Study to Assess the Effectiveness of Planned Teaching Programme (PTP) on Knowledge and Practices Regarding Defibrillation among Staff Nurses Working in Selected Units of Indira Gandhi Medical College and Hospital, Shimla, Himachal Pradesh

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Abstract: _Background: When "Sudden Cardiac Arrest" occurs, the entire heart stops or is rendered ineffective in pumping a sufficient amount of blood to supply the organs. That is why people who suffer cardiac arrest, need emergency medical treatment. Advanced cardiac life support, or advanced cardiovascular life support, often referred to by its abbreviation as "ACLS", refers to a set of clinical algorithms for the urgent treatment of cardiac arrest, stroke, myocardial infarction, and other life-threatening cardiovascular emergencies. Nurses, very frequently, have to encounter the cases of sudden cardiac arrests. They are the primary emergency care givers in the hospital and thus they need to be knowledgeable and competent enough regarding the usage of defibrillator because the chances of rescue or fatality are dependent on a matter of few minutes. Aim: The main aim of the study was to assess the effectiveness of Planned Teaching Programme on knowledge and practices regarding defibrillation among staff nurses working in selected intensive care units of Indira Gandhi Medical College and Hospital, Shimla, Himachal Pradesh (H.P). Methods and materials: Quantitative approach was adopted using the pre-experimental design. The sample size was 60 staff nurses working in selected of Indira Gandhi Medical College and Hospital, Shimla, H.P. They were selected using convenience sampling method. Ethical approval was taken from the concerned departments. The structured tool consisting of socio-demographic variables, knowledge questionnaire and practice check-list was prepared with extensive search from various sources and validated by various experts. After conducting pre-test, PTP was administered to the participants. Post-test was conducted after one week. After post-test information booklet was distributed to all the participants. Statistical analysis of the acquired data was done by calculating mean, median, mean percentage, mean difference, standard deviation, t test and chi square test. Result: The results of the present study reveal that considering the knowledge, in pre-test, maximum participants 51 (85%) had average knowledge, 5 (8.3%) participants had poor knowledge and 4(6.7%) participants had poor knowledge regarding defibrillation. In post-test, maximum participants 34 (56.7%) had good knowledge, 26 (43.3%) had average knowledge and no participant, that means 0 (0%) had poor knowledge regarding defibrillation. In case of practices, in pre-test, 56 (93.3%) participants expressed good practices whereas 4 (6.7%) participant expressed poor practices regarding defibrillation. In post-test, all, i.e. 60 (100%) expressed good practices and nobody, i.e. 0 (0%) expressed poor practices regarding defibrillation. Results shows that planned teaching programme was effective in terms of improving knowledge and practices staff nurses regarding defibrillation. Conclusion: The study findings showed that the mean post-test knowledge and practice score was higher than the mean pre-test knowledge and practice score. Hence, it can be concluded that the planned teaching programme was effective in improving the knowledge and practices of the Staff Nurses regarding defibrillation._

Keywords: Staff Nurses, Knowledge, Practices, Defibrillation, Planned Teaching Programme (PTP)

1. Introduction

Sudden cardiac death (SCD) is a sudden, unexpected death caused by loss of heart function (sudden cardiac arrest). Sudden cardiac death is the largest cause of natural death in the United States, causing about 325,000 adult deaths in the United States each year. It is responsible for half of all heart disease deaths.

Emergency treatment includes cardiopulmonary resuscitation (CPR) and defibrillation. Defibrillation consists of delivering a therapeutic dose of electrical energy to the affected heart. It is the definitive treatment for life threatening cardiac arrhythmias, Ventricular fibrillation and Pulseless ventricular tachycardia and other Dysrrythmias. [1]

Cardiac arrest is the third commonest cause of death next to only cancer and road accidents in India. Every year 2.5 million people suffer from coronary artery disease & 1.5 million die of it in India. It is estimated that by 2025 every one out of four heart attacks in the world will be an Indian.[2] Nurses working in Intensive Care Units should be acquainted with the use of defibrillators at any point of time of need since it is an important life saving measure.

The nursing staff working in the intensive care units and the emergency wards very frequently, have to encounter the cases of sudden cardiac arrests. They being the ones, who are the primary emergency care givers in the hospital, need to be knowledgeable and competent enough regarding the usage of defibrillator because the chances of rescue or fatality are dependent on a matter of few minutes. [3]

A research study was conducted regarding the Nurse's role in the early defibrillation of cardiac patients" and it was found that the time taken to initiate early defibrillation is crucial to improve the quality of life of patients suffering from sudden cardiac arrest. Despite the extension of training and the authorization of nurses to perform early defibrillation (advocated by the American Heart Association), such practice has not been widely adopted in hospitals. Inadequate knowledge, lack of skill retention, insufficient organizational support and the passive culture of nurses are barriers preventing the move towards nurse-led defibrillation. The study discussed the need to extend the registered nurse's role in the early defibrillation of cardiac patients in Hong Kong. [4].

Cardiac arrest outcome studies have identified early defibrillation (among other variables) as a strong predictor of survival with the emphasis placed on minimal delay between arrest and 'shock'. Nurses can contribute to the prevention of cardiac arrest in the community by promoting the importance of seeking medical care in the event of chest pain. Furthermore, skilled clinical assessment and recognition of the prodromes of cardio respiratory collapse may reduce the incidence of in-hospital cardiac arrests [5]

A planned teaching programme on the usage of defibrillator and its importance in treating sudden cardiac arrest, can be a time-saving and cost-effective method to enhance their knowledge and improve their practices.

2. Objectives

1) To assess the knowledge regarding defibrillation among staff nurses working in selected units of Indira Gandhi Medical College and Hospital, Shimla, H.P.
2) To assess the practices regarding defibrillation among staff nurses working in selected units of Indira Gandhi Medical College and Hospital, Shimla, H.P.
3) To assess the effectiveness of Planned Teaching Programme on knowledge and practices regarding defibrillation among staff nurses working in selected units of Indira Gandhi Medical College and Hospital, Shimla, H.P.
4) To find out the association of knowledge score with the selected demographic variables.

3. Methodology

In this study quantitative research approach and pre-experimental research design were used to collect the data from the sample size of 60 Staff Nurses who were working in selected units (Intensive care units, Emergency areas, Cardiology wards and Medicine wards) of Indira Gandhi Medical College and Hospital, who understood Hindi and English and were willing to participate in the study.

Convenience sampling technique was used to select the study sample and self- structured knowledge questionnaire and practice check-list was used to collect the data from subjects. The tool comprised of three sections- Section A had questions related to socio-demographic variables (professional qualification, work experience, previous knowledge and source of information regarding

defibrillation, previous experience of delivering defibrillation and current area of working), while Section B consisted of questions consisting of 30 knowledge items related to defibrillator and the process of defibrillation. Section C consisted of self- structured check-list consisting of 25 items related to step-wise procedure of defibrillation.

To ensure the content validity of the tool, it was submitted to ten experts (six Nursing experts from Nursing Colleges and four doctors from departments of cardiology, critical care and Preventive and Social Medicine). Reliability of the tool was computed by using Karl Pearson formula and was found to be reliable with value of 0.88.

Ethical approval was sought from the concerned authorities of Indira Gandhi Medical College and Hospital, Shimla. An informed consent was obtained from the participants (Staff Nurses) before administering the tool. Confidentiality and privacy of the collected data was maintained. After taking pre-test, the Planned Teaching Programme was administered and post- test was conducted after one week.

Data was analyzed by using descriptive and inferential statistics i.e. frequency and percentage distribution, mean percentage, median and chi square to determine the association between knowledge with selected variables.

4. Result

The present study findings showed that in professional qualification, most of the participants 34(56.7%) had done G.N.M course, most, i.e. 40(66.7%) Staff Nurses had 5 or less than 5 years of clinical work experience. Majority of the participants, i.e. 37(61.7%) had information regarding defibrillation from health professionals. Majority, i.e. 40(66.7%) participants had not previously delivered defibrillation. Maximum participants 31(51.7%) were from Intensive care units of Indira Gandhi Medical College and Hospital, Shimla, H.P.

In pre-test knowledge score maximum 51(85%) had average knowledge, whereas 5(8.3%) had poor knowledge and 4(6.7%) had poor knowledge regarding defibrillation. In post test knowledge score, maximum 34(56.7%) had good knowledge, 26(43.3%) had average knowledge and no participant, i.e. 0(0%) had poor knowledge.

In pre-test practice score maximum 56(93.3%) expressed good practice and 4(6.7%) expressed poor practice. In post test practice score, all i.e. 60(100%) expressed good practice and no participant, i.e. 0(0%) expressed poor practice.

There was a significant increase in the post-test knowledge and practices of the staff nurses after administering the Planned Teaching Programme (PTP).

Association of pre-test knowledge score was found to be significant with source of prior information regarding defibrillation (p=0.001) at 0.05 level of significance and also found to be significant with current area of working (p=0.001) at 0.05 level of significance.

Table 1: Findings related to assessment of knowledge regarding defibrillation among Staff Nurses, N=60

Assessment Of Knowledge Scores		
Score Level (N=60)	**Pre-test**	**Post-test**
Poor (0-10)	5(8.3%)	0(0%)
Average (11-20)	51(85%)	26(43.3%)
Good (21-30)	4(6.7%)	34(56.7%)

Minimum=30   Minimum=0

Table 1 depicts that in pre-test it is found that, maximum participants 51 (85%) had average knowledge, 5 (8.3%) participants had poor knowledge and 4(6.7%) participants had poor knowledge regarding defibrillation.

In post-test, maximum participants 34 (56.7%) had good knowledge, 26 (43.3%) had average knowledge and no participant, that means 0 (0%) had poor knowledge regarding defibrillation.

Table 2: Findings related to assessment of practices regarding defibrillation among Staff Nurses, N=60

Assessment of Practice Scores		
Score Level (N=60)	Pre	Post
Poor Practice (0-12)	4(6.7%)	0(0%)
Good Practice (13-25)	56(93.3%)	60(100%)

Maximum=25   Minimum score=0

Table 2 depicts that in pre-test, 56 (93.3%) participants expressed good practices whereas 4 (6.7%) participant expressed poor practices regarding defibrillation.

In post-test, all, i.e. 60 (100%) expressed good practices and nobody, i.e. 0 (0%) expressed poor practices regarding defibrillation.

Table 3: Findings related to effectiveness of Planned Teaching Programme on knowledge regarding defibrillation, N=60

Paired T Test		Mean	S.D.	Mean %	Mean Difference	Paired T Test	P value	Table value at 0.05	Result
Knowledge	**Pre**	16.68	3.347	55.61	3.750	15.574	<0.001	2.00	Significant t
	Post	20.43	2.837	68.11					

Maximum score= 30   Minimum score=0

Table 3 depicts that in pre test, mean knowledge score was 16.68 with standard deviation of 3.347 and mean percentage was 55.61% whereas in post-test, the mean knowledge score was 20.43 with standard deviation of 2.837 and mean percentage was 68.11%. The mean difference was found to be 3.750. The calculated value for paired T test is 15.574, which is greater than the table value, i.e. 2.00. Hence it is considered as significant.

Table 4: Findings related to effectiveness of Planned Teaching Programme on practices regarding defibrillation, N=60

Paired T Test		Mean	S.D.	Mean %	Mean Difference	Paired T Test	P value	Table value at 0.05	Result
Practice	Pre	15.42	2.028	61.67	4.283	23.056	<0.001	2.00	Significant t
	Post	19.70	1.816	78.80					

Maximum score=25   Minimum score=0

Table 4 depicts that in pre test, mean practice score was 15.42 with standard deviation of 2.028 and mean percentage was 61.67% whereas in post-test, the mean practice score was 19.70 with standard deviation of 1.816 and mean percentage was 78.80%. The mean difference was found to be4.283. The calculated value for paired T test is 23.056, which is greater than the table value, i.e. 2.00. Hence it is considered as significant.

Table 5: Findings related to association between the pre-test and post-test knowledge scores of Staff Nurses with demographic variables, N=60

Demographic Variables		Levels(N=60)			Association with Pre-knowledge Score			
Variable	Options	Good	Average	Poor	df	Chi test	Table Value	P Value
Professional Qualification	G.N.M	3	29	2	4	1.332	9.488	0.856
	B.Sc./ Post B.Sc. Nursing	1	21	3				
	M.Sc. Nursing	-	1	-				
	Above M.Sc. Nursing	-	-	-				
Clinical Work Experience	0-5Year	2	34	4	6	3.176	12.592	0.786
	>5-10Years	1	8	1				
	>10-15Years	-	5	-				
	>15 Years	1	4	-				
Source of Prior Information Regarding Defibrillation	Print Media	1	-	1	6	23.035	12.592	0.001
	Mass Media	-	3	2				
	Health Professionals	3	34	-				
	Both a. & b.	-	14	2				
Have you ever Delivered Defibrillation?	Yes	3	17	-	2	5.625	5.991	0.06
	No	1	34	5				
Current Working Area	Intensive Care units	2	29	-	6	20.071	12.592	0.003
	Emergency Unit	-	9	1				
	Cardiology Wards	2	6	-				
	Medicine Wards	-	7	4				

Table 5 depicts the association of the pre-test knowledge score with socio-demographic variables. The Chi-square value shows that there was significant association between the pre-test knowledge score with socio-demographic variables such as source of prior information regarding defibrillation (p=0.001). Here the chi square value (23.035) was more than table value (12.592) at the 0.05 level of significance. There was also significant association of pre-test knowledge score with the variable, current area of working (p=0.003). Here the chi square value (20.071) was more than the table value (12.592).

5. Conclusion

The present study findings indicate that there is need for further improvement in the knowledge and practices among nurses regarding defibrillation. This can be achieved through continuous ongoing in-service education and training programmes. They should be made acquainted with latest technologies related to defibrillators and their working. The use of educational resources such as simulator manikins which allows nurses to practice and prepare for emergent critical situation requiring defibrillation, will improve their skills.

6. Acknowledgement

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