

Evaluation of Awareness and Knowledge of Basic Life Support Among Physiotherapy Students

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ABSTRACT

BACKGROUND: Cardiovascular diseases are the major public health concern worldwide. Sudden cardiac death (SCD), is the most common cause of death worldwide. BLS- Basic life support is a key component of chain of survival. It helps to maintaining an airway and supporting breathing and circulation without using any equipment. It involves CPR- Cardiopulmonary resuscitation - An evolving lifesaving technique in modern medicine that includes a series of lifesaving actions that improve survival rates. Physical therapists work in collaboration with clinical, nursing, emergency staff. They use exercise as a therapeutic approach, so they must have good knowledge and skills in CPR, not only to deal with possible adverse cardiac events during exercise but also because the widespread application of CPR is early defibrillation can significantly reduce cardiac mortality.

MATERIALS AND METHODS: Self-administered questionnaire of 20 questions was formed and link of this questionnaire was spread from social media platforms. Questionnaire had three parts - Demographic data, Information regarding to Past experience of BLS, Knowledge about CPR. Total 105 students of all four years of B. physiotherapy and MPT Students filled the form. Statistical analysis of 101 students was done.

RESULTS: Results show that physiotherapy students have poor to average knowledge about BLS. Especially in knowledge of EMS, Methods of ventilation, chest compression depth, Rate of compression, choking strategies and recovery position after drowning.

CONCLUSION: knowledge and awareness about BLS among physiotherapy students is inadequate and research is highly needed to establish effective strategies for improving the same.

KEY WORDS: Basic life support, Physiotherapy students.

INTRODUCTION

The life of an individual is influenced by various factors including the condition of health, education, occupation, and socioeconomic status. Among the various factors, the condition of health influences the life of an individual to a greater extent. There are various systemic conditions of health like myocardial infarction, congestive

cardiac failure, and stroke which may cause even death of an individual.^[1]

Cardiovascular Pathologies are the major public health concern now a days. 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.

BLS- Basic life support is a key component of chain of survival. [2] It decreases the chance of mortality. It helps to maintaining an airway and breathing, circulation without using any equipment. [3] which involves CPR- Cardiopulmonary resuscitation - It is an evolving lifesaving technique in modern medicine that includes a series of life saving actions that improve survival rates after SCAs. Some studies have shown that immediate CPR after collapse due to ventricular fibrillation doubles and even triples the chances of survival. Conversely, the chance of survival decreases by 7% to 10% for each minute of delayed CPR. [4]

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. [5]

Seventy percent of out-of-hospital cardiac arrests (OHCAs) occur in the home, and approximately 50% are unwitnessed. Outcome from OHCA remains poor. Only 10.8% of adult patients with non-traumatic cardiac arrest who have received resuscitation efforts from emergency medical services (EMS) Who survive to hospital discharge. In-hospital cardiac arrest (IHCA) has a better outcome, with 22.3% to 25.5% of adults surviving to discharge. [6] So, it is important for all medical and paramedical staffs to know about BLS as they encounter life-threatening emergencies in their routine life. [7]

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. [4] As recommended by the American Heart Association (AHA, 2004), the students and teachers should be given training regarding the BLS. [6] BLS has been routinely recommended training procedure for all health- care professionals

in the US since 1966, and their demand for courses is increasing throughout the world. However, BLS and resuscitation training is not routinely practiced in developing countries like India, and there is still no standard. Hence, in Indian scenario, doctors working in casualties of private and government hospitals will handle most of the emergencies.

There are not many studies in India to assess the effect of these training programs. Hence, it feels that students should be trained with the necessary skills of BLS, with the effectiveness of the training program assessed thereafter. With ever-increasing heart diseases, road traffic accidents, head injuries, etc., as well as the increase in morbidity and mortality following thereafter, it is very prudent to train medical graduates to administer BLS properly.

Skilled students can contribute in reducing the problems of morbidity and mortality due to life-threatening emergencies. [8] Physical therapists work in collaboration with clinical, nursing or emergency staff to properly respond in an emergency situation. They using exercise as a therapeutic approach, so they must have good knowledge and skills in CPR not only to deal with possible adverse cardiac events during exercise but also because the widespread application of CPR is early defibrillation can significantly reduce cardiac mortality. CPR is the technique for delivering basic life support (BLS) until advanced life support (ALS) can be delivered or circulation is restored and spontaneous ventilation. Hence, the present study was conducted with the aim of assessing the awareness and knowledge involved in BLS/CPR and the prospective of introducing these skills into their regular Physiotherapy curriculum.

A physiotherapist is a medical professional who work in an intensive and critical care facility and treats heart disease even though during exercising which requires knowledge of BLS, so it is important to assess these professionals' knowledge and awareness about BLS.

MATERIALS & METHODS

An observational study was conducted at Department of Shree M. M. shah Physiotherapy college, other different Government and private Physiotherapy colleges, Clinics and Hospitals. Total 101 Students (Both males and females) of BPT and MPT were taken.

INCLUSION CRITERIA:

- Age Group: >19 years
- Second year, Third year, Final year B. Physiotherapy students and Interns of

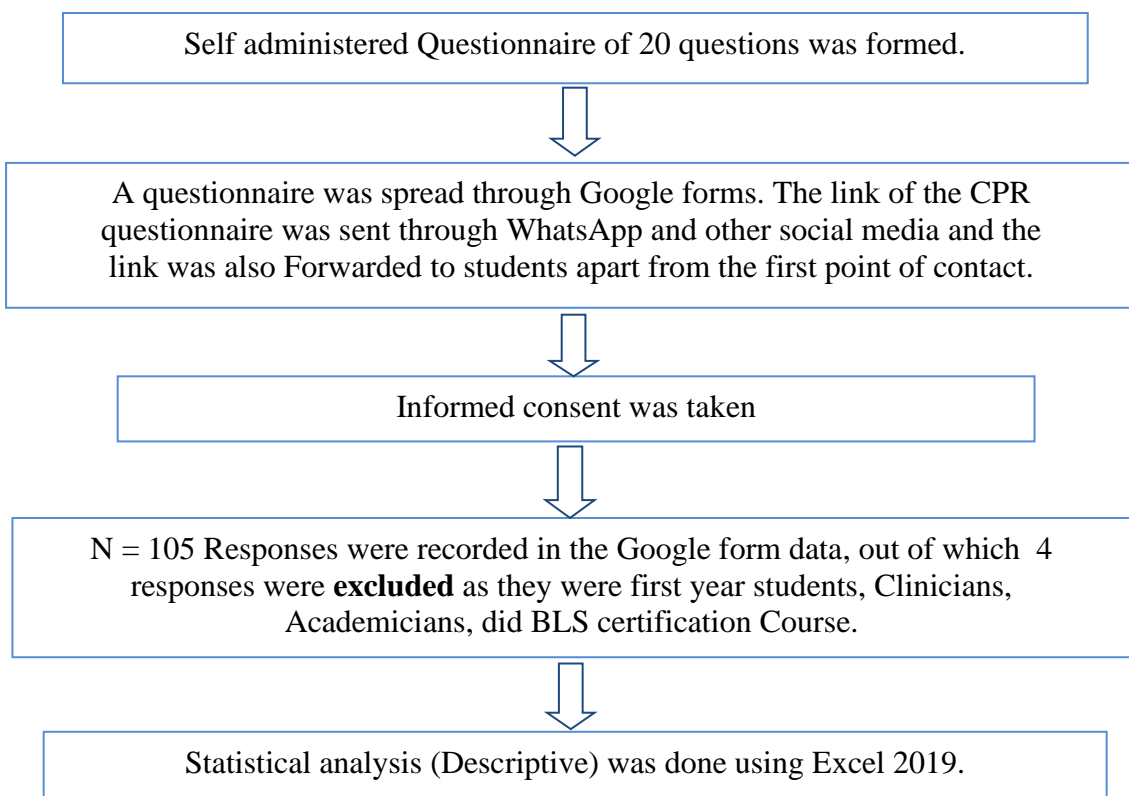
Physiotherapy, Master students of Physiotherapy

- Students who were able to understand English language
- Both male and female students
- Students who willing to participate in the study

EXCLUSION CRITERIA:

- First year Physiotherapy students and academicians
- BLS/ACLS Course Certified Students
- Non paramedical students

METHOD (FLOW-CHART)



OUTCOME MEASURE

CPR QUESTIONNAIRE

Self-administered questionnaire was formed according to the recent AHA - American health association guidelines. This questionnaire consisted of three parts. The

first part include- Demographic data , Second part include- information about previous experience and certified course related (awareness) to BLS. In third part include- total 20 questions regarding knowledge of Basic life support.

1. What is the abbreviation of "BLS"?
a. Best Life Support b. Basic Life Support c. Basic Lung Support d. Basic Life Services
2. When you find someone unresponsive in the middle of the road, what will be your first response? (Note: You are alone there)
a. Open airway b. Start chest compression c. Look for safety d. Give two breathings
3. If you confirm somebody is not responding to you even after shaking and shouting at him, what will be your immediate action?
a. Start CPR b. Activate EMS c. Put him in recovery position d. Observe
4. What is the location for chest compression?
a. Left side of the chest b. Right side of the chest c. Mid chest d. Xiphisternum
5. What is the location for chest compression in infants?
a. One finger breadth below the nipple line b. One finger breadth above the nipple line c. At the intermammary line d. At Xiphisternum
6. If you do not want to give mouth- to-mouth CPR, the following can be done EXCEPT
a. Mouth-mask ventilation and chest compression. b. Chest compression only c. Bag mask ventilation with chest compression d. No CPR
7. How do you give rescue breathing in infants?
a. Mouth-to-mouth with nose pinched b. Mouth-to-mouth and nose c. Mouth-to-nose only d. Mouth-to-mouth without nose pinched
8. Depth of compression in adults during CPR
a. 1.5 to 2 inches b. 2.5 to 3 inches c. 1 to 1/2 inches d. 1/2-1 inch
9. Depth of compression in Children during CPR
a. 1½ - 2 inches b. 2½ - 3 inches c. One-half to one-third depth of chest d. ½ - 1 inch
10. Depth of compression in neonates during CPR
a. 1½ - 2 inches b. 2½ - 3 inches c. ½ - 1 CM d. One-half to one-third depth of chest
11. Rate of chest compression in adult and Children during CPR
a. 100 / min b. 120/min c. 80/min d. 70 / min
12. Ratio of CPR, single rescuer in adult is
a. 15:2 b. 5:1 c. 30:2 d. 15: 1
13. In a new born the chest compression and ventilation ratio is
a. 15:2 b. 5:1 c. 30:2 d. 3:1
14. What does abbreviation AED stands for?
a. Automated External Defibrillator b. Automated Electrical Defibrillator c. Advanced Electrical Defibrillator d. Advanced External Defibrillator
15. What does abbreviation EMS stands for?
a. Effective Medical Services b. Emergency Management Services c. Emergency Medical Services d. External Medical Support
16. If you and your friend are having food in a canteen and suddenly your friend starts expressing symptoms of choking, what will be your first response?
a. Give abdominal thrusts b. Give chest compression c. Confirm foreign body aspiration by talking to him d. Give back blows
17. You are witnessing an infant who suddenly started choking while he was playing with the toy, you have confirmed that he is unable to cry (or) cough, what will be your first response?
Start CPR immediately Try to remove the suspected foreign body by blind finger sweeping technique Back blows and chest compression of five cycles each then open the mouth and remove foreign body only when it is seen Give water to the infant
18. You are witnessing an adult unresponsive victim who has been submerged in fresh water and just removed from it. He has spontaneous breathing, but he is unresponsive. What is the first step?
a. CPR for two minutes and inform EMS b. CPR for one minute and inform EMS c. Compress the abdomen to remove the water d. Keep him in recovery position
19. You noticed that your colleague has suddenly developed slurring of speech and weakness of right upper limb. Which one of the following can be done?
a. Offer him some drinks, probably hypoglycemia b. Possibly stroke, get him to the nearest clinic c. Possibly stroke, he may require thrombolysis and hence activate emergency medical services d. May be due to sleep deprivation, make him sleep.
20. 50-year-old gentleman with retrosternal chest discomfort, profuse sweating and vomiting. What is next?

Probably myocardial infarction, hence activates EMS, give an aspirin tablet and allow him to rest
 Probably acid peptic disease, give antacid and Ranitidine
 Probably indigestion, hence give soda
 Take him by walk to the nearest clinic.

STATISTICAL ANALYSIS

Data were summarized using Descriptive statistics of Mean and Standard deviation. Which was done by using Excel 2019.

RESULT

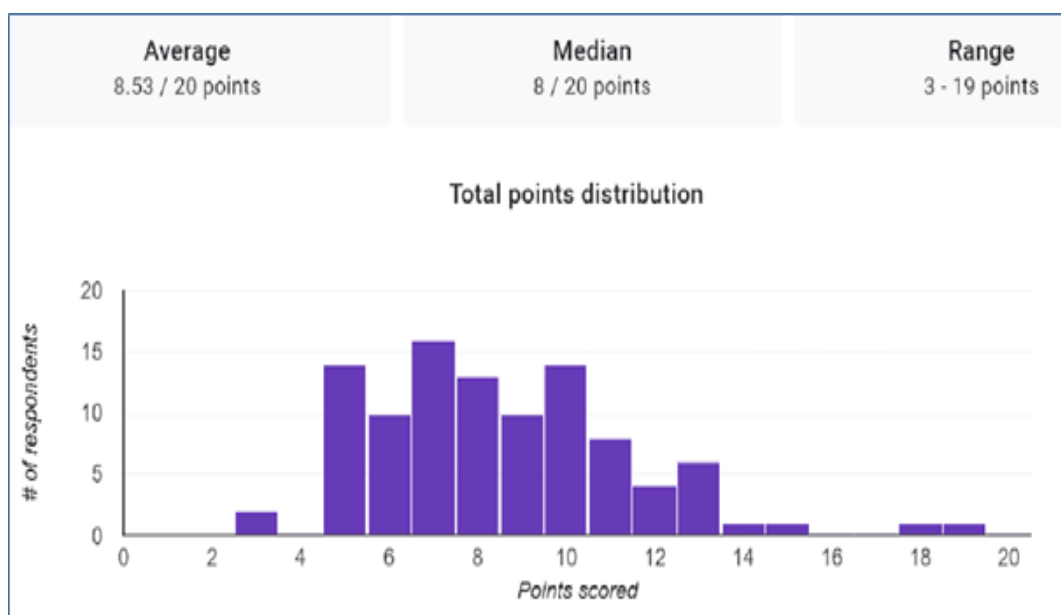
Mean age (years) of students in the study is 22.24. Out of 101 students, 80 (79.2%)

students are from BPT and 21 (20.9%) students are from MPT participated in the study. Mean number of Second year, third year, final year, interns and MPT students are shown in table 1.

EDUCATIONAL LEVEL NUMBER OF STUDENTS	
Second Year	20
Third Year	20
Final Year	24
Interns	16
Mpt Students	21

Table 1: Mean Number of Students in Each Year

Result shows, Average Score is 8.53 out of 20 for all Physiotherapy students. The score of all students is in the range of 3 - 19.



Graph 1: Average score of all students

Result shows only 21.7% (n=22) of them could get more than 10 questions correct. No one among respondents had complete knowledge of BLS (n=0) who get all 20 questions correct. Table 2 shows Questions with a less than 50% of correct response rate.

While only 17.8% students have past experience of giving CPR. Remaining

82.2% have not any kind of past experience of giving CPR. Only 11.9% have done certified course regarding to Basic life support (BLS) before. 88.1% have not certified yet for any BLS/ACLS course. So, according to the findings and Likert scale (<20%) physiotherapy students are not at all aware about Basic life support.

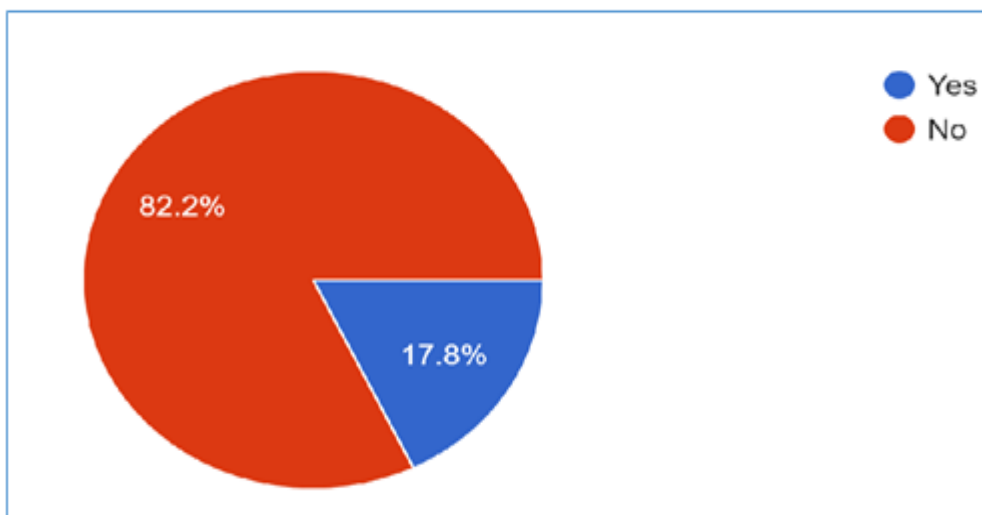


Chart 1: Shows % of students who have past experience of giving CPR

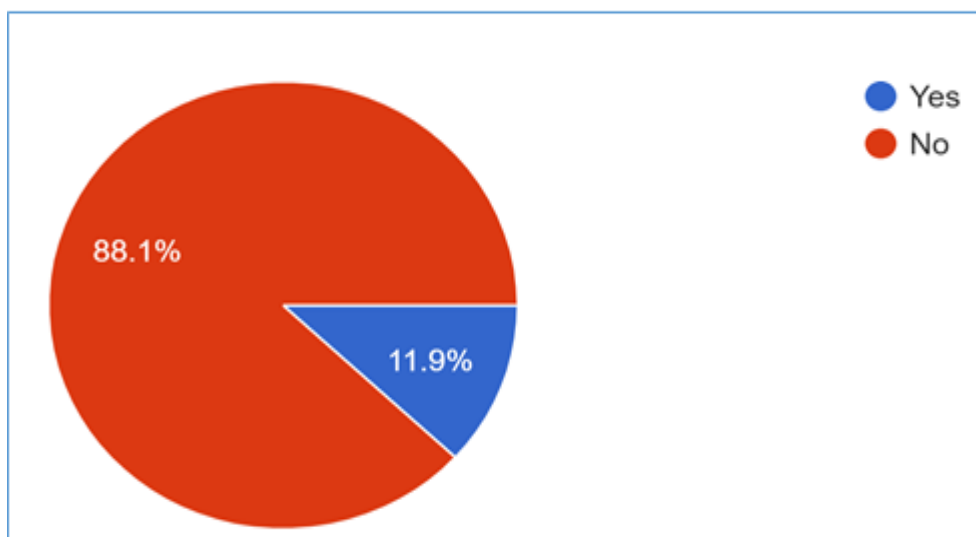


Chart 2: Shows % of students who have done Certified course of CPR

Among the whole sample (n=101), 97% students had knowledge of Abbreviation of BLS (Basic life support). When asked about the first response after seeing someone on the road, 39.6% students gave correct response of “looking for safety” first. Only 29.7% of sample knew that “Activate the EMS” is the first step after confirming somebody is not responding even after shaking and shouting at him/her.

While 56.4% of them were aware about the location for Chest Compression in Adults while giving CPR. Out of total, 41.6% of sample said that Location for chest compression in infants while giving CPR is “one finger breadth below the nipple line”. Only 25.6% of sample knew another options for ventilation if in case of mouth-to-mouth

ventilation is not possible. 24.8% of sample reacted correct that in infants, rescue breathing can be given Mouth-to-mouth and nose both without pinching the nose. 46.5% students were aware about the Depth of compression in adults during CPR. Whereas only 29.7% students were aware about the Depth of compression in Children during CPR. While 33.7% of students were aware about the Depth of compression in neonates during CPR.

Out of total, 29.7% students gave correct answer for the Rate of chest compression in adult and Children during CPR. 52.5% responders knew the Ratio of CPR, while single rescuer in adult is available. While 35.6% students knew the chest compression and ventilation ratio in

newborns. 44.6% had knowledge of abbreviation of AED (Automated External Defibrillator). 82.2% students reacted correct answer for abbreviation of EMS which is Emergency Medical Services.

While students were asked about the knowledge of choking, only 20.8% of total students knew that first they have to Confirm foreign body aspiration before giving any abdominal thrusts. 52.5% gave correct response when they are asked about choking in infants. Only 7.9% of students knew about the recovery position of adult who has been submerged in fresh water and

just removed from it and has spontaneous breathing, but unresponsive. 41.6% of students were aware about emergency medical services activation. 61.4% were aware about the symptoms of Myocardial infarction and what kind of medicine should be give immediately.

These results shows that Physiotherapy Students have poor to average (Likert scale 0% to 40%) knowledge about BLS. Especially in knowledge Of EMS, Methods of ventilation, chest compression depth, Rate of compression, choking strategies and recovery position after drowning.

QUESTIONS WITH LESS THAN 50% SORE	CORRECT RESPONSE
2. When you find someone unresponsive in the middle of the road, what will be your first response? (Note: You are alone there)	39.6%
3. If you confirm somebody is not responding to you even after shaking and shouting at him, what will be your immediate action?	29.7%
5. What is the location for chest compression in infants while giving CPR?	41.6%
6. If you do not want to give mouth- to-mouth CPR, the following can be done EXCEPT:	25.7
7. How do you give rescue breathing in infants?	24.8%
8. Depth of compression in adults during CPR?	46.5%
9. Depth of compression in Children during CPR?	29.7%
10. Depth of compression in neonates during CPR?	33.7%
11. Rate of chest compression in adult and Children during CPR?	29.7%
13. In a new born the chest compression and ventilation ratio is?	35.6%
14. What does abbreviation AED stands for?	44.6%
16. If you and your friend are having food in a canteen and suddenly your friend starts expressing symptoms of choking, what will be your first response?	20.8%
18. You are witnessing an adult unresponsive victim who has been submerged in fresh water and just removed from it. He has spontaneous breathing, but he is unresponsive. What is the first step?	7.9%
19. You noticed that your colleague has suddenly developed slurring of speech and weakness of right upper limb. Which one of the following can be done?	41.6%

Table: 2 - Questions with a <50% of correct response rate

DISCUSSION

Early identification and intervention of cardiac arrest victims by performing CPR forms the cornerstone of BLS, which helps in sustaining the patient's life until medical care arrives and the patient is transferred to hospital settings for further advanced management. Medical personnel reported in researches that a victim of cardiac arrest has the high rate of survival without neurological damage if care is received within 3–5 minutes after any incident happened. To give this kind of immediate

care, BLS knowledge and skill is every important to prevent and save the life of suddenly collapsed patient.

These skills are considered to be so much important that CPR and first aid training is mandatory in most of the local, national, and international industries, institutions, firms, construction sites, and many other professional and non-professional areas of life. Especially health science and medical students should become knowledgeable, have good attitude and adequate skill in order to deliver standard quality BLS.^[9]

The present study evaluated the Awareness and knowledge of BLS among physiotherapy Students. Total 101 students participated in the study. The study used a standard questionnaire 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.

This study revealed that the participants had inadequate knowledge on BLS. The mean score of the knowledge about the skills of BLS in the study group was 8.53 with a score range of 3-19. In this study, only one question was correctly answered by 97% of the participants. Another key area in study has identified is the positive attitude of the participants towards BLS and their readiness to perform it despite the paucity in their knowledge.

Our results are consistent to the study conducted by Jonathan Webber et al, which revealed that physical therapists who employed in private setups and community hospitals have not up-to-date CPR skills, Knowledge and certification.^[10]

Meena Kumari K, babu Amberkar et al, did study and showed a similar result as our study and concluded that CPR knowledge in medical students was found to be average.^[11] One another study done by Aroor et al, which suggests that mean score of awareness and knowledge of basic life support (BLS) was 4.16 of a 10-maximum, which indicating a poor knowledge score among nursing, dental and medical individuals including undergraduate, internship and postgraduate groups in South India.^[12]

Moreover, we found that trained and more self-confident physiotherapists did answer better about CPR compared to those who had not been trained and/or had lower self-confidence. This fact underlines the importance of training in achieving and maintaining a solid theoretical background in CPR.^[13]

Another study done by Dr. Himadri K. Tripathi, in 2021 which was titled “Cardiopulmonary Resuscitation Knowledge/Awareness Among Final Year B. Physiotherapy Students: A Questionnaire-Based Study”. This cross-sectional study involved final year B. Physiotherapy students from different colleges of Ahmedabad. Results showed that average score was 44.53% (N=200). While only 31.5% of them were completely aware of the universal compression rate, 62.5% were aware of the compression depth in adults whereas only 19% were aware of the compression depth in infants. So, this questionnaire survey demonstrated that CPR skills in physiotherapy students were insufficient, which could be improved by well-designed certified training programs.^[14]

One another literature by Shanta Chandrasekaran which suggests that, No one among respondents had complete knowledge of BLS. Only two out of 1054 (0.19%) had secured 80 – 89% marks, 10 out of 1054 (0.95%) had secured 70 – 79% marks, 40 of 1054 (4.08%) had secured 60 – 69%marks and 105 of 1054 (9.96%) had secured 50– 59% marks. A majority of them,894 (84.82%) had secured less than 50% marks. They concluded that Awareness of BLS among students, doctors and nurses of medical, dental, homeopathy and nursing colleges is very poor. The aspects on which they were interrogated were about the abbreviation of BLS, AED and EMS (Emergency Medical Service), sequential steps in BLS, assessment and resuscitation techniques.^[15]

Other studies also show that, only few participants are able to arrange a. Airway, b. Breathing, and c. Chest compression in orderly sequence. This is because of the fact that majority of the study subjects are not aware of the recent change of A-B-C sequence to C-A-B as per AHA 2010 guidelines.

Because the updating of the guidelines every 5 years, repetitive training is needed to ensure the changes. The Medical Council

of India has already incorporated emergency medicine as a separate speciality. The awareness and basics of ACLS of the medical and paramedical team and BLS as the first aid will be the prime responsibility of this new emergency specialty.^[16]

CONCLUSION

In conclusion, this study has revealed a critical issue that, physiotherapist/intern/student lack adequate knowledge in CPR/BLS which should be addressed promptly. If we, as healthcare workers, really want to reduce the morbidity and mortality of a cardiac arrest victim, the training of BLS and re-enforcement every year thereafter during medical graduation is a must.

Most of the students had brief theoretical BLS knowledge and no previous practical training of CPR in college. This may have accounted for the average knowledge in present study.

So, we strongly recommend that CPR/BLS should be a core competency across all physiotherapy programs.

Declaration by Authors

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