should practice regularly so that they could be prepared and respond efficiently during disasters. The objective of this paper is to determine the practice of healthcare workers regarding disaster preparedness. Method: 300 samples were collected from five hilly districts of Uttarakhand. Out of which 150 were medical staff and 150 were the paramedical staff. Result: It was found that 300 participants had 60% practiced in disaster preparedness. Medical staffs were found better in the practice of disaster preparedness than paramedical staff. There was a strong association found between work experience and preparedness. Conclusion: training should be conducted regularly in the hospital. More awareness should be given to mock drills and evaluation to be done after every mock drill. Paramedics should be involved in every step of disaster preparedness planning and practice.

Keywords: Disaster Preparedness Practice, Disaster Training, Mock-drills, Healthcare professionals.

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INTRODUCTION

Disaster management works on four factors: mitigation, preparedness, response, and recovery. Disaster preparedness is one of the components of emergency management and is the amalgamation of knowledge, competencies, and practice that are required for healthcare workers to respond to disasters. [3] According to ICRC, Disaster preparation measures all the planning done by the organization for the reduction of the direct or indirect effects of disasters. It is a situation where the community, government, and non-government institutions work together and make out all possible solutions to prevent it. [10] Hospitals prepare their staff so that they could respond effectively to the consequences of disasters. Disaster preparedness focuses on the improvement of different areas varying from training and logistics to healthcare and institutional development. Planning is the foremost step in disaster preparedness [11].

Disaster preparedness planning is a procedure in which important elements like triage, and regular training should be emphasized in the plan. The plan should be documented and checked daily [15]. A disaster plan should be designed in such a way that it properly utilizes highly skilled health workers.

Hospitals need to sustain the preparedness of staff and systems to a high level which could mitigate the consequences of disasters. Therefore, the knowledge and practices of the hospital staff are considered to be very important in enhancing the preparedness of the health system for crises [8].

Programs and training are the ways to estimate a hospital's efficiency to deal with a disaster before the emergency circumstances. This training should be organized in such a way that it provides all the essential medical needs to the sufferers and simultaneously reduce the adverse effects of specific incidents on health services [5].

Assessment of preparedness for disaster and effectiveness of response is one of the ways to find out the loopholes in the functioning of the system and could fill those gaps and weaknesses.

Education and training are important elements of disaster preparedness. Thus, professionals' competencies regarding disaster management would be strengthened if there would be provisions for formal educational programs [4].

Education and training are essential for health professionals to gain knowledge and develop skills that would help to respond to disasters effectively [6]. Sufficient knowledge and skills in healthcare workers will increase their confidence and that will help them to tackle disasters [2]. The lack of training programs in disaster preparedness was one of the concerns that would increase the negative outcome of the disaster [10].

Several studies conducted on perceptions of healthcare works in preparedness and practices. A study was conducted in Sorogon to assess the practice of disaster management among healthcare workers and found they practiced disaster management often. There was a need for capacity building to be regular for healthcare workers to sustain their practices of disaster management [12]. Another study was conducted in Saudi Arabia to assess the knowledge and training of Emergency departmental staff and found that 81% of the participants had conducted disaster drills at their hospital while two-thirds indicated the periodic update of Emergency operational plans and ongoing training on disaster and emergency preparedness [10]. A study conducted on the practice of health professionals working in emergency units towards disaster preparedness in Ethiopia found that 67.5% had an inadequate practice of disaster preparedness [16].

A study on practices of healthcare workers regarding disaster preparedness was conducted at Johannesburg Hospital, South Africa, and found that 40% of the participants didn't know about types of disaster drills 28% didn't know whether it's practiced in their hospital or not, 48% didn't know about ongoing training and 48% of the participants didn't know whether their disaster plans were regularly updated or not [7].

A Study on practice regarding disaster preparedness conducted in tertiary hospitals in South India revealed that 70% of the participants didn't know whether drills were conducted at their hospital and 80% didn't know what types of drills were conducted [3].

A study of Practices of Internship students regarding disaster preparedness was conducted at a tertiary hospital, in Udaipur, Rajasthan, and found that 94% of the participants didn't know about updates of a disaster plan, 74% of the participants never faced any disaster.97% of the participants were never been the part of disaster team and 87% believed that their practice for disaster preparedness was insufficient [14].

A study on nurses' practices regarding disaster management was conducted and found that 83.5% of the participants were doing poor practices in disaster management [15].

Uttarakhand is a hilly state where 86% part is mountainous and the rest 14% part is under plain area. Uttarakhand is prone to natural disasters due to its physiographical features and climatic extremes. Hazards like landslides and floods happen frequently, especially in the May-July months and districts like Chamoli and Uttarkashi come under zone 4 (earthquake). The health system in the hilly areas of Uttarakhand depends upon the Sub-centres, PHC (Primary Health Centre), CHC (Community Health Centre), Sub-District, and District Hospitals. This study covered CHC, Sub-district, and district hospitals.

Methodology:

Study Approach:

A descriptive cross-sectional study was conducted in 23 hospitals from five hilly districts (Chamoli, Tehri, Uttarkashi, Pauri, Rudraprayag, and Chamoli) of the Garhwal region, Uttarakhand. This study includes 16 Community Health Centers (CHC Pokhri, CHC Jakholi, CHC Joshimath, CHC Augustmuni, CHC Purola, CHC Nainidanda, CHC Chinyalisaur, CHC Naugaon, CHC Ghandiyal, CHC Chamba, CHC Gopeshwar, CHC Thatyur, CHC Khari, CHC Pratapnagar, CHC Gairsain), 3 Sub-district hospitals (S.D.H Karanprayag, S.D.H. Narendranagar, S.D.H Srinagar) and 4 district hospitals (D.H Baurari, D.H. Rudraprayag, D.H Uttarkashi, D.H Chamoli).

Population Size:

The study targets CHC's, Sub-district and District hospitals of five hilly districts of Garhwal region which are 46 total in number. Doctors and paramedical staff of these hospitals form the population of this study.

Sample size:

23 hospitals were chosen for the sample study based on the judgmental sampling technique. 300 samples were collected from the doctors and paramedical staff on basis of their availability.

Data Collection:

Primary data was collected from doctors and paramedical staff through a close-ended questionnaire. 16 sets of questions were constructed based on practice regarding disaster preparedness. All the collected data were entered into an Excel sheet for analysis. 1 mark was given for a yes response and 0 for a No response. The P-value was calculated

through CHI-square test to analyse the significant difference in practice regarding disaster preparedness between medical and paramedical staff. The association between work experience and practice preparedness was found through regression analysis.

Results

Fig1 showed the number of health professionals that had practiced disaster preparedness. A total of 300 health professionals participated in this study. Out of which 180 (60%) had attended disaster training, 100 (33%) of them said that training was regular, 180 (60%) of them attended mock drills, 100 (33%) of them said drills were regularly conducted in their hospital, 100 (33%) of them said that evaluation were been done after mock drills , 180 (60%) of the participants had practiced Basic Life Support , 220 (73%) had experienced the disaster, 220 (73%) had the practice to use fire extinguisher, 240 (80%) of the participants knew whom to report first when disaster happens, 220 (73%) of the participants knew about the steps to be taken during earthquake disaster, 220 (73%) had said that they can handle influx of patients during disaster, 180 (60%) said that they could manage the disaster with insufficient staff, 240 (80%) of the participants had the practice to shift the spinal injury patients to the hospital, 240 (80%) of the participants had the practice to evacuate the patients in hospital disaster, 140 (47%) of the participants felt that their practice for disaster preparedness was sufficient. And only 110 (37%) of participants stated that their disaster plan was regularly updated.

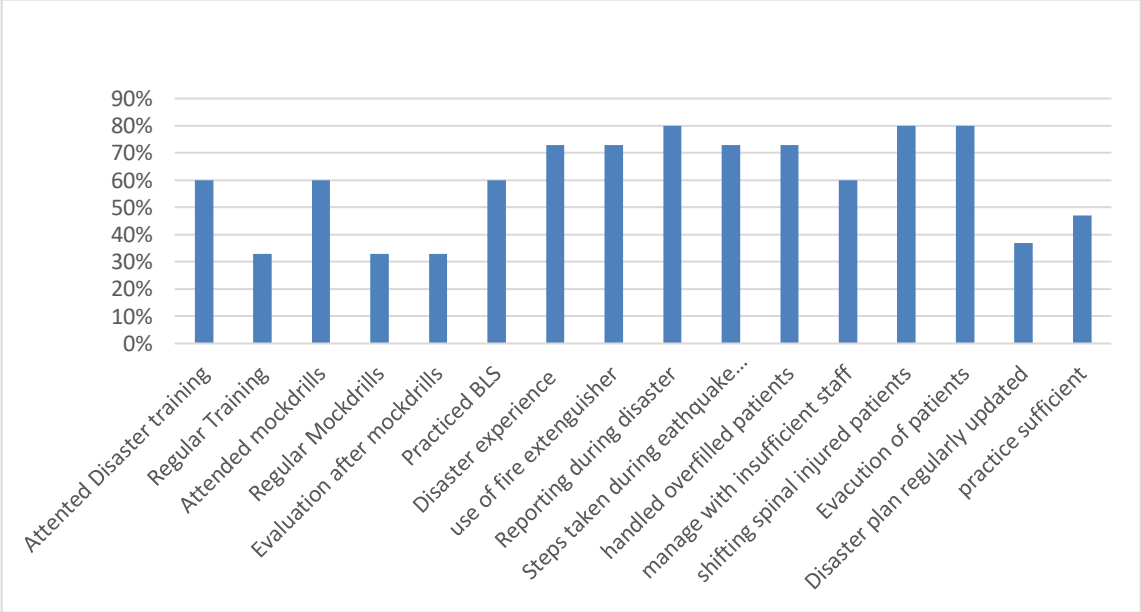

Table 1. showed that 300 participants had 60% practice in disaster preparedness

Number of Participants (n=300)	% of the Practice score
100	100%
10	81%
30	75%
40	69%
40	44%
20	19%
60	Scored no marks

Table 2. showed the comparison of practice regarding hospital disaster preparedness between medical and paramedical staff. 150 medical and 150 paramedical participated in this study. In this study, 56% of medical staff and 44 % of paramedical staff had attended the disaster training. 50% of medical staff and 50% of paramedical staff stated that their disaster training was regular in their hospital. 56% of medical staff and 44 % of paramedical staff had attended mock drills. 50% of medical staff and 50% of paramedical staff said that their mock drills were regular. 50% of medical staff and 50% of paramedical staff stated that evaluation was been done after mock drills. 56% of medical staff and 44% of paramedical had practiced Basic Life Support (BLS). 55% of medical staff and 45% of paramedical staff had experienced the disaster. 57% of medical staff and 43% of paramedical staff believed that their practice for disaster preparedness. 55% of medical staff and 45%of paramedical staff knew the usage of fire extinguishers. 54%

of medical staff and 46% of paramedical staff knew to whom to report first when a disaster happens.55% of medical and 45% of paramedical staff knew what to be done in earthquake disasters. 55% of medical and 45% of paramedical staff had the practice of handling the influx of patients during a disaster. 56% of medical and 44% of paramedical staff would manage the disaster with insufficient staff. 54% of medical staff and 46% of paramedical staff had the practice to shift spinal injury patients to the hospital. 59% of the medical staff and 41% of the paramedical staff stated that the disaster plan of their hospital was regularly been updated. 87% of medical staff and 73% of paramedical staff knew to evacuate the patients during a hospital disaster.

Table2.Comparison on Practice regarding Disaster Preparedness among Medical and Paramedical staff

Practice on topics	Medical staff	Paramedical staff	Chi-square test	p-value
1. Attended Disaster training	100 (56%)	80 (44%)	5.52	0.02
2. Regularity of Disaster training	50(50%)	50(50%)	0	1
3. Attended Mock drills	100 (56%)	80 (44%)	5.52	0.02
4. Regularity of Mock drills	50 (50%)	50 (50%)	0	1
5. Evaluation of Mock drills	50 (50%)	50 (50%)	0	1
6. BLS Practice	100 (56%)	80 (44%)	5.52	0.02
7. Disaster experience	120 (55%)	100 (45%)	6.818	0.01
8. Practice in disaster preparedness is sufficient	80 (57%)	60 (43%)	5.3	0.02
9. Usage of fire Extinguisher	120 (55%)	100 (45%)	6.818	0.01
10. Reporting during the disaster	130 (54%)	110 (46%)	8.26	0.004
11. Steps were taken in earthquake-disaster	120 (55%)	100 (45%)	6.818	0.01
12. Handling influx of patients during a disaster	120 (55%)	100 (45%)	6.818	0.01
13. Managing disaster with insufficient staff	100 (56%)	80 (44%)	5.52	0.02
14. Shifting the Spinal injured patient to the hospital	130 (54%)	110 (46%)	8.26	0.004
15. Disaster Plan regularly conducted	65 (59%)	45 (41%)	5.72	0.016
16. Evacuation of patients during hospital disaster	130 (54%)	110 (46%)	8.26	0.004

Table 3. showed that 150 Medical participants had 65% practice in disaster preparedness.

Table 3. Practice results of 150 Medical participants

Medical Participants (n=150)	**% of Practice scores**
50	100
15	81%
15	75%
20	69%
20	44%
10	19%
20	Scored no marks

Table 4. showed that 150 paramedical participants had 54% practice in disaster preparedness.

Table 4. Practice Results of 150 Paramedical Participants

Paramedical Participants (n=150)	**% of Practice scores**
45	100%
5	95%
10	75%
20	69%
20	44%
10	19%
40	Scored no marks

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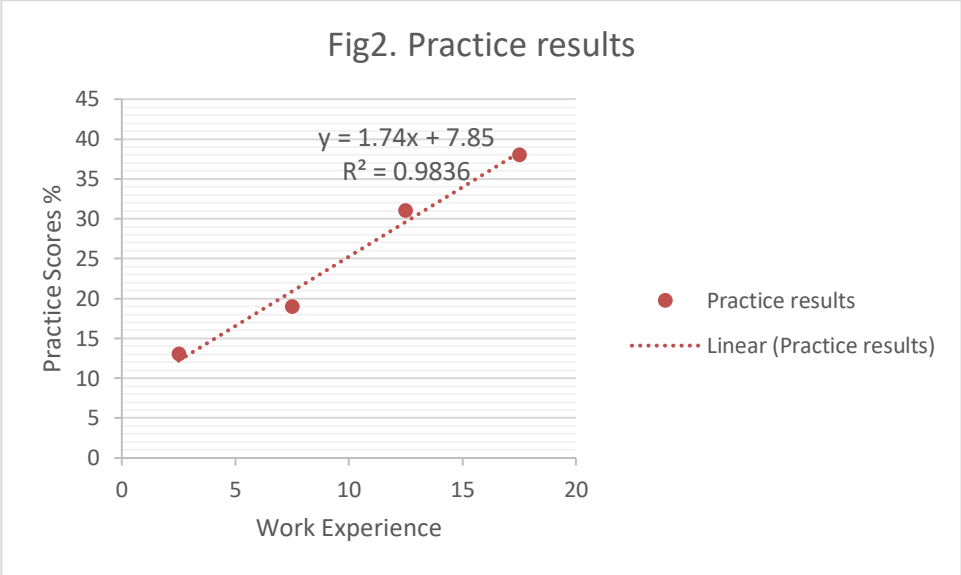
Table 5 showed that health professionals who had more than 15 years of experience had practiced the most in disaster preparedness.

Table 5. Association between work experience and Practice Scores

Work Experience (years)	Participants(n=300)	Practice Scores (%)
0-5	80	13%
5-10	50	19%
10-15	100	31%
15-20	70	38%



Correlation between work experience and practice was carried out through regression, and the findings state that r = 0.99 and significance value=0.049. It showed a positive relationship between work experience and practice (fig2.).

4. DISCUSSION

- There was a disparity in the numbers of staff attending disaster training and mock drills between medical and paramedical staff, as $p<0.05$.
- There was no disparity found in the staff's statement regarding the regularity of disaster training and mock drills and its evaluation between medical and paramedical staff, $p>0.05$
- Medical and paramedical staff had significant variation in statements regarding updating disaster plans, $p <0.05$.
- Medical and Paramedical staff had significant variation in experiencing a disaster, $p<0.05$
- Medical and Paramedical staff had significant disparity regarding the need for the practice of disaster preparedness, $p<0.05$.
- Medical and Paramedical had a significant disparity in the practice of usage of fire extinguishers, $p<0.05$.
- Medical and Paramedical staff had significant differences in knowledge of reporting during disaster, ($p<0.05$).
- Medical and Paramedical staff had a significant difference in practicing handling the influx of patients during disaster, ($p<0.05$).
- Medical and Paramedical staff had significant differences in practicing managing hospitals with insufficient staff during the disaster ($p<0.05$).
- Medical and Paramedical staff had significant differences in the practice of shifting spinal injured patients between medical and paramedical staff ($p<0.05$).

- Medical and Paramedical had significant differences in the practice of evacuating patients during hospital disasters, $p<0.05$.
- There was a strong relationship between work experience and practice preparedness (as the correlation coefficient (r) lies between -1 and +1. Hence, the more they experienced, the more they practiced disaster preparedness.

CONCLUSION

This study showed that healthcare providers had less practice in disaster preparedness. Medical staff were found better practiced than paramedical staff. There was an irregularity in disaster training provided to healthcare professionals. Mock drills should be conducted regularly in hospitals and after the completion of mock drills evaluation should be done. There was a need to update the disaster plans and they should be documented. It was found that the practice of disaster preparedness provided to the hospital staff was not sufficient for them. Paramedical staff needs to practice the usage of fire extinguishers. Paramedical staff needs to practice all the steps required during an earthquake disaster. Paramedical staff needs to practice handling patients's influx during a disaster with insufficient staff. More emphasis should be given to the training. As Ballut et al. revealed in their study that disaster training should be such that it properly defines the role and importance of the healthcare provider [1]. Disaster Training helps in the improvement of knowledge and increased the ability to work during disasters. After every disaster, the importance of preparedness is being felt, therefore improvised plan should be implemented and frequent drills and exercises should be conducted frequently [3].

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