

## AWARENESS, KNOWLEDGE AND ATTITUDES OF BASIC LIFE SUPPORT AMONG COMMUNITY HEALTH OFFICER (CHO) TRAINEES AT BABA RAGHAV DAS MEDICAL COLLEGE GORAKHPUR, UP, INDIA

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### Abstract

**Background:** Basic life support (BLS) with cardiopulmonary resuscitation (CPR) provided at the right time greatly improves survival following cardiac arrest. Adequate knowledge and skills related to BLS are essential requisites for Health care workers. This study was aimed to explore the awareness, knowledge and attitudes related to Basic Life Support among Community Health Officer (CHO) Trainees at BRD Medical College, Gorakhpur, India.

**Methods:** After approval from Institute Ethical Committee and informed consent from the participant, the present descriptive, cross-sectional study was conducted among 118 CHO Trainees at BRD Medical College, Gorakhpur, in November 2019, using a self-administered pretested, semi-structured questionnaire based on knowledge and attitude of BLS and CPR.

**Results:** Majority of participants had poor to good knowledge about CPR. None of the participants were able to answer all the questions correctly. Main source of information was lectures in classes, YouTube videos and healthcare workers. Majority of participants have overall positive attitude for providing basic life support to victims.

**Conclusions:** This study has highlighted a critical issue that a majority of trainees have limited knowledge about CPR. We recommend the mandatory implementation of CPR and basic life-support training for all Health care workers across India, and the need for incorporation of the BLS teaching into their curriculum and reinforcement and refresher courses at frequent intervals.

**Key words:** Basic life support (BLS), Cardiopulmonary resuscitation (CPR), Sudden Cardiac Arrest (SCA), emergency medical services (EMS), American Heart Association (AHA), Compressions Only Life Support (COLS), Community health officer (CHO)

### Introduction

Cardiac arrest is one of the leading causes of premature death in the modern world. Data from previous studies suggest that more than 3 million sudden cardiac deaths occur worldwide every year and survival is lower than 8%.<sup>1-3</sup> It has also been estimated that by the end of present decade, 60% of world's heart disease is expected to occur in India and proportionately the incidence and prevalence is expected to rise.<sup>4</sup> Basic life support (BLS) is the foundation of life saving steps following out-of-hospital cardiac arrest.<sup>5</sup> The ultimate aim of any basic life support training course is not just to enrich the health care providers and lay rescuers with the knowledge and skills to perform cardiopulmonary resuscitation (CPR), but also to cultivate a strong conviction among them to be willing to help should such an actual dire need arise in real world.<sup>6</sup> Time is of utmost importance in improving the chance of survival of a cardiac arrest victim<sup>7</sup> as every minute delay without the initiation of BLS will decrease the chance of survival by 7–10%.<sup>8</sup> This is especially so if the time taken from the activation of the emergency medical services (EMS) to the time when they arrive at scene is longer than the critical first 5 min. Furthermore, as over 75% of all out-of-hospital

cardiac arrests occur at home<sup>9</sup>, there is a need to disseminate the knowledge and skills of BLS to a wider sphere of the population, encompassing not just the uniformed members of society like the police and the fire squads, but also the ordinary citizens at home as well. The ability to respond quickly and effectively to cardiac arrest situation rests on health care team as they are supposed to be competent in emergency lifesaving procedure of cardiopulmonary resuscitation.<sup>10,11</sup> However studies conducted in the past show a lack and inconsistency in knowledge regarding the CPR and defibrillation.<sup>12</sup>

Chandrasekaran et al<sup>13</sup> in their study demonstrated inadequate BLS knowledge among medical, dental and nursing students in a medical college in Tamil Nadu. Various studies also reveal that retention of knowledge and skills related to BLS deteriorates with increasing duration without periodic refresher training.<sup>14-16</sup> The American Heart Association (AHA) resuscitation guidelines recommend that all under graduated students who are in contact with the patients should have regular resuscitation training.<sup>17</sup> The Medical Council of India recommends that medical undergraduate students should have adequate

knowledge and skills to manage common acute emergencies.<sup>18</sup> According to guidelines for CPR<sup>19</sup>, all citizens should have some knowledge of BLS, both as laymen, i.e. people without formal medical education, and as healthcare professionals out of their workplace and without medical equipment, when in the role of eyewitnesses. Basic life support includes recognizing signs of Sudden Cardiac Arrest (SCA), obstruction of the airway by a foreign body and performance of CPR. Updated guidelines of CPR have been presented in 2020 by American Heart Association. The fact that the chest compressions Only Life Support (COLS) has gained more importance with the announcement of the AHA scientific statement in April 2008<sup>20</sup> is certainly good news for the community responding to an adult stranger who collapses suddenly outside of the hospital. The present study has been conducted to investigate the knowledge of CPR among CHO Trainees which will help in understanding the deficits and for further formulating medical education protocol in this regard and also to assess their attitude towards CPR.

### Materials and Methods

The present cross-sectional study was conducted among 118 CHO trainees at BRD Medical College, Gorakhpur, in November 2019, using a self-administered pretested, semi-structured questionnaire based on knowledge and attitude of BLS and CPR. The questionnaire did not contain the name of the participants to maintain the confidentiality of the participants. The purpose of study was explained to study subject to avoid ambiguity and misunderstanding. Questionnaire consisting of 2 parts was prepared. Part I consisted of Demographic details of the participants and Part II was used to summarize the awareness, knowledge and attitude of the participants. Data were collected before their BLS training session. They were also enquired about their readiness or reluctance in performing BLS in an emergency situation either in a hospital or in an out-of-hospital setting. Those who expressed reluctance in performing BLS were enquired about the reasons for their

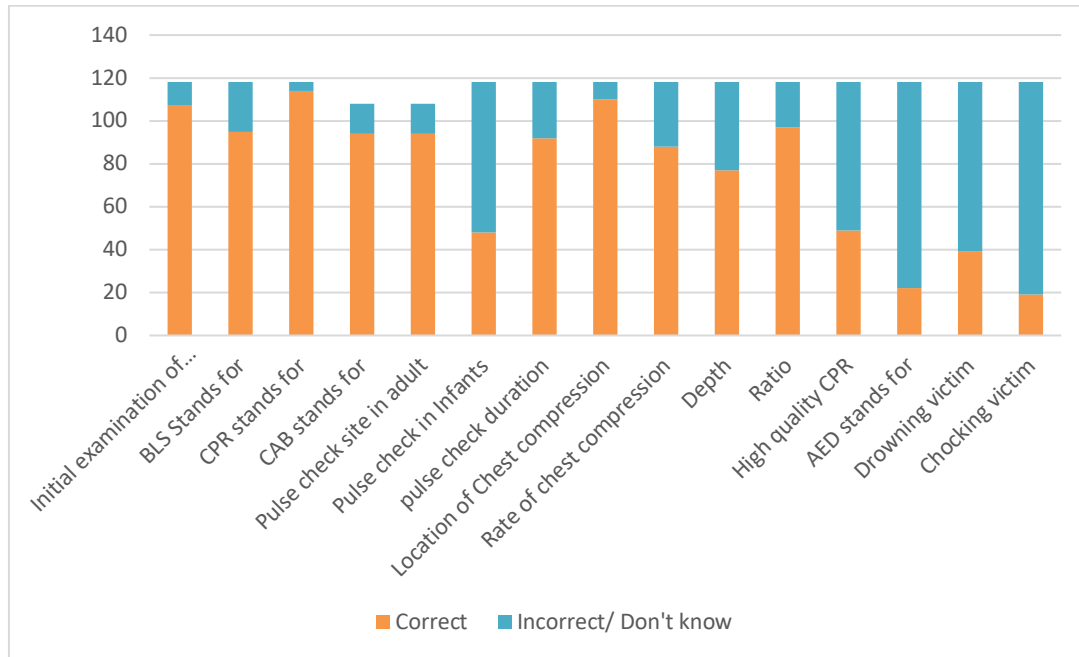
reluctance to identify the possible barriers. The validity of the questionnaire was determined by doing a pilot study among a sample of 20 paramedical students, after which appropriate changes were made in the questionnaire. Total number of questions answered correctly in each category was counted and scored 1 for each correct answer. Total scores are converted into percentages and divided into pre-fixed grades as follows: >80 as excellent, 60–80 good, and <60 poor. So, in knowledge section those who secured 9 or less were graded as Poor, 10-12 as Good and 13-15 as Excellent. In attitude section responses were recorded on 5-point Likert scale. The responses were recorded in Microsoft Office Excel 2019. Statistical analysis was performed using Statistical Package for Social Sciences (SPSS) version 20. Descriptive statistics were expressed in percentages. Knowledge and attitude score among the participants was expressed as mean and standard deviation. Data were represented as tables, bar chart and pie chart as appropriate.

### Results

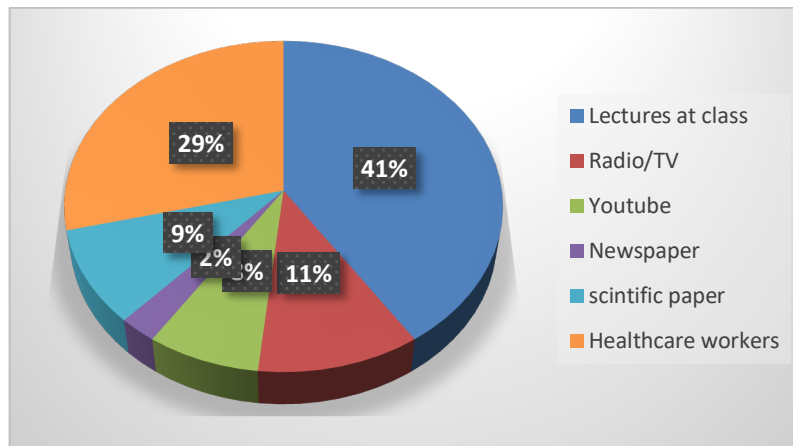
One hundred and eighteen completely filled responses were obtained from participants between ages 21 year to 34 year (mean age 25.81, standard deviation 3.52). There were 25 male (21.2%) and 93 female (78.8%) participants among them 79 (66.9%) were not taken any training for Basic Life Support and 39 (33.1%) had undergone training of BLS before CHO training (Table 1). Mean knowledge score of participants were 9.71 (out of 15), standard deviation 1.69 with lowest score of 6 and highest score 12 (Table 4). None of the participants were able to answer all the questions correctly. Majority of the participants had poor knowledge about High quality CPR, management of drowning/choking patients and about AED. Only 48 (%) participants knew correctly about the pulse check site in infants. (Figure 1). Different sources of information obtained regarding CPR are compiled in Figure 2.

**Table 1: Participants Details**

Age (Year)	25 and less	61 (51.7%)
	More than 25	57 (48.3%)
Gender	Male	25 (21.2%)
	Female	93 (78.8%)
BLS training in past	Yes	39 (33.1%)
	No	79 (66.9%)



**Figure 1: Distribution of Knowledge status**



**Figure 2: Sources of knowledge about CPR**

Table 2 shows the knowledge grade of participants. 55.9% participants had good knowledge, 44.1% showed Poor knowledge and none of the participants showed excellent grade.

**Table 2: Knowledge of Participants**

Knowledge Grade		
	Frequency	Percent
Poor	52	44.1
Good	66	55.9
Excellent	0	0.0
Total	118	100.0

Responses of attitude questionnaire are compiled in table 3. Majority of participants have overall positive attitude about providing basic life support to victims.

**Table 3: Distribution of attitude questionnaire responses**

	Questions	Definitely no frequency (%)	Probably no	Can't say	Probably yes	Definitely yes
1	Are you confident of recognizing a person in need of basic life support?	5 (4.2)	4 (3.4)	8 (6.8)	28 (23.7)	73 (61.9)
2	Are you confident of providing chest compressions?	5 (4.2)	3 (2.5)	4 (3.4)	30 (25.4)	76 (64.4)
3	Are you confident of providing mouth-mouth ventilation (MMV)?	12 (10.2)	27 (22.9)	8 (6.8)	33 (28.0)	38 (32.2)
4	Are you willing to provide chest compressions to a stranger?	7 (5.9)	4 (3.4)	10 (8.5)	32 (27.1)	65 (55.1)
5	Will you be willing to provide mouth-mouth ventilation to a stranger?	13 (11.0)	17 (14.4)	16 (13.6)	35 (29.7)	37 (31.4)
6	Do you think CPR training should be mandatory to health care professionals?	0	4 (3.4)	27 (22.9)	42 (35.6)	45 (38.1)
7	Do you think CPR training should be offered to general public?	0	1 (0.8)	31 (26.3)	62 (52.5)	24 (20.3)

Mean attitude score of participants was 28.07 (SD 4.45) with minimum 15 and maximum 35 (Table 4). This shows that participants were largely having positive attitude towards performing CPR and they may save lives if trained adequately.

**Table 4: Knowledge and Attitude Score**

	Mean	Std. Deviation	Minimum	Maximum
Knowledge	9.71	1.69	6	12
Attitude	28.07	4.45	13	35

Sixty-nine (58.5%) participants agreed that they have seen CPR being done on a victim but only 23 (19.5%) had actually participated (Table 5). Among those who have never done CPR (80.5%) some were reluctant to perform CPR and others never got such opportunity.

**Table 5: CPR practice**

	Yes	No
Have you ever seen a CPR being done?	69 (58.5)	49 (41.5)
Have you ever done CPR?	23 (19.5)	95 (80.5)

Participants were asked about their willingness to perform CPR to the cardiac arrest victims in out of hospital settings. Their responses are compiled in Table 6. The major concern was fear of legal issues (73.7%) and fear of problems by relatives and bystanders (71.2%) in the event of failure of reviving the victim. These findings need particular attention that widespread public awareness about CPR is needed to promote practice of this evidence-based procedure of CPR.

Table 6: Reasons for reluctance in performing CPR

Sr no.	Reasons for non-willingness to perform CPR	Frequency*
1	Fear of acquiring infection during mouth-to-mouth ventilation	45 (38.1%)
2	Fear of causing harm or injury to the victim	24 (20.3%)
3	Hesitancy in providing mouth to mouth respiration to opposite sex	16 (13.6%)
4	Not willing to provide CPR to alcoholic persons	31 (26.3%)
5	Fear of legal issues	87 (73.7%)
6	Fear of problems by relatives and bystanders	84 (71.2%)
7	Not confident enough	43 (36.4%)
8	Did not got opportunity	52 (44.1%)

\*Not mutually exclusive

## Discussion

Often the paramedical staff are the first health care personnel who encounter emergency health situations even in tertiary health care settings attached to medical colleges. Therefore, BLS knowledge and skills are essential for all healthcare workers. In few states like Tamilnadu all medical students undergo training in BLS at the beginning of third semester.<sup>21</sup> Medical students are educated and trained on ALS at the commencement of the 4th year, and all pre-intern doctors undergo an ALS training program organized by the Sri Lanka Medical Council prior to the commencement of their medical internship. Although different countries have included the teaching of BLS into the curriculum of high school students, as did Norway, which since the beginning of the sixties has established the compulsorily teaching of CPR to schoolchildren. The curriculum of the Indian schools is still lacking such topics. In earlier days, CPR training was meant only for health care professionals. Later, it was noticed that many of these events occurred outside the hospital setting and that early CPR need to be performed by the bystanders who witnessed the event. If more people knew CPR, more lives could be saved.<sup>22</sup> Hence, CPR is said to be a skill for all people.<sup>23,24</sup> Quality of life is also found to be better for victims who immediately receive bystander CPR even in the absence of professional assistance. Return to a prior quality of life and functional state of health is the ultimate aim of CPR and post-CPR care. High-quality CPR is the cornerstone of first aid and emergency medical care that can optimize outcomes beyond return of spontaneous circulation. It is very important that all adults in a community know CPR to save lives in out-of-hospital Sudden Cardiac Arrest. At least the doctors, nurses and paramedical staff should be instructed to complete CPR courses, as they are routinely facing life-threatening situations, and the knowledge of CPR will be definitely useful especially in-hospital SCAs.<sup>13</sup>

Various authors have recommended integrating a BLS training program into the undergraduate curriculum so that the healthcare students will get early exposure to such program.<sup>25, 26</sup> Sudeep *et al.* demonstrated that training

improved the knowledge and skills of CPR.<sup>27</sup> A previous study has shown that self-directed learning lead to improved 6 months of retention of knowledge.<sup>28</sup> American Heart Association suggests that skills training requires more frequent assessment, preferably within the 2 year certification, with reinforcement as necessary.<sup>29</sup>

The source of information about CPR in our study was mostly Lectures at classes (40.7%), while Healthcare workers contributed 28.8%, various electronic/print media (Television/radio/YouTube/newspaper) 29.6%. This indicates the importance of the media to increase the awareness of the community. With the advancement of technology, there is a high accessibility of information about CPR through the internet and media.<sup>30</sup> This study has limitations that standard questionnaire used in the study actually measures only theoretical knowledge or cognitive domain. On the contrary, practical performance needs both theoretical knowledge as well as psychomotor skills. The satisfactory acquisition of theoretical knowledge during the course doesn't necessarily indicate a good performance of psychomotor skills during CPR in the real world. Various authors have recommended that healthcare professionals should have hands-on courses regularly in order to master the skills and refresh knowledge about BLS.<sup>31</sup> The CHO training curriculum now also has BLS training. To leave the ignorance of common man behind various city branches of Indian Society of Anesthesiologists are now demonstrating and teaching BLS and COLS in public gatherings and on some special days like World Anesthesia Day.

## Conclusion

This questionnaire survey demonstrated that up-to-date CPR skills among CHO Trainees were insufficient, which could be improved by well-designed certified training programs. At least, certified programs training basic skills of CPR should be a mandatory component in the all health-associated fields like medical, paramedical, and nursing colleges and faculties and should be frequently and regularly revised, with continuous medical education (CME), along with the testing of knowledge and skills at

regular intervals. CPR is an important skill that everyone should learn. One need not be a medical professional to know or use CPR. It can be useful at any unknown time and place to save someone or to be a hero to a stranger. From this study, we would like to spread a strong message especially to all health care workers irrespective of their status should spare fair amount of time to get certified in CPR training and should enjoy executing the art of life saving. This study may have a great importance in developing information for planners and programmers who can be used in tackling against cardiac arrest and its association by encouraging habit of CPR training and education across the country.

### Recommendations

From this study, we suggest that all members of our community and especially health care professionals should join CPR training programs. Policy makers should prioritize, and clearly articulate, a policy regarding compulsory BLS education in their syllabus and position on the provision of compulsory training schedule and certifications for their degree registration. There should be some simple yet compulsory questions regarding CPR in professional examinations so that its importance can be stressed among healthcare workers.

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