Evaluation of the effectiveness of basic life support training among nursing staff at tertiary care centre

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Abstract

Background: Basic Life Support (BLS) as the first level of medical care in sudden cardiac arrest and life-threatening illnesses. This study was conducted among nursing staff at tertiary care centre undergoing BLS training and who were previously not familiar with the BLS training skills. Aim of this study was to evaluate the effectiveness of BLS training provided for the nursing staff. **Methods:** A quasi experimental study (n-72) was conducted at Basaveshwara Medical College and Hospital, Chitradurga, from May 2019 to July 2019. Knowledge and practices was assessed using structured knowledge questionnaire and practice checklist. On the first day, pre-test and post test to assess knowledge regarding BLS was conducted. Practice sessions were given to 3 groups per day between 2-5th day. Pre-test and post test of practices was conducted on same day. On the 7th day, 2nd post test of knowledge was conducted for all the groups. **Results:** The mean of first post test knowledge score (15.46) was higher than the mean of pre test knowledge score (7.22). The mean of second post test knowledge score (16.21) was higher than the mean of pre test knowledge score (7.22). The mean of post test practice score (17.68) was higher than the mean of pre test practice score (6.68). **Conclusion:** BLS training program was effective in enhancing the knowledge and practices of nursing staff.
Key Word: BLS training, effectiveness, knowledge score, practices score, nursing staff.

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INTRODUCTION

Basic life support (BLS) is the major foundation for saving lives following cardiac arrest. Fundamental aspects of BLS include immediate recognition of sudden cardiac arrest and activation of the emergency response system, early chest compressions and breaths and rapid defibrillation with an automated external defibrillator.[1] Basic life support (BLS) is one of the most fundamental components of emergency medical interventions and is defined as "ensuring an open airway and supporting circulation without any equipment in cases of cardio-respiratory arrest until providing advanced life support." The aim of basic life support is to maintain a distribution of oxygen-rich blood through vital organs, especially the brain and heart, through a temporary artificial circulation until normal cardiac activity and breathing are restored.[2,3,4] Nurses are generally the first responders to an in-hospital cardiac arrest and initiate basic life support while waiting for the advanced cardiac life support to take over. Kavalci, *et al*., and Ozdogan, *et al*. pointed out that it was considered amongst the duties of all healthcare team members to possess BLS knowledge and skills. [5, 6] Nurses especially should be involved in BLS training programs and these training programs should be repeated at certain intervals and updated in line with up-to-date guidelines including the steps of BLS. It is equally important to assess the effectiveness of the BLS training provided for nurses. Aim of this study was to evaluate the effectiveness of BLS training provided for the nursing staff at a tertiary care centre.

MATERIALS AND METHOD

A quasi experimental (pre-test and post-test) design was used to evaluate the effectiveness of BLS training among nursing staff. The study was conducted at Basaveshwara medical college and hospital, Chitradurga, Karnataka from May 2019 to July 2019. Ethical committee permission was taken. Study comprised of 72 nursing staff; 12 groups of 6 people each were made by using simple random sampling technique. Nursing staff who were willing to participate were included in the study. Nursing staff who were not willing to participate were excluded from the study. Written informed consent was obtained from all the participants before starting the study 20 structured knowledge questionnaires were used to assess the knowledge regarding BLS. Pre-test assessment for knowledge was done before BLS training for all the groups. Teaching method was 2 hours lecture cum discussion with audio visual aids and demonstration. Post-test assessment for knowledge was done after teaching on first day for all the groups. Knowledge was assessed before and immediately after teaching by a structured knowledge questionnaire comprised of 20 multiple choice questions (each given 1 mark for correct answer and 0 for wrong answer) validated by experts. On the day 2-5, pre-test of practices regarding BLS was conducted using 20 observation checklists. Practice sessions were given to 3 groups per day between 2-5th day. There was 2 hour practice session on adult and infant manikins. Practice sessions were given and post-test was taken on the same day. On the 7th day, 2nd post test of knowledge was conducted for all the groups.

Data analysis: The data was analyzed according to the objectives of the study using both descriptive and inferential statistics. Calculation was carried out with the help of Microsoft Excel and Statistical Package for Social Science (SPSS version 20) Program. The various statistical measures used were the frequency distribution, mean, mean difference, standard deviation of difference and p value to find the statistical significance.

RESULTS

Description of sample characteristics: Frequency and percentage were computed for describing sample characteristics. The data presented in Table 1 showed that all the nursing staff (100%) were in the age group of 20-45 years. Majority of subjects (80.56%) were females and 19.44% were male. Most of the subjects (70%) didn't have previous knowledge about Basic Life Support. Only 25 % of the subjects had practical exposure to Basic Life Support and witnessed in ICU.

Table 1: Frequency and Percentage Distribution of Nursing staff According to Sample Characteristics

Sample Characteristics	Frequency	%
Age in years		
<30	20	27.78
30-40	32	44.44
>40	20	27.78
Gender		
Male	14	19.44
Female	58	80.56
Working place		
ICU	8	11.11
NICU/PICU	10	13.89
Wards	34	47.22
OT	20	27.78
Years of experience		
< 1	8	11.11
1-5	15	20.83
5-10	30	41.67
>10	19	26.39
Previous experience in BLS training		
Yes	4	5.56
No	68	94.44

Table 2: Showing Mean, Standard Deviation of Knowledge Score Before and After BLS Training among Nursing staff (n-72)

Area	Mean	SD	P value
Pre-test	7.22	3.08	-
Post-test 1	15.46	5.8	<0.01*
Post-test 2	16.21	4.2	<0.01*

Table 3: Mean, Standard Deviation of Pre test to Post test of Practice Scores of Nursing staff **(n-72)**

Area	Mean	SD	P value
Pre test	6.68	1.67	-
Post test	17.68	5.01	<0.01*

*compared with the pretest

The mean of first post test knowledge score (15.46) was higher than the mean of pre test knowledge score (7.22). The findings further indicate that the mean of second post test knowledge score (16.21) was higher than the mean of pre test knowledge score (7.22) as shown in table-2. Thus it indicated that training program was effective in increasing the knowledge of nursing staff regarding BLS. The knowledge difference between pre and post training of BLS was statistically significant (p<0.05). The mean of post test practice score (17.68) was higher than the mean of pre test practice score (6.68) as shown in table-3. This indicated that the training program was effective in enhancing the practices of nursing staff. The practical skills between pre and post training of BLS was statistically significant (p<0.05).

DISCUSSION

The current study compared the knowledge and practices of BLS among nursing staff at the beginning and at the end of the training program. We found that BLS training program could significantly increase the knowledge of nursing staff who should have the ability to recognize several life-threatening emergencies and provide CPR in a safe, timely, and effective manner. In our study it has shown that the post-test mean knowledge score (16.21) was higher than the pre-test mean knowledge score (7.22). The mean of post test practice score regarding BLS (17.68) was higher than the mean of pre test practice score (6.68). Our study findings are compared with other studies. Celik, *et al.* [7] stated the nurses (58.1%) working in an emergency department believed themselves to be incompetent about BLS. Ratha Kabina *et al* [8] conducted a quasi-experimental study to evaluate the effectiveness of Planned Teaching Programme regarding Basic Life Support at Nursing College and findings showed that the Post-test Mean – (13.4) was higher than Pre-test Mean. Adedamola *et al*[9] revealed that the level of pre-training knowledge was 8.9% compared to post training knowledge of 88.6%. The knowledge difference between pre and post training in CPR was statistically significant (p<0.05). A similar study conducted in a tertiary care hospital among the undergraduates and postgraduate medical, dental and nursing students, also stressed the need to include basic life support training at all levels as the awareness among students was below average.[10] Asmita Chaudhary *et al* [11] conducted a BLS study among medical and paramedical staff and reported that only 3

out of 117 participants had secured80-90% marks in pretest and post workshop assessment showed 70% candidates securing more than 80%.[7] Unfortunately proper training of BLS is lacking among nursing staff. Busy hospital work schedules and lack of resources act as barriers. Nursing staff are still expected to learn resuscitation skills in the hospital setting, where there is opportunity to correct poor techniques.[12]

CONCLUSION

Nursing staff tend to see cases of cardiac arrest in hospitals earlier, it is crucial for them to have sufficient knowledge and skills regarding BLS. We conclude that preexisting knowledge of nursing staff regarding BLS was poor; BLS training we provided for the nursing staff in our study was effective in our hospital. BLS training should be made mandatory for all the nursing staff irrespective of their working places in hospital. Training programs should be repeated at regular intervals and knowledge and skills must be kept up-to-date.

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