



Hospital emergency preparedness of nursing students for effective response

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ABSTRACT

This study was aimed to assess the effectiveness of Simulation on Hospital Emergency Code Programme upon the Competency of Nurses in Disaster Preparedness at Selected Multi Specialty Hospitals, Chennai. Methods: Study was conducted by using Quasi-experimental time series research design (with one pre-test and 2 post tests - posttest 1 and posttest 2) at selected private College, Chennai with the Sample size of 94 who are divided into 9 teams, 10-11 students in each group. Samples were chosen by using total enumerative sampling technique. The intervention included the one day workshop on Simulation on Hospital Emergency Code Programme. Data were collected through observation method by using pretested and predetermined tools such as Background Variables proforma and observation checklist to assess the team performance of the students. Collected data were entered and analyzed using SPSS- 20. Results: Study findings revealed that, there is a significant difference in the mean scores (Team Score) of students between pre-test, post-test 1 and posttest 2 in total score (M=115.33, SD 11.64; 135.22, SD 7.22; 140.44, SD 9.76 in pretest, posttest 1 and posttest 2 respectively) as well as in all the components such as Code Blue, Code Red, Code Pink, and Code Brown within the subjects and between subjects ($p < 0.001$). Conclusion: Improved practice scores in post-tests than pre-test can be attributed to the effectiveness of the Simulation of hospital emergency code programme in disaster preparedness among Final year Nursing students. Therefore this intervention can be replicated in all other settings to prepare the nurses to manage the hospital emergency situations effectively and efficiently.

Keywords— Hospital emergency preparedness, Nursing students, Effective response

1. INTRODUCTION

Disasters are defined as serious disruptions of the functioning of a community or society that exceeds its ability to cope using its own resources. Disasters are classified into natural and man-made. Advancements in technology and industrialization are the reasons for the increase in the rate of natural and man-made disasters whose onset may be sudden or slow according to their cause. Disasters have a huge impact on society and many of history's great civilizations have been brought to their knees by the effect of natural disasters.^[1,2] Due to the development of new technology, such as air transport and internet, society has become more vulnerable.^[3] At present, there is an increase in terrorism, emerging natural threats and even threats of bio-nuclear terrorism.^[4] The result of increased urbanization also means a rise in the number of people affected when a disaster strikes.^[5]

Due to increased incidence of Disaster and emergencies in recent days, Medical emergencies are part and parcel of any hospital setting. Most hospital caregivers are trained to act quickly during a medical emergency and thus preventing the health of the patient from worsening any further. Usually, patient vital signs like heart rate, B.P give an indication about the health of the patient. However, sometimes the patient's condition may take a turn for the worse, without any warning, necessitating prompt medical attention. This situation may even lead to the death of the patient if the medical assistance is delayed.

In 2015, the flood-hit city of Chennai raised hopes that rescue efforts could've picked up after the official toll of 280 confirmed killed in the disaster. In one of the most shocking incidents, 18 patients in the intensive care unit of the MIOT International hospital have died after floods took out generators running life-support systems.^[6] During the time of disaster, hospitals play an integral role within the health-care system by providing essential medical care to their communities. Without appropriate emergency planning, local health systems can easily become overwhelmed in attempting to provide care during a critical event.^[7]

Health resilience is an integral part of disaster management and is a lies nexus in between this and public health considerations. As the largest group of professionals worldwide, nurses face continual challenges in further developing their competencies in disaster

response and recovery.^[8] Since the time of Florence Nightingale, nurses have contributed to health care to help people in need and are at the forefront of the health care response to disasters. Advocacy, promotion of safe environment, research, participation in shaping health policy and in patient and health systems management, and education are also key nursing roles".^[9] Since nurses are the largest workforce in health care and they play an integral role in disaster response and preparedness according to Veenema et al.^[10]

Nurses in a hospital setting must be knowledgeable about resuscitation procedures includes BLS, ACLS and proficient in the delivery of care during an emergency. They must be ready to implement their knowledge and skills at a moment's notice. A common dilemma for many nurses is that cardiopulmonary emergencies (Code Blues) are infrequent occurrences. It may be difficult for nurses to remain competent and confident in their implementation of emergency skills with limited exposure to the equipment and minimal experience in emergency situations. Therefore the nursing students must be well prepared to face the challenges and deal with emergency situations effectively.

Hence this study was conducted to assess the effectiveness of hospital Emergency Code Programme upon the competency of nurses in dealing with emergency assessment, calling codes, equipment's handling, communication, and effective coordination with members in the team. It will help them to empower them for managing emergency by improving the competency to face any kind of disasters to decrease the overall mortality and improve functional ability and recovery of the patients.

2. MATERIALS AND METHODS

A study was conducted by using Quasi-experimental time series research design (with one pre-test and 2 post tests- posttest 1 and posttest 2) at selected private College, Chennai with the Sample size of 94 who are divided into 9 teams, 10-11 students in each group. Samples were chosen by using total enumerative sampling technique. (All the students were included in the study). Data were collected through observation method by using pretested and predetermined tools such as Background Variables proforma and observation checklist to assess the team performance of the students. After the initial introduction, the researcher obtained informed consent from the students to participate in the study. The pretest was conducted before starting the intervention.

Intervention - Simulation on Hospital Emergency code Programme

It refers to module on hospital emergency code program in disaster preparedness which includes code blue-medical emergency, code red-hospital fire, code brown-external disaster, and code pink-infant/child abduction. A one day workshop was conducted for the students to prepare the students to manage the hospital emergency situations effectively which included Code Blue, Code Red, Code Pink and Code Brown, through Code protocols in the Hospital using simulation techniques- such as Lecture cum Discussion, Role plays and Mock Drills.

- **Code Blue** refers to a medical emergency- a patient requiring resuscitation or in need of immediate medical attention, most often as the result of a respiratory arrest or cardiac arrest.
- **Code Red** refers to the management of possible fire in the hospital
- **Code Pink** is alerting staff and dealing with Child abduction in the hospital
- **Code Brown** is an external disaster in any occurrence including flood, fire, earthquake, tsunami, accidents, epidemic in human, building collapse etc.

It includes getting call from the incident site, mass casualties, respond to requests for pre-hospital emergency care, the team commander will work with the incident controller and the emergency medical team to ensure the safety of all those at the scene, Scene management, Safety issues, People management, incident sites can be chaotic, with numbers of dead, injured and uninjured people. Triage is very important-Triage casualties and determines treatment priority.

After completion of the workshop post-test, 1 was conducted immediately after the intervention (workshop), which was followed by posttest 2 (post-test 2 was conducted after three months of the intervention).

Nursing Students' team performance on hospital emergency code programme in pre and posttests was assessed by using a simulation approach to assess the practice of the students on hospital emergency code using checklists. These checklists were developed by the researcher based on personal experience, review of the literature and experts opinion which was used to assess the practice of nursing students by observing the performance of emergency code programme in disaster preparedness on code blue, code red, code pink and code brown. Scores were distributed as follows. Checklists consisted of 77 items on the following components, with three options- Done (2), Partially done (1), and Not Done (0). Therefore the obtainable score was 0-154.

Code	Score
Code Blue	70
Code Red	46
Code Pink	26
Code Brown	12
Total	154

Collected data was coded and analysed through SPSS- 20, using descriptive and inferential statistics.

3. RESULTS AND DISCUSSION

Study findings revealed that all of them were females with a mean age of 21 years, were from Tamil Nadu (74%) followed by Kerala and other states (26%).

Table 1: Comparison of Pre-test, post-test 1 and posttest 2 Practice Scores (Team Score) on Hospital Emergency Code between assessments among Final Year Nursing Students (N= 94 with 9 teams)

Assessment	Max Score	Mean	SD	F Value (ANOVA) & p-value	
				Within-Subjects	Between-Subjects
Total Score					
Pre Test	154	115.3333	11.64045	25.457 .000	2887.574 .000
Post Test 1		135.2222	7.22457		
Post Test 2		140.4444	9.76103		
Code Blue					
Pre Test	70	51.11	7.305	13.448 .000	1988.934 .000
Post Test 1		60.22	4.295		
Post Test 2		62.67	4.848		
Code Red					
Pre Test	46	35.56	3.167	10.916 .001	3213.813 .000
Post Test 1		41.22	3.153		
Post Test 2		42.78	4.147		
Code Pink					
Pre Test	26	21.22	3.866	8.646 .003	2421.816 .000
Post Test 1		25.78	.667		
Post Test 2		24.56	1.590		
Code Brown					
Pre Test	12	7.44	1.509	17.623 .000	1383.159 .000
Post Test 1		8.00	.000		
Post Test 2		10.44	1.333		

The above table depicts that, there is a significant difference in the mean scores (Team Score) of students between pre-test, post-test 1 and posttest 2 in total score as well as in all the components such as Code Blue, Code Red, Code Pink, and Code Brown within the subjects and between subjects. i.e Mean Knowledge Scores of students on Hospital Emergency Code is significantly increased in post-tests than the pre-test ($p < 0.001$).

Improved practice scores in post-tests than pre-test can be attributed to the effectiveness of the Simulation of hospital emergency code programme in disaster preparedness among Final year nursing students. It reflects the fact that students gained the confidence to handle any kind of emergency situation in the hospital.

Considering the frequency and unpredictability of emergency situation in Hospitals, periodic disaster capacity building activities may be essential to adequately prepare nurses to respond and better manage of hospital emergency disaster situation. Such activities may include actual mock drills, exposure to disaster simulations, and participation and attendance in skills training such as first aid training, life support training –BLS (Basic Life Support), ACLS (Advanced Cardiac Life support) and other codes like, code red, code pink and code brown and Triage.

Nursing curricula and continuing education programs should incorporate emergency preparedness information. Education and best practices about hospital emergency preparedness on different codes must be highlighted in the nursing curriculum including delivery of emergency care in low resource settings, Triage and appropriate care during emergency situations. Simulation laboratory needs to be mandatory in all health care settings to provide hands-on training will helps to reduce the fear and anxiety in handling critical emergency management. With emerging health care trends, policies should be established in nursing institutions to help students improve their knowledge and competency.

4. CONCLUSION

Disaster preparedness is one element of a holistic approach to the reduction of risk associated with natural hazards. Study findings on Simulation of hospital emergency code programme in disaster preparedness increased the level of competency among Final year Nursing students and gained the confidence to handle any kind of emergency situation in the hospital as well as in the community. This study throws light on the importance of preparation of nursing students on managing the emergency situation effectively. An adequate level of preparedness can be particularly essential to saving lives and livelihoods in the face of natural hazard events.

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