Original Research Article

An observational study of basic life support knowledge amongst nurses in a tertiary care hospital from Gujarat, India

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Abstract

Background: Successful Cardio Pulmonary Resuscitation for a good patient outcome requires teamwork. Appropriate knowledge amongst health professional is necessary. The skills and confidence of performing basic life support (BLS) needs proper knowledge of the same. We conducted this study to assess the knowledge and attitude among nurses regarding BLS at our institute. **Methods:** An observational study was conducted at a tertiary care hospital from Gujarat, India. A self-prepared questionnaire was distributed to the nurses and based on their responses; the percentage of knowledge and attitude regarding BLS was assessed. **Results:** Total 108 nurses were included in the study. For the purpose of analysis the nurses were divided in two groups based on their involvement in emergency services. Group A nurses- working in casualty, Intensive care and operation theatres and group B- nurses from outpatient department and wards. The mean score (out of 15) for group A was 5.88 and group B was 5.78. None of the nurses could score more than 85%, 19 scored 50-85% and 89 nurses scored less than 50%. Score among trained nurses vs untrained nurses was also not significantly different (p 0.0716). **Conclusion:** Overall knowledge of the nurses of our Institute was not satisfactory which warrants an Institutional policy for regular BLS training.

Key Word: BLS (Basic Life Support); CPR (Cardiopulmonary resuscitation); Questionnaire; Training; Knowledge; Attitude.

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Received Date: 04/01/2019 Revised Date: 10/02/2019 Accepted Date: 21/03/2019
DOI: https://doi.org/10.26611/10159315

Access this article online	
Quick Response Code:	Website: www.medpulse.in
	Accessed Date: 22 March 2019

INTRODUCTION

Cardiac arrest is a critical event within and outside the hospital and has a high level of mortality[1]. If Basic life support (BLS) – cardio pulmonary resuscitation (CPR) is initiated as soon as possible, it can improve the survival rate[2]. Appropriate teamwork is the determinant of successful CPR and hence knowledge of BLS amongst medical and paramedical staff is necessary. In developing countries like India, CPR training is not a routine practice and there are only few researches regarding the level of knowledge among the health care professionals in India[3], In Institutions where BLS training not mandatory, the hospital staffs are unable to follow protocols. Paramedical staff is the first responder for any in-hospital cardiac arrests. Nurses are there at the bedside for quite a significant time period before any doctors arrives to the patient. If the nurses have a proper BLS knowledge, any wastage of the Golden Period can be prevented. We have conducted this study to assess the knowledge and attitude among nurses to know the ground level knowledge and to plan their future trainings.

MATERIALS AND METHODS

Ethical consideration: The study was conducted after Institutional Human Ethics Committee approval. Written and informed consent of the participants was taken. The

How to site this article: N Bose, D B Tanna, P D Chavda. An observational study of basic life support knowledge amongst nurses in a tertiary care hospital from Gujarat, India. *MedPulse International Journal of Anesthesiology.* March 2019; 9(3): 226-229.
http://medpulse.in/Anesthsiology/index.php

information collected from all the participants was kept confidential.

Study design and setting: An observational study was conducted at a tertiary care teaching hospital from Gujarat, India, which is a 750 bedded public hospital with all speciality departments.

Study population: We planned to include all the staff nurses from our medical college in this study. Total around 250 nurses work in our hospital in rotating shifts of eight hours. We were able to approach 180 nurses during our study period who. Those on leave and / or unwilling to participate were excluded from the study. Data was collected from on-duty, above mentioned staff from Hospital and college during two months of study period. Participants were given maximum two reminders to return the filled questionnaire at two days interval through a phone call. The questionnaires which were not returned by this time or were incomplete were excluded from analysis. Therefore, the total participants enrolled for study analysis were 108 staff nurses. For comparing the knowledge among participants working in emergency areas to those of non-emergency areas, we divided nurses into two groups, group- A: nurses working in casualty (emergency), all Intensive Care Units (ICUs) and Operation theatres. And group B- nurses working in Out Patient Departments (OPDs) and Indoor wards.

Study tool: A structured questionnaire was prepared to measure the knowledge and attitude of the participants based on American Heart Association Guidelines 2015[4]. The questionnaire consisted of 20 questions out of which 14 were Multiple Choice Questions and 6 short answer questions. We also collected the basic demographic details of the participants. Knowledge score was derived out of 15 knowledge based questions. Face validation as well as content validation was done by three independent experts in this field for the prepared questionnaire and changes were made according to their suggestions in the second version of the questionnaire. This second version of questionnaire was sent to two participants for pilot testing. Based on this the final version of the questionnaire was prepared.

Outcome measures:

Following were assessed after analysis of data:

- The percentage of knowledge score among nurses of group A and B
- Difference in knowledge scores among BLS trained vs not trained nurses

Data analysis: The data was entered in Microsoft office excel 2007 and statistical analysis was done using GraphPad Instat software. Descriptive analysis was done using percentage, mean and median. Comparison between various groups was done using unpaired t test. P value of <0.05 was considered statistically significant.

OBSERVATIONS AND RESULTS

This observational study shows the findings from the survey among 108 nurses. The nurses in group A (working in casualty, ICUs and OTs) were 52 and nurses in group B (working in OPDs and wards) were 56. Table 1 shows their demographic details. Self reported level of involvement in CPR cases is shown in table 2.

Table 1: demography

Demography	Nurses group A	Nurses group B	Total (n=108)
Mean age years (SD)*	29.4(5.4)	30.1(5.5)	29.8(5.4)
Sex			
Male(%)	10(19.2)	8(14.3)	18(16.7)
Female(%)	42(80.8)	48(85.7)	90(83.3)
Median years of experience	6	6	6
Training received (%)	15(28.8)	11(19.6)	26(24.1)

*SD- Standard Deviation

Table 2: Involvement in CPR

Involvement in CPR(%)	Nurses group A	Nurses group B	Total nurses
Very frequent	29	14	43
Occasional	15	22	37
Only observed	6	12	18
Never	2	8	10

We collected data regarding their previous CPR training status within last five years. They were categorized as AHA training, CME or lecture with or without hands on training and no training. Only one nurse of group A was AHA certified BLS provider among the 108 total nurses. 14(26.9%) nurses from group A and 11(19.64%) nurses from group B had received training in CME or Lecture. While 37(71.1%) of group A and 45(80.35%) of group B had received no training at all. Mean score (out of 15) obtained by group A and group B nurses was 5.88 and 5.78 respectively, which didn't differ from each other significantly (p value 0.790, unpaired t test). For ease of interpretation and comparison, the marks obtained

by participants were converted into percentage and were classified in three categories. Good score >85%, average score 50-85% and poor score <50%. Figure 1 shows distribution of nurses of both the groups as per their scores.

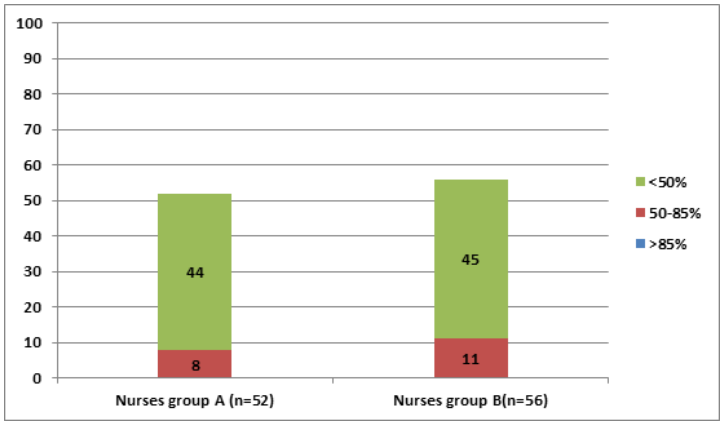

Figure 1: Percentage wise distribution of the participant scores

We compared knowledge scores of nurses who were trained vs not trained in last five years. The mean score was 6.42 and 5.65 respectively, which was not statistically significant. (P value 0.0716, unpaired t test)

Table 3: Question wise knowledge

No	Questions	Correct (%)	Incorrect (%)	Blank (%)
1	Full form of BLS	100 (93)	0 (0)	8 (7.40)
3	First step in outside hospital arrest situation	50 (46.29)	57 (52.77)	1 (0.92)
4	Rate of chest compression in adult CPR	26 (24.07)	73 (67.59)	9 (8.33)
5	Ratio of chest compression to breathing in adult CPR	65 (60.18)	43 (39.81)	0 (0)
6	Airway manoeuvre for unresponsive polytrauma patient	26 (24.07)	73 (67.59)	9 (8.33)
7	About rescue breaths	18 (16.66)	74 (68.51)	16 (14.81)
8	Chest compression to breathing ratio in pediatric CPR	24 (22.22)	78 (72.22)	6 (5.55)
9	Depth of chest compression in adults	39 (36.11)	66 (61.11)	3 (2.77)
10	Location for chest compression in adult	18 (16.66)	89 (82.40)	1 (0.92)
11	Need to check carotid pulse	86 (79.62)	20 (18.51)	2 (1.85)
12	Ventilation rate in intubated patient	36 (33.33)	66 (61.11)	6 (5.55)
13	Full form of AED	36 (33.33)	29 (26.85)	43 (39.81)
14	Step after AED	15 (13.88)	78 (72.22)	15 (13.88)
15	Components of high quality CPR	40 (37.03)	61 (56.48)	7 (6.48)
16	Manoeuvre for choking	19 (17.59)	80 (74.07)	9 (8.33)

The most important aspects of CPR are rate of chest compression, ratio of compression to breathing in adults and pediatric patients, location of hands over chest and Automated External Defibrillator (AED). Table 3 presents the details on correct answers by the number of nurses for each of these knowledge questions. Majority of the nurses were aware of the correct full form of BLS. Only around 25% of the nurses knew the correct rate of chest compression. 60% of the nurses didn't know the correct depth of chest compression and 80% didn't know the correct location of chest compression. 72% of the nurses didn't know the correct step after AED. The responses for mouth to mouth breathing were as follows: 35 (32.40%) nurses preferred to use some barrier device. 14 (12.96%) nurses said they would just stay back and let someone else volunteer, 33 (30.55%) nurses would perform mouth to mouth breathing without hesitancy and 26 (24.07%) would continue just chest compressions. 79 (73.14%) nurses were ready to take lead during performance of CPR. 107 (99%) nurses gave opinion that CPR training should be included in their curriculum.

DISCUSSION

Knowledge of CPR along with the skills is very essential for all health care professionals. Training is required for performing effective CPR. [5]In our institute, BLS training is not mandatory for medical or paramedical staff. Apart from the single training, refreshment of the training also doesn't occur if they have undergone some training before. We conducted this observational study to assess the current level of knowledge of BLS among the nursing staff, so that based on the results, future plan for their training can be

formulated and stressed upon. Our study showed poor knowledge among the nursing staff. Other studies done previously had similar results.[6,9] A cross sectional study was conducted in Tamil Nadu, India on 1054 medical practitioners, medical, dental, homeopathy students and nurses. They also showed the knowledge was very poor among all categories. No one had complete knowledge on BLS. Only two out of 1,054 (0.19%) had secured 80 – 89% marks, Ten out of 1,054 (0.95%) had secured 70 – 79% marks, Forty-three of 1,054 (4.08%) had secured 60 – 69% marks. 894 (84.82%) secured less than 50% marks.[6] Our study results showed, none of the nurses could score more than 85%, which is expected to be a good score. The nurses in category of 50-85% were also very few (eight from group A and 11 from group B). While majority had poor score, 44 (84.61%) from group A and 45 (80.35%) from group B. This poor result can be because they have not been formally trained in CPR during their graduation as well as during their work. Though the nurses are the first responders in any arrest scenarios, their role becomes passive once doctor from the emergency team arrives at the site. So, self motivation for learning and improvising skills is also very less in some nurses. A study conducted in Nepal among 50 nurses also suggested to have poor knowledge among the participants.[9] As per our results, only 26 (24%) nurses had received training in the last five years. Majority[23] had just attended CME or lecture on CPR. As a routine, in medical colleges, undergraduate students are given lecture with hands on training during their clinical posting in Anesthesia or Medicine. However, training for nurses is not a routine in majority of the institutes. Nowadays, as quality assurance, national boards recommend repeated training for all paramedical staff. Even as per AHA guidelines, re-trainings every two years are mandatory for healthcare professionals.[4] In a study conducted among nurses in Botswana, the authors suggested regular and repetitive CPR courses to update their knowledge and skills frequently.[10]

CONCLUSION

Overall knowledge of BLS is very poor among the nurses of our institute. There was no significant difference in knowledge among trained vs untrained nurses.

Limitation: In this questionnaire based observational study, we did not assess the practical skills to perform CPR, which is practically more important.

Future implication: We suggest, training for CPR should be made mandatory for all the medical and paramedical staff in our hospital. Moreover, repeated trainings at least yearly should be made compulsory.

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Source of Support: None Declared
Conflict of Interest: None Declared