Original Article

A Survey to Compare Disaster Preparedness Knowledge, Skills and Attitude Among Nurses and Physiotherapists in Delhi-NCR

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Abstract

Background and Purpose: Around the world, natural disasters upend lives and economies; Delhi capital city in India, lying on tectonic plates seems particularly susceptible. Physiotherapists and nurses need to be ready to handle these emergencies. An observational, cross-sectional survey using the Disaster Preparedness Evaluation Tool (DPET) is used in this study to examine the nurses and physiotherapist's knowledge, skills and attitude related to disaster preparedness.

Methodology: The study populationconsisted of 154 physiotherapists and 154 nurses (308 in total) who were actively working in hospitals, possessed a minimum of two years of professional experience, and voluntarilyexpressedinterest in participating in the survey. Participantsranged in age from 23 to 60 years. Theeobservational, cross-sectional survey used DPET questionnaire containing 36 Likert-typequestionsasses singknowledge, skills, and attitudes. The data was collected through both online and offline questionnaire distribution and the outcomes were statistically assessed through SPSS version 22.

Results: The DPET outcomes on knowledge, skills and attitude (KSA) were reported in mean±SD. The physiotherapists scored 52.77±11.079 for knowledge, 32.69±7.249 for skills, and 65.58±12.003 for attitude, while nurses scored 52.34±12.397 for knowledge, 33.98±7.249 for skills, and 63.92±12.463 for attitude, with no statisticallysignificant differences ($p > 0.05$). On comparison, between the two groups, the nurses exhibitedslightlyhigherskilllevels. The study revealedthat physiotherapists and nurses possess similar levels of disaster preparedness, with nurses demonstratingmarginallyhigherproficiency in skills, therebysupporting the nullhypothesisthatminimal differences exist in disaster preparednessknowledge, skills, and attitudes between the nurses and physiotherapists.

Conclusion: Physiotherapists and nurses, both possess similar levels of disaster preparedness, with nurses demonstrating slightly higher proficiency in skills, as compared to knowledge and attitude parameter.

Keywords: Disaster preparedness, Disaster Awareness, Knowledge, Skills, Nurses, Physiotherapist, India.

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Introduction

Disasters may occur to property, environment and human life as a result of disasters (natural or man-made[1]. According to World Health Organization (WHO,2009), a disaster is any occurrence that interrupts the normal flow of things and gives the population a degree of suffering beyond its ability to recover[2]. The International Federation of Red Cross and Red Crescent Societies (IFRC) World Disasters Report is considered an annual report, which thoroughly analyses the nature of global disasters in terms of different themes each year. The report intends to increase awareness and develop a better reaction to disasters studying trends and effects and the efficiency of interventions. It is an essential source to governments, NGOs, scholars and humanitarian personnel[3]. According to the description provided by the "Centre for Research on the Epidemiology of Disaster", disasters are defined as surprising occurrences that bring big losses and demand outside help[4]. Disasters range from man-made incidents like terrorist attacks to natural catastrophes like earthquakes and floods. India has faced numerous disasters, exposing deficiencies in its healthcare system's preparedness and response[5]. The "four phases of disaster management (DM) are prevention, preparedness, response, and recovery". According to the "World Confederation of Physical Therapy" (WCPT), physiotherapists roles in emergency response are increasingly recognized[6].India is highly prone to natural disasters due to unique geo-climatic conditions. The World Health Organization (WHO) has adopted the ill impacts of natural disasters on the welfare and health of individuals around the globe. It has been revealed that natural calamities like earthquakes, floods, and hurricanes result in a substantial mortality rate and morbidity, interrupt the healthcare system, and boost the currently existing weaknesses, especially in low- and middle-income economies (LMICs). Such incidents not only result in instantaneous bodily disorders and deaths but also the long-term consequences are on the psychological front, infrastructure and health-care framework of the population[7,8,9]. The disaster preparedness strategy entails the adoption of protocols and the development of a pro-active attitude on the part of medical personnel to help in crisis management[10]. Therefore, this research study tested the levels of disaster preparedness knowledge, skills and attitude of nurses and physiotherapist.

Role of Healthcare Professionals in Disaster Management

The "International Council of Nurses" (2009) emphasizes that nurses need fundamental disaster competences to respond quickly and efficiently, providing appropriate health care during catastrophes[8]. Nurses are very important in responding to crisis, injury prevention, policy making and patient care[11]. Disaster nursing entails treating the body and psyche of disaster victims through the application of professional knowledge, skills and attitudes towards physical and emotional needs of these victims[3].

Physiotherapy is a therapeutic practice that aims at sustaining, building and reinstating perfect physical capacities[12].Physiotherapy is looked upon as secondary referral profession though it is very important[13]. To respond quickly in case of emergency, the techniques of the basic life support (BLS) are important[14]. Physiotherapists can play a significant role in post-disaster recovery by helping victims regain their physical functionality and improving their overall quality of life[6]. Their involvement is crucial in the rehabilitation phase of disaster management, ensuring that individuals affected by disasters receive the necessary care to restore their physical capabilities[15].

Geographic Context and Significance

The National Capital Territory of Delhi lies along the river Yamuna and is very susceptible to earthquakes and floods. The NCR region has a population of around 46 million which is spread across regions in neighbouring states-Uttar Pradesh, Haryana and Rajasthan. Delhi-NCR is vulnerable to a earthquakes, flood, fire and collapse of buildings as well as diseases. Seismic activity, monsoon flooding, wind storms, and sequence of fire hazards in the region make disaster mobilization compulsory. The recent situation with the COVID-19 pandemic once again demonstrated the absolute necessity of a

strong disaster preparedness and response system. The healthcare system in Delhi was forced to adapt to fit the increased number of cases, showing both improved and lagging disaster preparedness.

Significance of the Study

Research Question: Is there any significant difference in the Knowledge, Skills and Attitude (KSA)about disaster preparedness among nurses and physiotherapists?

Understanding these differences can help in tailoring disaster preparedness training programs to enhance the effectiveness of both healthcare professionals (nurses and physiotherapists) in emergency situations and work in collaborative projects. The objectives of this study wereto review and contrast the disaster preparedness knowledgeof the nurse and the physiotherapist in the face of disaster.

Methodology

Study Design

The study design of this research was observational, cross-sectional study executed via a survey questionnaire. The research was carried out to explore the knowledge,skills, and attitude of disaster preparedness of nurses and physiotherapists in Delhi NCR.

Ethical Considerations and Registration

This study has been earlier approved by the Institutional Ethics Committee (IEC (Ref No: DEC/017/2023). Informed consent, which was provided in written form was obtained after the subjects were informed of the purpose and the nature of the study. Their privacy and confidentiality were ensured and they were told that they are free to opt out of the study without any repercussions any time. The current study was registered with Clinical Trials Registry - India (CTRI) with Registration No. CTRI/2023/09/057171 as the conditions of conducting human research studies in India.

Sample Size and Sampling

The standardized Rao soft software was used to calculate the sample size, with the margin of error kept at 5% with a confidence interval of 90% and a response distribution rate of 50%, the minimum estimated sample size calculated to two hundred and sixty seven[16].A total of 138 participants in each two sample groups (nurses and physiotherapists) was reached, and hence the sample size was calculated as 267 participants. The final sample size calculated was 308 (i.e., 154 nurses and 154 physiotherapists) with government and private hospitals in Delhi NCR being the participants as shown in **Figure 1.**

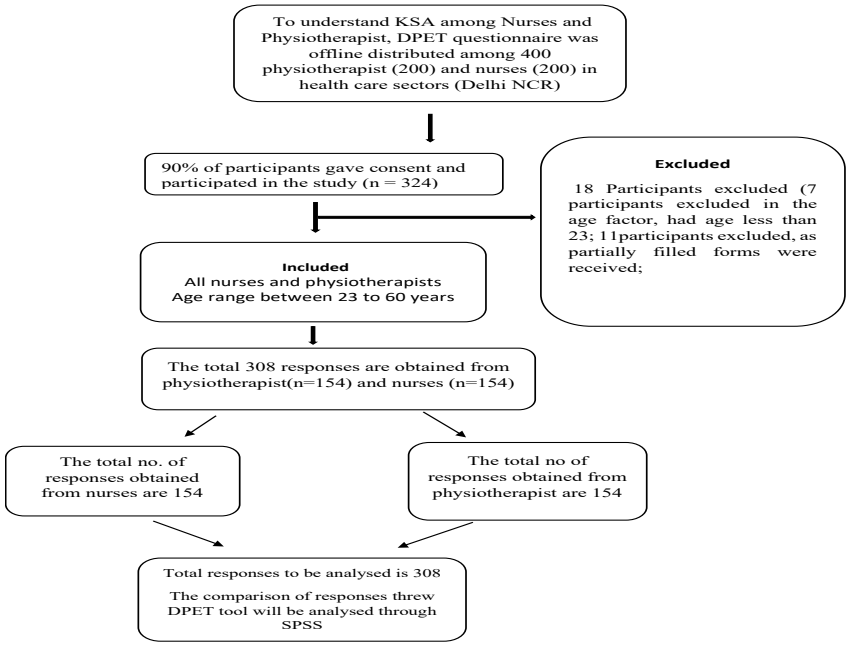

Figure1: Flow Chart of participants selection

Inclusion Criteria

Nurses and physiotherapists were recruited as the researchers in active practice in hospitals, had experience of at least two years, and demonstrated the wish to participate in the survey voluntarily. The age category of the participants varied between 23 and 60 years and both males and females were enrolled in the study field in order to provide various background gender representatives.

Exclusion Criteria

The other allied health professionals were not included in the study, except nurses and physiotherapists to ensure that the study concentrated on the particular comparison between the two healthcare practitioners. Moreover, incomplete survey questionnaires were not used during final analysis and refusals by people not to formally take part in the study were also discounted as a data integrity measure. Individuals below the age of 23 years were also not allowed to take part in order to be consistent with the already established minimum number of years of professional experience criteria.

Data Collection

The questionnaire was of the standard 6 -point Likert type (Disaster Preparedness Evaluation Tool (DPET)[17]. The survey was sent both online and offline to physiotherapists and nurses working in the sphere of healthcare. 400 copies of forms were distributed (200 to physiotherapists and 200 to nurses). 81.5% of the respondents (n=324) agreed to participate in the study and signed the consent. Data was collected between March 23, 2023 and May 22, 2023 after 308 participants were declared as the usable data. All the data collected was validated and stored in MS Excel for statistical analysis.

Statistical Analysis

The SPSS 22.0 was used in statistical analysis. The Kolmogorov-Smirnov testwas used to test the normality of study variables (knowledge, skills and attitude). The data was found to be non-normality distributed. So, Mann-Whitney U test used for comparative approach of knowledge, skills and attitude between physiotherapists and nurses.

Results

Mann-Whitney U tests were done to indicate whether differences between the two groups were significant or not. The findings revealed that the p-value of noting, skill as well as attitude all were greater than 0.05 which indicates that there was no statistically significant difference between the two groups in relation to the above aspects of disaster preparedness. With regard to knowledge, 0.85 with regard to skills, 0.51 and 0.25 with regard to attitude (all values $p>0.05$), which rejects the alternate hypothesis of significant differences between physiotherapist and nurses with respect to disaster preparedness.

Disaster Knowledge

The first variable tested by the DPET was the knowledge-related area that contained 13 questions with a range of 1 to 6 (strongly disagree to strongly agree). The Knowledge of the Physiotherapists (n=154) and Nurses (n=154) had mean ± standard deviations of 52.77±11.079 and 52.34±12.379 respectively.

Disaster Skills

The skills-related domain was developed with 8 DPET items and the responses could vary between 1 to 6 (strongly disagree to strongly agree). The values of the mean ±standard deviations of Skills of Nurses (n=154) and Physiotherapists (n=154) were 33.98±7.249 and 32.69±7.307 respectively. The observed values indicate that the competencies of both cadres of professionals were skewed to normal.

Disaster Attitude

A total number of 15 DPET items were used to measure the attitude domain, values were on a scale of 1 to 6 (strongly disagree to strongly agree). Pearson

correlation showed the mean control ± standard deviations of Attitude for Physiotherapist and Nurses as 65.58±12.003 and 63.92±12.463 respectively. The numbers are observed to show that the attitude of both professional groups were supposed to be normal.

Summary of Statistical Analysis

Table 1. Non-parametric test (Knowledge, Skills, Attitude) results

Variable	Mann-Whitney test	p-value	Hypothesis H0
Knowledge	.855	p=.855	H0 retained
Skills	.051	p=.051	H0 retained
Attitude	.259	p=.259	H0 retained

Table 2. Descriptive statistical variables by professions (Physiotherapists and Nurses)

Variable	Physioth-erapists (N=154)		Nurses (N=154)	
	Mean	SD	Mean	SD
Knowledge	52.77	11.079	52.34	12.397
Skills	32.69	7.307	33.98	7.249
Attitude	65.58	12.003	63.92	12.463

Discussion

The role of disaster preparedness within medical personnel especially nurses and physiotherapist to reduce the effects of disaster, and effectual response and compartment is very important. Such preparedness of these professionals is necessary in the Delhi-NCR region considering how prone to both natural and manmade disasters one is in the area. Thrwi et al., 2024)reported that although nurses are moderately prepared in terms of disaster preparedness, there is a big deficit in terms of skills and psychological preparedness which deserves to be addressed[17]. A study done by Labrague &Hammad 2023, dwell on the knowledge, skill and attitudes of healthcare professionals relating to disaster preparedness have shown that though nurses are usually at the forefront in the event of disaster, their level of preparedness is typically low and this is mainly because of poor disaster response training and education. This disparity has emphasized the necessity to conduct wide-ranging training programs that would improve their preparedness and performance during disasters[18]. Similar results were found in the studies done by Usher et al., 2015 and Wee, 2011, explored the disaster issues of preparedness of nurses, where the nurses with different qualifications showed no significant difference in the disaster preparedness knowledge, skills, and attitudes[19-20].

Research done by Ezhilarasi NM et alreported how nurses were readiness to respond to disasters and effect of disaster management educational intervention program on it.The disaster educational intervention program changed the knowledge in the nurses, found significant improvement in disaster preparedness, when the same nurses were tested after the program[9].Labrague et al. studied Philippine nurses' perceptions of disaster preparedness and found that only 20% felt sufficiently prepared, with 57.7% unaware of workplace disaster management procedures[2].

Dissimilar results were found according toYounis NM et al.,where the awareness of the nurses regarding disaster preparedness in Mosul Teaching Hospital was high and the attitude is neutral, and the readiness is satisfactory [21].Md.Khalid et al., a descriptive survey on the knowledge, skills, and attitudes toward the disaster management in a megapolis showed that disaster management preparedness of nurses in Dhaka was at moderate levels and required further development[22].Basnet et al. conducted a study on disaster preparedness among nurses in Saudi Arabia, revealing moderate awareness (70.07± 10.01), with below-average knowledge and practice levels, but a positive attitude towards disaster preparedness[23].

Patel et al. conducted a cross-sectional survey on healthcare professionals' attitudes towards disaster management in Gujarat, finding that 44.8% had experienced a disaster at work and 45.8% had

received disaster management training. The study highlighted the need for improvement in hospital staff's and patients' attitudes towards disaster vulnerability[1].The level of knowledge and attitude of Iranian nurses towards bioterrorism was assessed by Gorji HA et al. and it was observed to have lack of knowledge and attitude of bioterrorism[24].

Limitations

There are a number of limitations that should be noted in this study. To begin with, it revolved solely around the response and recovery aspect of the disaster nursing disaster, and left out the prevention and mitigation aspects, which are part and parcel in the provisions of a complete disaster preparedness. The fact that a convenience sampling methodology was used to select the nurses and physiotherapists can have created a sampling bias that restricted the representation of the results. Also, the small-scale sample of 308 respondents limits the applicability of findings into the overall healthcare population. The geographical focus of the study was restricted to the area of Delhi NCR, and cannot be generalized to the diversity of the experiences and level of preparedness in other areas. There is also a possibility of reporting bias in the self-reported data collected by the questionnaires as there is a likelihood that answers given depend on the individuals' views and social desirability. In addition to that, any trend or variation in the preparedness level over the years is not possible on account of the cross-sectional nature of the study, which only provides a snapshot at a particular time. Finally, the lack of qualitative data restrains the extent of knowledge on personal stories and facts about the experiences of the participants and corresponding ideas that might have been used to contextualize the quantitative results.

Future Research Directions

In accordance with the results of the present study and its limitations, a number of the future research directions can be proposed to contribute to the discussion and better disaster preparedness in healthcare professionals. The extended geographical investigation of various regions across India would be more representative and homogeneous of the national preparedness levels. It is advisable to undertake longitudinal studies to observe variations in knowledge of disaster preparedness, skills, and attitudes over a period, especially to measured training interventions. A mixed-methods approach to data collection that combines a qualitative research approach with enabling tools like interviews and focus groups will be capable of providing more insightful information on the experiences, opinions, and issues of healthcare providers. Future studies are also needed on the design and testing of organized disaster preparedness education initiatives that are specifically set up to reflect the roles and responsibilities of nurses and the physiotherapists. Moreover, expanding it to include other healthcare professionals (doctors, paramedics, and emergency medical technicians, etc.) would allow making meaningful inter-professional comparisons. The approach would be enhanced by integrating empirical examination of real skill by employing simulated and demonstration-based performance, unlike self-reported information that only monitors preparedness on paper. Lastly, policy impact research is important in determining the changes caused by implementation of the current disaster management policies to improve the preparedness and response capacities of the health worker in the ground.

Conclusion

This study provides valuable insights into the disaster preparedness knowledge, skills, and attitudes of nurses and physiotherapists in the Delhi-National Capital Region. Despite the critical roles these healthcare professionals play in disaster response, the findings indicate no significant differences between the two groups in terms of preparedness. However, notable variations were observed in qualifications when compared pair-wise. The research underscores the need for ongoing educational programs and training to enhance

disaster preparedness, as evidenced by previous studies showing improvements post-intervention. Additionally, the study highlights the importance of comprehensive disaster management strategies, including the need for heightened awareness and readiness among healthcare professionals. Future research with larger sample sizes and broader geographic coverage is essential to further understand and improve disaster preparedness in the healthcare sector. Addressing these gaps will ensure that nurses and physiotherapists are better equipped to handle disasters, ultimately contributing to improved health outcomes and saving lives.

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