International Journal of Nursing Research (IJNR)

International Peer Reviewed Journal

Research article

Impact of workshop on emergency care management: Nursing perspectives on the knowledge of nursing staffs

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Abstract

Introduction: Trauma and emergency care in a department is critically dependent on the training and competence of the health care professionals posted there. Nurses play a crucial role in providing care in emergency conditions. The current study was planned to study Impact of workshop on "Emergency Care Management: Nursing Perspectives" on the knowledge of Nurses working in PGIMER, Chandigarh." Nurses working in the emergency require in-service training in order to update them regarding the latest development in nursing practice. **Material and methods**: This pre-experimental was conducted on 166 nursing officials of PGIMER, Chandigarh, who were willing to participate in the workshop by using total enumeration technique. An objective type of questionnaire validated by experts was used to assess the knowledge before and after the teaching programme. Paired t test was applied to compare before and after knowledge score of nurses on the emergency care management. McNemar matched pair was applied to compare the percentage of the correct response of each question before and after workshop. **Results:** Total 166 subjects were participated in the study out of which 82% were female nursing officials while 18% of the participants of the workshop were male nursing officials. The mean age of the participants was 34.60 ± 10.13 years with the range of 22-59 years. There were 82% female nursing professionals. Mean pre-workshop scores of female and male nurses were 15.90±3.86 and 13.33±3.41, respectively. Mean post workshop scores of female and male nurses were 20.24±2.84 and 22.63±2.48, respectively. **Conclusion**: There was significant increase in the mean knowledge score after workshop among male and female participants. So we can conclude that there should be organization of such type of workshops to improve the knowledge of in-service staff to equip them with latest news.

Key words: Emergency management, knowledge, nursing staff.

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1. Introduction

Emergency nursing care is an especially designed and equipped facility, staffed by skilled personnel to provide effective and safe care for dependent patients with life threatening or partially life threatening problems. The nurses should have additional education in health assessment, diagnosis, management of illness and injuries including ordering and integrating the results of the test and prescribing medication. Their practices emphasize health promotion and illness prevention. The concept of Emergency Nursing Care took its root from Florence Nightingale who is the founder of Modern Nursing. She placed seriously ill patients near the nurses' station for closer and better observation and care [1].

During the past years the demands on emergency nursing have been increasing because of the changing health care needs of the society. Because of the current health care crisis one of every three persons are seeking cares in the emergency department [2]. It is also reported that persons seeking emergency care at hospital over a 24 hour period have the problems as chest pain, diarrhea, dyspnea, accidental injury, head injury, hemorrhage, weakness, dizziness, abdominal pain, behavioral problems as well as toxological emergencies, i.e. poisons, sting and snake bites [3].

Inadequate knowledge is most hazardous than ignorance because the person who has inadequate knowledge may not be able to identify the deficiency properly, which in turn may lead to poor services resulting serious consequences. Similarly nurse with deficient knowledge may provide poor service in the care of emergent clients and the outcome will be more complications rather than their prevention [4].

Nurses are required to render care in variety of settings from acute and emergency conditions to chronic rehabilitations forms. Each setup demands specialized skills and knowledge to effectively carryout the care. Modern life is contributing to increase number of accidents and higher incidences of acute conditions requiring emergency care. Adequate monitoring and management during emergency condition can prevent complications, disabilities and death [5]. Regular nursing education programs may not sufficient to meet the additional demands of emergency monitoring and management. Hence short term orientation or educational interventions eg. PTPs are necessary for nurses to equip their work efficiently emergency conditions. The current study was planned to assess the impact of workshop on "Emergency Care Management: Nursing Perspectives" on the knowledge of Nurses working in PGIMER, Chandigarh. So we can conclude that there should be organization of such type of workshops to improve the knowledge of in-service staff to equip them with latest news.

2. Material and methods

This pre-experimental one group pre-test post-test study was conducted in Lecture Theatre-1, Nehru hospital, PGIMER, Chandigarh. Using total enumeration technique, 166 nursing personnel were included in the study. A pre validated objective type questionnaire prepared by the investigator and corrected by experts was used to assess the knowledge before and after the teaching program. The tool was divided in two parts. It described the profile characteristics of nursing officials, working in PGIMER, Chandigarh i.e. name, age, sex, place of posting, designation, academic qualification, professional qualification, year of professional experience etc. It consisted of 30 multiple choice questions. Each correct response was given a score of one and no score for wrong or unattempted answers. A written permission was obtained from the worthy Medical Superintendent and Professor and Head, Department of Hospital Administration, PGIMER, Chandigarh and written informed consent were taken from the individual participant. The pre-test was conducted by administering questionnaire regarding knowledge on selected topic. Workshop was organized on selected topics on the same day of pre-test. Post-test was conducted by administering questionnaire same as pre test at the end of workshop on same day. The collected data was analyzed by using the descriptive and inferential statistics using trail version 20 SPSS software. The pretest and posttest result was analyzed by using paired t test.

3. Result and Discussion

Mean age and professional experience of the participants

The mean age of the participants was 34.60 ± 10.13 with the range of 22- 59 years. The median age of the participants was 31.50 with the Inter Quartile Range of 26.0 to 43.0. The mean professional experience of the participants was 11.04 ± 9.78 with the range of 0.5 – 36.0 years. The median professional experience of the participants was 7 with the IQR of 3.0 to 20.13.

Table No 1:- Mean age and professional experience of the participants

Parameters	Mean±SD (Min.-Max.)	Median (IQR)
Age in years	34.60±10.13 (22-59)	31.50 (26.0-43.0)
Professional experience in years	11.04±9.78 (0.5-36.0)	7.00 (3.0-20.13)

Gender profile of the participants:

Table-2 depicts the gender profile of the participants. Female nursing officials formed the majority (82%) while 18% of the participants of the workshop were male nursing officials. Mean pre workshop knowledge score of male nurses and female nurses was 15.90±3.86 and 13.33±3.41, respectively. Mean post workshop knowledge score of female participants was 20.24±2.84 and of male participants was 22.63±2.48. There was significant increase in the mean knowledge score after workshop among male and female participants ($p<0.001$)

Table 2: Gender profile of the participants

Characteristics of participants		N (166)	Pre workshop knowledge score (Mean±SD)	Post workshop knowledge score (Mean±SD)	P value
Gender	Female	136 (82%)	13.33±3.41	20.24±2.84	<0.001
	Male	30(18%)	15.90±3.86	22.63±2.48	<0.001

Designation vs knowledge score of the participants

Majority of the participants (76%) were sister grade-II nurses whereas 20% were sister grade-I and 4% participants were Assistant Nursing Supdts (Figure-2).Mean pre workshop knowledge scores of ANS, SGI and SG II were 13.29±4.54, 12.70±2.79, and14.11±3.73, respectively. And mean post workshop knowledge score were 19.57±1.72, 19.33±2.79, and 21.09±2.90, respectively. There was also statistically significant improvement in knowledge score (p=0.003, p=<0.001, p=<0.001). (Table 3)

Table 3: Designation vs knowledge score of the participants

Characteristics of participants		N (166)	Pre workshop knowledge score (Mean±SD)	Post workshop knowledge score (Mean±SD)	P value
Designation	ANS	7(4%)	13.29±4.54	19.57±1.72	0.003
	SG 1	33(20%)	12.70±2.79	19.33±2.79	<0.001
	SG 2	126(76%)	14.11±3.73	21.09±2.90	<0.001

Professional qualification vs knowledge score of the participants:-

Table 4 depicts that Majority (86) of them were completed basic B.Sc. Nsg course, whereas 60of them have done General Nursing and Midwifery (GNM) diploma course and only 2 were post graduate (PG) in nursing. Knowledge score of GNM, post basic, Basic and post graduates were 12.28±3.30, 13.72±3.06, 14.80±3.62, and 16.50±3.54, respectively before the workshop. At the end of the workshop, improvement in the knowledge score was found out with statistically significant that was 19.55±2.70 of GNM (p<0.001), 20.50±2.68 of Post basic (p<0.001), 21.42±2.88 of basic nursing (p<0.001), and 24.00±2.83 of PG nurses (p=0.180) [@].

Table 4: Professional qualification vs knowledge score of the participants

Characteristics of participants		N (166)	Pre workshop knowledge score (Mean±SD)	Post workshop knowledge score (Mean±SD)	P value
Professional qualification	GNM	60	12.28±3.30	19.55±2.70	<0.001
	Post Basic	18	13.72±3.06	20.50±2.68	<0.001
	Basic	86	14.80±3.62	21.42±2.88	<0.001
	PG	2	16.50±3.54	24.00±2.83	0.180[@]

@ Wilcoxon signed rank test

Academic qualification vs knowledge score of the participants

As per academic qualification, most of {138 (83%)} participants were 10+2/pre university pass out followed by 20 (12%) graduate and only 8 (5%) were post graduates. There was significant enhancement in the knowledge score of the participants from pre workshop test to post workshop test. (Table 5)

Table 5: Academic qualification of the participants and their knowledge score

Characteristics of participants		N (166)	Pre workshop knowledge score (Mean±SD)	Post workshop knowledge score (Mean±SD)	P value
Academic qualification	10+2/ Pre University	138 (83%)	13.88±3.66	20.73±2.93	<0.001
	Graduation	20(12%)	13.15±3.63	20.75±2.75	<0.001
	Post-graduation	8 (5%)	14.00±3.25	19.50±3.34	0.011[@]

@ Wilcoxon signed rank test

Professional experience of the participants:-

According to professional experience of the participants, 53(32%) having more than 15 years of experience followed by 35 (21%) having less than 2 years of experience (table 6)). There were also statistically significant improvements in the knowledge scores among the workshop participants.

Table 6:-Professional experience of the participants

Characteristics of participants		N (166)	Pre workshop knowledge score (Mean±SD)	Post workshop knowledge score (Mean±SD)	P value
Professional experience	Upto 2 years	35 (21%)	14.66±3.40	21.37±3.07	<0.001
	>2 to 5 years	34(20.5%)	15.12±3.81	21.47±2.64	<0.001
	>5 to 10 years	32(19.3%)	13.69±4.24	21.56±2.54	<0.001
	>10 to 15 years	12(07.2%)	14.08±3.58	21.75±1.96	<0.001
	>15 years	53(32%)	12.38±2.79	18.92±2.69	<0.001

Knowledge score of the subjects

The mean knowledge score of the participants before starting the workshop was 13.80±3.63and it improved to 20.67±2.92at the end of the workshop. There was a statistically significant difference between the pre-test score and the post-test score (t=25.919, df=165, $p < 0.001$) of the participants of workshop (Table-7).

Table 7:- Mean knowledge score of the participants

N=166

Particulars	Pre workshop	Post workshop	t, df	P value
Knowledge score (Mean±SD)	13.80±3.63	20.67±2.92	25.919, 165	0.0001

Correct responses of the participants:

The table no. 8depicts question wise correct responses of the participants during pre-test and post-test of the workshop. There were 30 items/multiple choice questions focused on various emergency nursing conditions to assess the knowledge of nursing staff regarding emergency care perspectives. These items mainly included knowledge of nursing staffs regarding emergency management of trauma patients, acute stroke patients, burn patients, patients with poisons, basic life supports, cardiac arrest patients, ECG interpretation in emergency situations, ethical issues in nursing during emergency care, emergency drugs administrations etc. in majority of the items the correct responses were significantly improved from baseline. On the other hand, there was no significantly improvement seen in all items related to ECG interpretations. "A seven years old child has received partial thickness burns of the face & chest with fire accident. For the first 24 hrs after hospitalization, the nurse should primarily observe the child for? In this condition, there was significantly decrease in the correct responders by 11.4% from 26.5% pre-workshop correct responders to 15.1% post-workshop correct responders ($p<0.001$). There should be organization of workshop regarding these crucial issues in the coming days for nursing officials to provide better care in emergency conditions by fulfilling the knowledge gap.

Table 8:- Correct responses of the participants

N=166

S.N	Question/Item	Correct responded		P value (McNemar Test)
		Pre workshop	Post workshop	
1	If a 6 second ECG Strip of a patient identifies 10 QRS – Complexes, the heart rate of a patient is 100 beat/min	43	50	0.337
2	The compression to ventilation ratio in adult BLS is 30:2	74	16	0.0001
3	To activate "code stroke" from any ward's extension of PGIMER, Chandigarh for PGI's Stroke Team information/activation, dial "333"	47	163	0.0001
4	N-acetylcysteine is used in acetaminophen overdose.	108	153	0.0001

S.N	Question/Item	Correct responded		P value (McNemar Test)
		Correct responded	P value (McNemar Test)	
5	The Indian Nursing Council Act was passed in the Parliament in the year 1947.	22	46	0.0001
6	The characteristic feature in ECG of Patient with a trial flutter is Sea-saw shaped P waves called 'F' waves.	64	107	0.0001
7	The characteristics of high quality CPR are: Compression rate of 100/min, Compression depth of 2 inches in adults & children, allowing complete chest recoil, minimal interruptions & avoiding excessive ventilation.	56	105	0.0001
8	A therapeutic agent which is sometimes called the universal antidote is activated charcoal.	76	121	0.0001
9	Door To CT (DTCT) time, Door To Needle (DTN) time and window period in acute ischemic stroke are (as per NINDS recommendations):≤ 25mins, ≤ 60mins, ≤ 4.5 hours; respectively.	05	65	0.0001
10	Wrong medication leading to death of patient is coming under the "Criminal Law"	107	159	0.0001
11	The characteristic feature of ECG of a Patient with ventricular tachycardia is presence of QRS complexes only	26	50	0.0001
12	The BLS sequence as per American Heart-Association -2010 Guidelines is C-A-B	80	140	0.0001
13	In Acute Stroke; FAST stands for FACE, ARM, SPEECH, TIME.	68	155	0.0001
14	Protamine sulfate is administered in overdose of Heparin	124	159	0.0001
15	The following types of patients are categorized as MLC in a hospital except "Mental patients"	142	155	0.007
16	The horizontal axis on ECG paper represents "Amplitude"	34	39	0.576
17	The important nursing consideration while placing ECG electrodes on the chest of patient is except "Place electrodes on bony part of chest and no need to change the site of ECG Electrodes"	76	96	0.009
18	When suctioning a patient with tracheotomy the nurse must remember to "Initiate suction as the catheter is being withdrawn"	90	97	0.392
19	A seven years old child has received partial thickness burns of the face & chest with fire accident. For the first 24 hrs. after hospitalization, the nurse should primarily observe the child for "Pulmonary distress"	44	25	0.001
20	The characteristic feature of ECG of patient with ventricular fibrillation is "Unrecognizable PQRS Waves, Wavy line only"	78	88	0.302
21	Calculate fluid as per parkland formula to be infused to a patient in first 24 hrs. After burn. Weight of the patient is 90 kg. with 83% total burn surface area (Ans.: 29880ml)	47	125	0.0001
22	In sinus bradycardia, there is "Increased RR interval"	22	44	0.0001
23	A patient is admitted with partial full thickness burn over 30% of the body. Nursing observation in the first 48 hours of hospitalization are directed primarily towards preventing "Shock".	138	157	0.0001
24	Simultaneous fracture of two or more fractures in one bone or fracture of two or more bones is called Multiple fracture	120	138	0.013
25	Acute or resuscitation period after trauma is 1-3 hrs.	98	151	0.0001
26	First treatment priority in patient with multiple fractures is "Airway, breathing, circulation".	66	78	0.065
27	Acceleration, deceleration, and deformation are the different mechanisms of injury.	141	161	0.0001
28	A coup injury occurs at the point of impact.	53	129	0.0001
29	A client with Head Injury should be protected from possible cord injury by "Immobilizing the head & neck immediately"	128	151	0.0001
30	In triage, black colour denotes "Death".	113	164	0.0001

Discussion:

Nurses play a significant role in providing care in emergency conditions. The present study was undertaken to appraise the impact of workshop on the knowledge of nursing personnel working in PGIMER, Chandigarh. This pre experimental one group pre test - post test study was conducted in Lecture Theatre-I, Nehru Hospital, PGIMER, Chandigarh. 166 nursing personnel participated in the study. Total enumeration sampling technique was used to collect the data.

In the present study 82%were female nursing officials while 18% of the participants of the workshop were male nursing officials. 39.1% had >10 year's professional experience. In a previous study, 31.7% were male and 68.3% were female participants. And About 58.7% of nurses had ≥ 10-year work experience [6].

The findings of the current study revealed that the mean knowledge score of the participants before starting the workshop was 13.80 + 3.63 and it improved to 20.67 + 2.92 at the end of the workshop. There was statistically significant difference between the pre test knowledge score and post test knowledge score ($p<0.001$) which is consistent with the study of Pasyar *et al*. (2009) concerning effect of educational sessions on promotion of nurses' level of knowledge in emergency wards of Shiraz University of Medical Sciences [7].

The majority of the previous studies revealed that structured teaching programme on various topics shows remarkable improvement in the knowledge score of participants. An experimental study conducted to assess the effectiveness of structured teaching programme regarding knowledge and practice of staff nurses regarding body mechanics in selected nursing interventions on 30 nurses who are selected by convenient sampling technique revealed that mean percentage obtained for overall practice in pre test was 49.1% and in post test 81.33%. The improvement in mean percentage for overall knowledge was 38.6% with't' value 14.68 which was highly significant showed the effectiveness of STP on body mechanics in selected nursing interventions [8].

A quasi experimental study was conducted to evaluate the effectiveness of teaching programme on knowledge of staff nurses regarding management of patients with fluid and electrolyte imbalance at Wockhardt, Bangluru. Results showed that there was significant improvement in the knowledge score of the participants. ($p<0.001$) [9].

Abbaszadeh *et al* [10] showed that continuing education programs resulted in an increase in nurses' knowledge, attitude, and practice. Huang *et al* [11]. Conducted a quasi-experimental study on evaluation of the effect of nursing educational programs among nurses in hospitals in China and reported an improvement in nurses' knowledge, practice, and behavior after education, which is consistent with this study.

In a study to help staff nurses in taking care of cancer patients and having an early diagnosis of depression and making necessary interventions, the results showed that nurses applied more strategies and evaluated their efficiency better after the workshop, compared to before workshop [12].

The results of some studies showed if educational programs are based on nurses' needs assessment and are conducted purposefully in the form of workshops, the educations can notably affect nurses' knowledge, attitude, and skills [13].

Numerous studies showed the weakness in nurses' knowledge in contexts of nursing cares as well as lack of fulfillment of determinant and important needs concerning administration of professional duties [14-16].

As education of nursing personnel, parallel to other medial professions, is speeding up toward professionalism and increase of competency of its professionals, the university education and obtaining an educational certificate cannot be a license for nurses to give nursing services lifelong any more. In fact, education of medical sciences does not end in a university, but should go on during professional activities [17]. Potter and Perry [18]. Believe that comprehensive educational programs which emphasize on personal learning needs reduce the caring costs, improve quality of care, and help the individuals obtain their independency. Brady and Hyde [19]. Believes that giving nurses the knowledge and preparation for continuing education is essential. In this direction, detection of educational needs and provision of needed facilities is the first step to fix the defects and improve quality of education. Therefore, the role of continuing education as a basic need for nurses' adaptation with progressive and rapid scientific changes is essential.

Determination of educational priorities based on needs assessment should be considered as the most important step in educational planning [20]. Working staff in health and treatment services should keep in touch with new advances and update their knowledge and science during their period of servicing. With regard to the results of this study, a positive background for nurses' participation in educational programs based on needs assessment should be prepared for their professional promotion.

A similar study was conducted in NINE, PGIMER, and Chandigarh to assess the knowledge of diabetes mellitus among nursing interns. It showed a statistically significant difference in the mean knowledge score between the pre test and post test ($t= 25.07$, $p<0.001$. The authors concluded that to provide quality diabetes care and education to the patients, the nursing staff should receive continuing education [21].

While discussing, the correct response regarding code stroke' 333' to activate stroke team in PGI was given by only 47 (28%) participants before starting the workshop whereas it was tremendously increased to 163 (98%) at the end of the workshop. Similarly, the correct response regarding compression to ventilation ratio in adult Basic Life Support is 30:2, was provided by 74 (45%) participants before starting the workshop whereas it was remarkably improved to 161 (97%) at the end of the

workshop. On the contrary, the question wise analysis revealed that the correct response regarding partial thickness burns of the face & chest with fire accident ,for the first 24 hrs after hospitalization, the nurse should primarily observe the child for ' Pulmonary distress' was given by 44(27%) at pre test was decreased to 25(15%) at the end of the workshop. Hence, re-emphasis on burn injuries may be conducted to all participants on a later date. The knowledge regarding reading and interpretation of ECG is very low among nursing staff even after at the end of the workshop.

Significant improvement in the knowledge score was found in all categories of professional experience of participants i.e. upto 2yrs, 2 to 5yrs, 5 to 10 yrs, 10 to 15 yrs, and more than 15yrs. ($p<0.001$).

Educational programs may lead to a substantial decrease in cost, morbidity, and mortality attributable to central venous catheterization [22]. So these programmers should be regularly, updated in view of changing knowledge and work practices [23].

Conclusion and recommendations

With regard to the role and importance of professional factors such as patients' expectations from nurses, the desire to increase professional knowledge in nursing continuing education programs, nursing managers, and authorities of continuing education programs should provide the nurses with conducive conditions for their attendance in educational programs for professional promotion. Educational sessions notably affected the promotion of nurses' knowledge. With regard to nurses' satisfaction with the workshop that was held, designing and organizing educational workshops based on constant needs assessment is suggested for promotion of nursing cares.

Limitations

The researchers faced some limitations while conducting this study. The most important limitation was in holding the sessions in two above-mentioned hospitals as well as the high number of participants in the program, which limited the participants' active participation and interaction.

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