International Journal of Community Medicine and Public Health
Rajashekar S et al. Int J Community Med Public Health. 2018 Sep;5(9):3969-3975
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20183580

Original Research Article

Knowledge of basic life support among health care professionals in a tertiary care hospital in Chitradurga

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Received: 05 June 2018
Revised: 20 July 2018
Accepted: 21 July 2018

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ABSTRACT

Background: Cardiovascular diseases are the major public health concern worldwide. Survival after cardiopulmonary arrest is usually low and depends on early intervention, quality of cardiopulmonary resuscitation (CPR) and time of initiation of defibrillation post cardiac arrest. Basic life support (BLS) is a key component of chain of survival. The aim of the study was to assess the knowledge of medical students, doctors, nursing students, nursing staff in Basic Life Support.
Methods: A cross sectional study was conducted in Basaveshwara Medical College and Hospital. Those who were willing to participate in the study and who gave informed consent, were administered a self-filling written questionnaire. A total of 400 people were administered the questionnaire, out of which 388 filled the Performa completely.
Results: This study was conducted to evaluate knowledge of basic life support among 388 health care professionals took part in the study of which 64.5% were medical students, 8.7% were doctors, 10.3% were nursing staff and 16.5% were nursing students. The study revealed that there is poor knowledge of basic life support among the respondents and 76% of them wanted basic life support to be included in the curriculum.
Conclusions: Awareness and knowledge about basic life support is mandatory among health care professionals as they encounter such situation on a daily basis and will help them a long way in saving lives, thus knowledge in basic life support is very essential as health care professionals will get exposed to such situation more often.

Keywords: Basic life support, Health care professional, Newborn care

INTRODUCTION

Cardiovascular diseases are the major public health concern worldwide. Sudden cardiac death (SCD) which is often the first manifestation of cardiovascular disease, is also the most common cause of death worldwide.[1] Survival after cardiopulmonary arrest is usually low and depends on early intervention, quality of cardio-pulmonary resuscitation (CPR) and time of initiation of defibrillation post cardiac arrest. Basic life support (BLS) is a key component of chain of survival. It decreases the chance of mortality.[2] Invented in 1960, CPR is a simple but effective procedure that allows almost anyone to sustain life in the early critical minutes after cardiac and respiratory arrest. BLS includes both prompt recognition, immediate support of ventilation and circulation in case of respiratory or cardiac arrest.[3]

A 70% of out-of-hospital cardiac arrests (OHCAs) occur in the home and approximately 50% are un-witnessed. Outcome from OHCA remains poor. Only 10.8% of adult

patients with non-traumatic cardiac arrest who have received resuscitative efforts from emergency medical services (EMS) survive to hospital discharge. In-hospital cardiac arrest (IHCA) has a better outcome, with 22.3-25.5% of adults surviving to discharge.[4]

BLS is the foundation for saving lives after cardiac arrest. Fundamental aspects of adult BLS include immediate recognition of sudden cardiac arrest and activation of the emergency response system, early CPR, and rapid defibrillation with an automated external defibrillator (AED). Initial recognition and response to heart attack and stroke are also considered part of BLS.[4]

It is important that at least the health care professionals should know about the basic life support as they encounter such situation often.[2] Such emergency situation can occur almost on daily basis in a hospital setting. Various studies have been carried out to assess the level of knowledge and attitude towards BLS among health care providers, which reflects its importance in the emergency care of the patients.[5,6] The knowledge of BLS (CPR) is a major determinant in the success of resuscitation and plays a vital role in the final outcome of acute emergency situation.[5] Hence the current study was conducted with the aim to assess the knowledge of medical students, doctors, nursing students, nursing staff in basic life support and objectives to assess the knowledge of medical students, doctors, nursing staff and students in BLS and to understand the ways in which the current knowledge can be expanded.

METHODS

A cross sectional study was conducted in Basaveshwara Medical College and Hospital after obtaining the ethical clearance from the institutional ethical committee for period of 2 months from June 2016 to July 2016, using convenient sampling technique. All the doctors, medical students, nursing staff of Basaveshwara medical college and of nursing college students studying in S.J.M. Institute of Nursing Science, Chitradurga, were included in the study after obtaining permission from the concerned head of the institutions. Those who were willing to participate in the study and who gave informed consent, were administered a pretested and predetermined self-filling written questionnaire in local language. There were 21 questions in the study questionnaire, which included information regarding the levels of knowledge and skills involved in basic life support (BLS). Questions including abbreviation of BLS, AED (automated external defibrillator) and EMS (emergency medical service), sequential steps in BLS, assessment and resuscitation techniques with regard to airway, breathing, circulation in unresponsive victims of different age groups, techniques regarding removal of foreign body obstruction, recognition of early signs of stroke and acute coronary syndrome were present in questionnaire. The information regarding the ways by which the current knowledge of BLS could be improved (whether by including BLS in curriculum, attending workshops, watching videos or by reading books) was also obtained. A total of 400 people were administered the questionnaire, out of which 388 filled the proforma completely. The data thus obtained is analysed using SPSS software version 22 and results were given in percentages.

Statistical analysis

The data was compiled and analysed using Microsoft (MS) Excel work sheet. For categorical data, the number and percentage were used in the data summarized. Data is presented in tables and graphs.

RESULTS

Of the 388 who gave completed questionnaire, 250 (64.5%) were medical students, 64 (16.5%) were nursing staff, 40 (10.3%) were nursing staff and 34 (8.8%) were doctors (Figure 1).

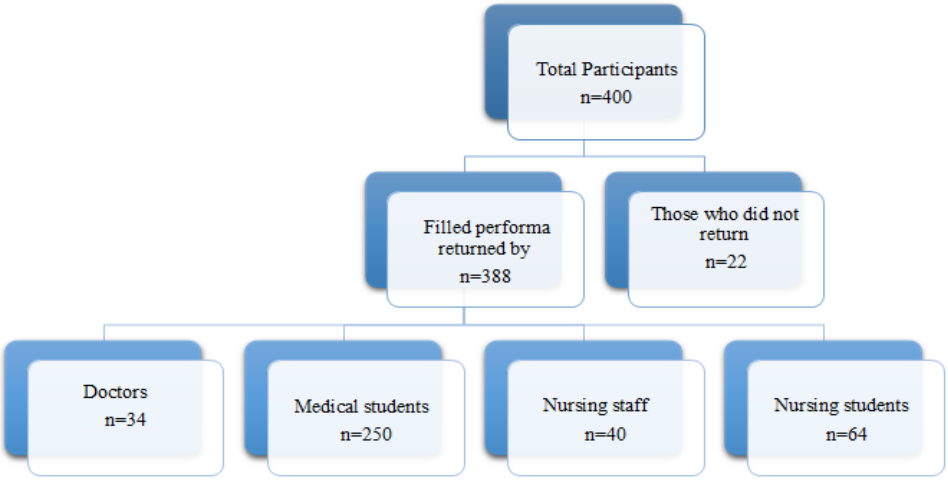

Figure 1: Distribution of the study population.

Table 1: Knowledge regarding abbreviations associated with basic life support.

Question	Percentage of correct answers from the respondents			
	Doctors (n=34) (%)	Nursing staff (n=40) (%)	Medical students (n=250) (%)	Nursing students (n=64) (%)
1. Who knew the abbreviation of BLS	31 (91.7)	29 (72.5)	187 (74.8)	56 (87.5)
2. Who knew the correct abbreviation of AED	27 (79.41)	8 (20)	28 (11.20)	11 (17.18)
3. Who knew the abbreviation of EMS	26 (76.47)	27 (67.50)	108 (43.2)	46 (71.87)

Table 2: Knowledge regarding basic steps of BLS.

Question	Percentage of correct answers from the respondents			
	Doctors (n=34) (%)	Nursing staff (n=40) (%)	Medical students (n=250) (%)	Nursing students (n=64) (%)
1. Who knew the 1st step of BLS	10 (29.4)	10 (25)	90 (36)	17 (26.6)
2. Who knew the correct steps of BLS	11 (32.35)	6 (15)	84 (33)	9 (14.06)

Table 3: Information about correct location of chest compression in BLS and CPR and rescue breathing.

Question	Percentage of correct answers from the respondents			
	Doctors (n=34) (%)	Nursing staff (n =40) (%)	Medical students (n =250) (%)	Nursing students (n=64) (%)
1. Who knew the correct location of chest compress in adults	13 (38.28)	8 (22.5)	120 (48)	13 (20.31)
2. Who knew the correct location Of chest compression in neonates	11 (29.4)	11 (27.5)	60 (24)	18 (28.12)
3. Who knew that they should not stop CPR	25 (73.5)	9 (22.5)	53 (21.2)	11 (17.18)
4. Who knew the correct information about rescue breathing in infants	12 (35.3)	9 (22.5)	57 (22.8)	11 (17.18)

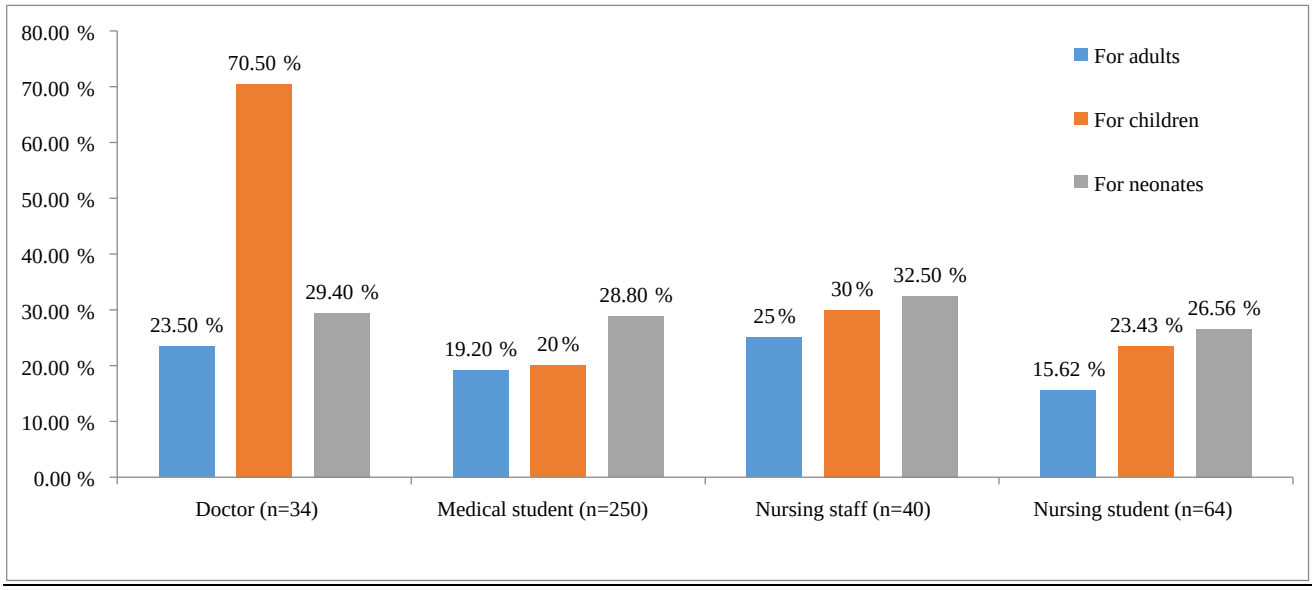

Figure 2: Information about correct depth of chest compression in CPR for adults, children and neonates.

A 91.17% of doctors knew the abbreviation of BLS whereas 74.80% of medical students knew the abbreviation of BLS. A 87.50% of nursing students and 72.50% of nursing staff knew the abbreviation of BLS. When asked for abbreviation of AED, 79.41% of doctors,11.20% medical students, 20% of nursing staffs and 17.18% of nursing students answered it correctly ie, Automated External Defibrillator. Similarly when asked regarding correct full form of EMS (emergency medical service) 76.47% of doctors,71.87% of nursing students, 67.5% of nursing staff and only 43.2% of the students knew it (Table 1).

In the study conducted, 29.40% of doctors, 36% of medical students, 25% of nursing staff and 26.56% of nursing students reportedly knew that scene safety was the first step of basic life support. Regarding the steps of BLS only 32.35% of doctors and 33% of medical students knew that when a patient is unresponsive even after shaking and shouting, they are supposed to activate EMS immediately before they start CPR. Only 15% of nursing staff and 14.06% of nursing students knew they had information about this (Table 2).

Information about correct location of chest compression in BLS and CPR and rescue breathing

In the present study, it was found out that 38.28% of doctors reported that they knew the exact location of chest compression in adults, whereas 48% of medical students reportedly knew the correct location of chest compression in adults. The percentage of nursing staff and nursing student who knew this is 22.50% and 20.31% respectively. A 70.60% of doctors did not know the correct location of chest compression in neonates. A 76% of medical students, 73.50% of nursing staffs and 71.88% of nursing students also did not know the exact location of chest compression of neonates (Table 3).

Present study revealed that, 73.50% of doctors knew that they are not supposed to stop giving CPR even though they do not want to give mouth to mouth respiration. Only 21.20% of medical students knew about this information, whereas 22.50% of nursing staff and 17.18% nursing students knew that they are not supposed to stop CPR. Only 35.30% doctors knew that they are supposed to give mouth to mouth and nose rescue breathing for infants whereas only 22.80% medical students, A 22.50% nursing staffs, 17.18% nursing students know that they supposed to give mouth to mouth and nose rescue breaths (Table 3).

Information about depth of chest compression in CPR for adults, children and neonates

Through our study we found out that, only 23.50% doctors, 19.20% medical students, 25% nursing staff, 15.62% nursing students knew the correct depth of compression to be given in CPR to an adult. 70.5% of doctors, 20% of medical students, 30% of nursing staff and 23.43% of nursing students knew the correct depth of compression to be given in CPR to a child. 29.40% of doctors, 28.8% of medical students, 32% of nursing staff and 26.56% of nursing students knew about the correct depth of compression to be given in CPR to a neonate (Figure 2).

Information about rate of chest compression and ventilation compression ratio

Total of 52.95% of doctors did not know the rate of chest compression during CPR. 64.80% of medical students did not know the rate of compression, 65% nursing staff and 70.32% of nursing students also did not know the rate of chest compression during CPR (Table 4).

Table 4: Information about rate of chest compression.

Participants (who knew the correct rate of chest compression)	Frequency	Percentage (%)
Doctor (n=34)	16	47.05
Medical student (n=250)	88	35.20
nursing staff (n=40)	14	35
nursing students (n=64)	19	29.68

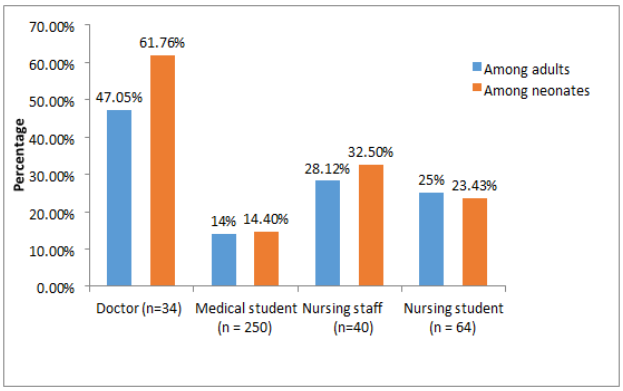

Figure 3: Information about ventilation compression ratio by single rescuer in BLS.

Only 47.05% of doctors knew that the ventilation perfusion ratio in case of single rescuer for an adult victim is 30:2. Only 14% of medical students, 28.12% nursing staffs and 25% of nursing students had knowledge regarding this question. in new born the chest compression: ventilation ratio is 3:1 which only 61.76% doctors, 14.40% medical students, 32.50% of nursing staff and 15.62% of nursing students knew that the in new born the chest compression: ventilation ratio is 3:1 (Figure 3).

Information about choking and drowning and cardio vascular emergencies

A 52.29% of doctors knew that talking to the patient is the first step to be taken to confirm the foreign body aspiration in a patient who starts to show the symptoms of choking. Only 15.60% of medical students, 30% of nursing staff and 7.18% of nursing students knew about this information. A majority of 73.52% doctors, 44.40% of medical students, 25% nursing staff and 18.75% of nursing students knew what to do next when an infant suddenly starts choking while playing with a toy and choking has been confirmed. 29.40% of doctors, 4.40% of medical students, 10% of nursing staff and 7.81% of nursing students knew that they had to keep the person in recovery position, when they witness an adult unresponsive victim who has been submerged in water and just removed from it and he has spontaneous breathing but is unresponsive (Table 5).

Table 5: Information about choking and drowning and cardiovascular emergencies.

Question	Percentage of correct answers from the respondents			
	Doctors (n=34) (%)	Nursing staff (n=40) (%)	Medical students (n=250) (%)	Nursing students (n=64) (%)
1. Who knew the correct initial step to be taken in case of choking	18 (52.29)	12 (30)	39 (15.6)	11 (7.18)
2. Who knew the correct steps to be taken when an infant starts choking suddenly	25 (73.52)	10 (25)	111 (44.4)	12 (18.75)
3. Who knew about keeping in recovery position post drowning	10 (29.4)	4 (10)	11 (4.4)	5 (7.81)
4. Who knew about the symptoms of stroke and measures to be taken	28 (82.35)	15 (37.5)	84 (33.6)	15 (23.43)
5. Who knew the symptoms of myocardial infarction	32 (94.11)	17 (42.5)	92 (36.8)	14 (21.87)

A majority of 82.35% of doctors, a 33.60% of medical students, 37.50% of nursing staff and 23.43% of nursing students indentified that when a person develops sudden slurring of speech and weakness of upper limbs, it is a possibility of stroke and that person might require thrombolysis and hence activation of emergency medical services is required. A majority of 94.1% of doctors identified the symptoms of myocardial infarction (retrosternal chest discomfort, profuse sweating and vomiting in a 50 year old patient). A 36.8% of medical students, 42.5% of nursing staff and 21.87% of nursing students identified the symptoms of myocardial infarction (Table 5).

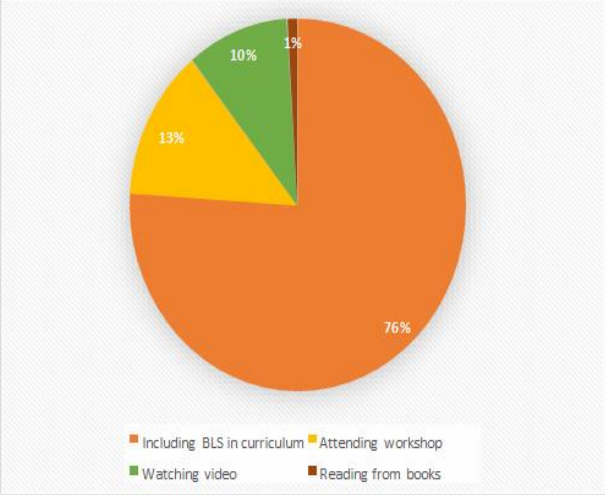

Figure 4: Participants' response to the ways in which the current knowledge of BLS can be improved.

Feedback from the study population

A 76.03% participants wanted BLS to be included in the curriculum, 13.14% wanted to improve their knowledge by attending workshops, 9.79% wanted to improve by watching videos related to the information of BLS and 1.03% wanted to improve by reading about BLS from books.

DISCUSSION

It is essential that every individual in the community should be aware of Basic Life Support to save lives as well as improve the quality of community health. It is all the more important for the health care professionals to know about basic life support as the encounter such situation on daily basis. Performing chest compressions at the correct location increases the likelihood of enhancing coronary circulation and lessens the risks of accompanying complications such as rib fractures. Also the depth, rate and interruption duration of the compressions directly influence the outcome of cardiac arrest.[1]

The present study was conducted to assess the knowledge about basic life support, 388 participants participated in the study. 250 participants were medical students, 34 were doctors, 40 were nursing staff and 64 were nursing students who took part.

The study used a standard questionnaire[6] for assessing the knowledge contained questions about the abbreviation of BLS, AED and EMS, sequential steps in BLS, assessment and resuscitation techniques with regard to airway, breathing and circulation in unresponsive patients of different age groups, techniques regarding removal of foreign body obstruction.

After the assessment it was found that, other than for question number one, which was expansion of BLS (doctors- 91.70%) no other question was answered by more than 90% of participants of any group. More than 80% of doctors (82.35%) and nursing staff (82.35%) knew the correct way to manage a person with sudden slurring of speech and paralysis. Expansion of BLS was correctly done by majority of nursing staff (87.35%) whereas all other questions got the correct answer by less than 80% of the participant group of doctors, medical students, nursing staff and nursing students. The main reason for such lack of knowledge may be due to lesser awareness and practical exposure about basic life support among health care professionals. Doctors group was

found to have better knowledge of BLS when compared to other groups, but still there is scope for betterment. In some of the questions, nurses fared better than medical students. This may be due to more practical exposure. The present study showed that majority of the participants prefers to include basic life support in curriculum to increase the knowledge about basic life support (Figure 4).

The review of literature showed that, the observations in our study were consistent with already existing literature.

In the study conducted by Almesned et al the scores of the respondents were very poor with 49.6% of the respondents scored less than 50%.[1] In our study we found better results with respondents scoring 60% in majority of the questions.

Alsayil et al in their study found that 59.6% of the respondents were not having sufficient knowledge regarding basic life support and how to attend the emergencies.[5] These findings are consistent with our results.

Chandrasekaran et al in their study found that awareness of basic life support (BLS) among students, doctors and nurses of medical, dental, homeopathy and nursing colleges is very poor with 84.82% of the respondents scoring less than 50% which is huge void and our studies substantiate the findings.[6]

A study was conducted by Sharma Rand Attar, regarding adult basic life support awareness and knowledge among medical and dental interns passing out from K.S. Hegde Medical College, Mangalore. It showed that even though almost all interns had heard about BLS, the correct knowledge regarding BLS was lacking among them.[7] Similar to the findings of the current study.

Zaheer et al conducted a study in Karachi, Pakistan among under graduate medical students in Karachi, Pakistan, regarding their awareness of BLS. It was found that around 60% of them had no knowledge of BLS. The authors concluded that inclusion of BLS course would increase awareness and application of this valuable lifesaving maneuver.[8] Which reinstates the results we found in our study.

Raghavan and group from resuscitation council of southern Africa, analyzed the level of knowledge and skill in basic resuscitation among medical practitioners and tried to determine the differences in characteristics between those with and without knowledge and skills. In this cross sectional study they also found poor knowledge and skills of basic resuscitation among medical practitioners as less than 25% of them scored more than 50% marks.[9] Our results were also on the similar lines.

CONCLUSION

Awareness and knowledge about basic life support is mandatory among health care professionals as they encounter such situation on a daily basis, and will help them a long way in saving lives. Such situations not only occur at hospital settings but can also occur at outdoor settings (Anywhere), thus knowledge in basic life support is very essential as health care professionals will get exposed to such situation more often. This study focused on the evaluation of knowledge of basic life support among health care professionals.

This study showed that there is a lack of knowledge about basic life support among health care professionals (doctors, nursing staffs, medical student, nursing students), which is also reflected in studies conducted elsewhere. A 76% of the participants opined that by including the topic basic life support in the curriculum would improve the knowledge of BLS among the medical and paramedical professionals.

Recommendations

The study highlights the importance of conducting workshops and seminars on Basic Life support and including Basic life support in the routine academic curriculum wherein the students can be trained in the essential and life-saving component in the chain of survival.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Rajashekar S, Nagendra Gowda MR, Anthony A. Knowledge of basic life support among health care professionals in a tertiary care hospital in Chitradurga. Int J Community Med Public Health 2018;5:3969-75.