

Effectiveness of Structured Teaching Programme with Mock Drill on Disaster Preparedness Among Nursing Students in Delhi/NCR: A Pre-Experimental Study

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Abstract

Background: India is highly vulnerable to disasters. Nurses are first responders, but disaster preparedness among nursing students is often inadequate. Structured teaching with mock drill is an effective educational strategy. **Aim:** To evaluate the effectiveness of structured teaching programme with mock drill on disaster preparedness in terms of knowledge and practice among nursing students.

Methods: A pre-experimental one group pre-test post-test design was conducted on 60 nursing students selected by purposive sampling. Tools: Demographic proforma, 30-item knowledge questionnaire [$r=0.73$] and 20-item practice checklist [$r=0.89$]. **Intervention:** Structured teaching + fire and earthquake mock drill on Day 1. Post-test on Day 7. Data analysed using paired t-test and chi-square at $p<0.05$. **Results:** 95% were aged 17-21 years and 93.3% were females. Mean knowledge score improved from 16.00 ± 4.37 to 21.71 ± 2.59 . Mean practice score improved from 11.63 ± 2.53 to 13.36 ± 1.80 . The difference was statistically significant for knowledge [$t=8.78$, $p<0.001$] and practice [$t=4.31$, $p<0.001$]. No significant association was found with demographic variables. **Conclusion:** Structured teaching with mock drill significantly improved disaster preparedness. Such training should be integrated into nursing curriculum.

Keywords: Disaster Preparedness, Mock Drill, Nursing Students, Structured Teaching, India

1. Introduction

India is among the most disaster-prone countries and faces 27 types of disasters.¹ Nurses play a critical role as first responders during emergencies. However, studies show that nursing students often lack adequate knowledge and skills for disaster management.^{2,3,9,13} the COVID-19 pandemic highlighted the need for disaster preparedness in healthcare education. Recent Indian studies reported that only 34-42% of nursing students had satisfactory disaster preparedness.⁴ Evidence suggests that traditional lectures are insufficient. Simulation and mock drills significantly improve retention and psychomotor skills.⁵ A study from Karnataka found that structured teaching with drill increased knowledge scores by 68%.⁶ Therefore, this study was undertaken to evaluate the effectiveness of structured teaching programme with mock drill on disaster preparedness among nursing students in Delhi/NCR.

2. Objectives

To assess knowledge and practice on disaster preparedness among nursing students. To evaluate effectiveness of structured teaching programme with mock drill. To find association between post-test scores and demographic variables.

3. Hypotheses

H1: Significant difference exists between pre-test and post-test knowledge scores.

H2: Significant difference exists between pre-test and post-test practice scores.

H3 : Significant association exists between post-test scores and demographic variables.

4. Materials And Methods

Research Approach: Quantitative

Research Design: Pre-experimental, one group pre-test post-test design

Setting: Nightingale Institute of Nursing, Noida, Delhi/NCR

Population: 2nd year B.Sc Nursing and 2nd year GNM students

Sample Size: 60

Ethical Clearance

Ethical clearance was obtained from the Institutional Ethics Committee of Nightingale Institute of Nursing. Written informed consent was taken from all participants.

Conflict of Interest: None declared

Funding: No funding received

Sampling Technique: Non-probability purposive sampling

Tools:

Tool I: Demographic Performa - 8 items

Tool II: Structured Knowledge Questionnaire - 30 MCQs.

Scoring: 0-6 Very poor, 7-12 Poor, 13-18 Average, 19-24 Good, 25-30 Very good.

Reliability KR-20 = 0.73

Tool III: Practice Checklist - 20 items. Scoring: 0-5 Poor, 6-10 Average, 11-15 Good, 16-20 Very good.

Reliability KR-20 = 0.89

Intervention: Structured Teaching Programme + Mock Drill on fire and earthquake conducted on Day 1 for 60 minutes.

Data Collection: Ethical clearance and informed consent obtained. Day 1: Pre-test → STP + Mock Drill. Day 7: Post-test.

Data Analysis: Frequency, percentage, mean, SD, paired t-test, chi-square using SPSS. Significance at $p < 0.05$.

5. RESULTS

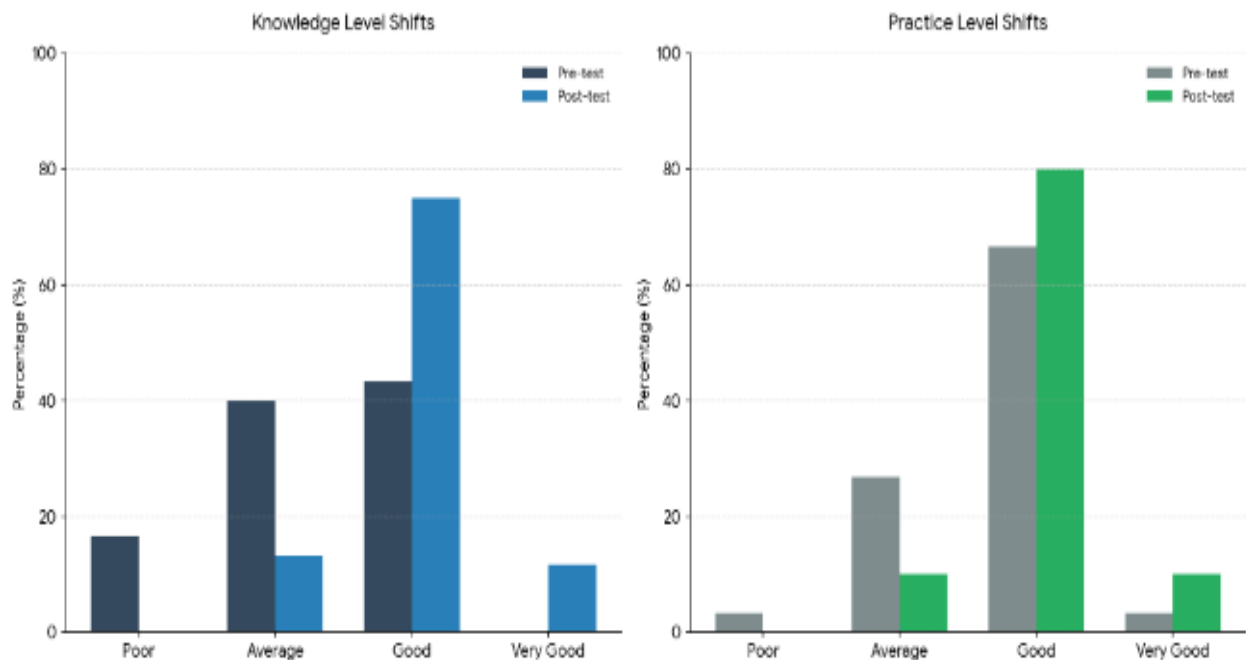
Demographic Characteristics: Majority 57(95%) were aged 17-21 years. 56(93.3%) were females. 42(70%) were Hindus. 48(80%) belonged to nuclear families. 26(43.3%) fathers were in government service. 58(96.7%) were single. 34(56.7%) had no previous disaster experience. Television 48(80%) was the major source of information.

Table 1: Distribution of Knowledge and Practice Levels (n = 60)

Level	Knowledge pre-test (n) (%)	Knowledge Post-test (n) (%)	Practice Pre-test (n) (%)	Practice Post-test (n) (%)
Poor	10 (16.7%)	0 (0.0%)	2 (3.3%)	0 (0.0%)
Average	24 (40.0%)	8 (13.3%)	16 (26.7%)	6 (10.0%)
Good	26 (43.3%)	45 (75.0%)	40 (66.7%)	48 (80.0%)
Very Good	0 (0.0%)	7 (11.7%)	2 (3.3%)	6 (10.0%)
Total	60 (100%)	60 (100%)	60 (100%)	60 (100%)

Table 2: Inferential Analysis of Teaching Effectiveness (Paired t-test, df = 59)

Variable	Pre-test Mean ± SD	Post-test Mean ± SD	Mean Difference	(t)- value	(p)- value	Statistical Significance
Knowledge	16.00 ± 4.37	21.71 ± 2.59	5.71	8.78	< 0.001	Highly Significant (p < 0.05))
Practice	11.63 ± 2.53	13.36 ± 1.80	1.73	4.31	< 0.001	Highly Significant (p < 0.05))



- The (t)-value of (8.78) with a (p)-value of (<0.001) indicates that this knowledge leap is highly statistically significant and did not happen by chance.
- The (t)-value of (4.31) with a (p)-value of (<0.001) confirms that the hands-on mock drill successfully translated into better practical execution.

6. Discussion

The study demonstrated significant improvement in knowledge and practice after structured teaching with mock drill. The mean knowledge score increased from 16.00 to 21.71 [$t=8.78$, $p<0.001$]. This finding is consistent with Reddy et al⁶ and Patel et al⁴ who reported similar improvement after simulation-based training. No significant association was found between post-test scores and demographic variables. This indicates that the intervention was effective across all groups. The results support the integration of disaster preparedness training with mock drills in nursing curriculum.

“Community health nurses play a vital role in disaster risk reduction at community level. This study supports the integration of disaster preparedness in Community Health Nursing curriculum as per INC guidelines.”

7. Conclusion

The structured teaching programme with mock drill was effective in improving knowledge and practice of nursing students regarding disaster preparedness. Nursing councils and NDMA should mandate such training to prepare future nurses for disaster response.

References

1. National Disaster Management Authority. Annual Report 2023-24. New Delhi: MHA; 2024.
2. Sharma R, Kumar P. Disaster preparedness among nursing students. *J Family Med Prim Care*. 2023;12:678-683.
3. Patel S, Singh A. Post-COVID disaster readiness. *Indian J Community Health*. 2022;34:245-250.
4. World Health Organization. Health EDRM Framework. Geneva: WHO; 2021.
5. Reddy V, Nair S. Simulation training for disaster preparedness. *Int J Nurs Educ*. 2022;14:112-118.
6. Gupta M, Singh J. Disaster preparedness training. *Indian J Public Health*. 2023;67:145-149.
7. Kumar A, Verma R. Knowledge of nursing students. *Nurs J India*. 2022;113:210-214.
8. Ministry of Health. Hospital Disaster Guidelines. New Delhi: MoHFW; 2023.
9. ICN. Disaster Risk Reduction. Geneva: ICN; 2022.
10. Bhattacharjee P, Das S. Mock drill effectiveness. *Int J Health Sci Res*. 2021;11:45-50.
11. WHO. World Disaster Report 2022. Geneva: WHO; 2022.
12. NDMA. School Safety Policy. New Delhi: NDMA; 2021.
13. Tichy M, Bond AE. Disaster nursing framework. *Nurse Educ Today*. 2020;40:1-5.
14. Wenji Z, Turale S. Disaster preparedness in Asia. *Int Nurs Rev*. 2021;68:156-163.
15. Veenema TG. Disaster Nursing. 4th ed. New York: Springer; 2019.
16. Jabbar K. Knowledge among nursing students. *J Clin Diagn Res*. 2019;13:LC01-LC04.
17. Alim S, Kawabata M. Attitude toward preparedness. *BMC Nurs*. 2021;20:1-9.
18. Singh R, Sharma M. Planned teaching effectiveness. *Int J Nurs Educ*. 2020;12:78-82.
19. MHA. National Disaster Management Plan. New Delhi: MHA; 2019.
20. American Red Cross. Disaster Preparedness. Washington: ARC; 2020.
21. Kaur P, Singh G. Practice in Punjab. *Indian J Community Health*. 2021;33:234-238.
22. IFRC. World Disaster Report 2021. Geneva: IFRC; 2021.
23. Gupta N, Yadav S. Study in Delhi. *Nurs J India*. 2022;113:120-124.
24. FEMA. Disaster Planning. Washington: FEMA; 2020.
25. Kumar V, Joshi R. Knowledge among students. *Int J Health Sci*. 2021;15:22-27.
26. WHO. Emergency Response Framework. 2nd ed. Geneva: WHO; 2019.
27. Sharma D, Patel K. Impact of mock drill. *J Emerg Nurs*. 2022;48:45-51.
28. INC. Syllabus for B.Sc Nursing. New Delhi: INC; 2020.
29. Pandey R, Singh A. Healthcare workers in India. *J Family Med Prim Care*. 2023;12:89-94.
30. UNDRR. Sendai Framework Report. Geneva: UNDRR; 2023.
31. Polit DF, Hungler BP. Nursing Research. 8th ed. Philadelphia: Lippincott; 2008.
32. Kerlinger FN. Foundations of Behavioral Research. 3rd ed. New York: Holt; 1993.
33. United Nations. Living with Risk. Geneva: UNISDR; 2004.