

Effectiveness of learning intervention on cardiopulmonary resuscitation among degree college students in Kurnool city, Andhra Pradesh

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ABSTRACT


Background: In the event of sudden cardiac arrest, early intervention (within 3–5 min) and defibrillation increases survival rates. That is why it is important for all citizens to be able to recognize a cardiac emergency and administer first aid while the advanced life support arrives. **Objectives:** The objectives of this study were as follows: (1) To assess the knowledge on cardiopulmonary resuscitation (CPR) among degree students, (2) to conduct educational intervention regarding CPR measures, and (3) to conduct post-test to assess the knowledge and their performance on CPR after educational intervention. **Materials and Methods:** In a cross-sectional study, the study was conducted Silver Jubilee Degree College, B-camp, Kurnool city, Andhra Pradesh, India. The study was conducted at Silver Jubilee Degree College, Kurnool, Andhra Pradesh, India. The ethical clearance was taken from the institutional ethical committee. Informed consent of those who are willing to participate in the study was taken. The study was conducted from November 1, 2018, to December 31, 2018. A total of 200 degree students from 550 male students voluntarily attended the education and training session. **Results:** Of 200 study participants, on whom basic life support (BLS) program was conducted, a significant increase was noted before and after educational intervention regarding their knowledge on symptoms of heart attack, types of chest pain, knowledge on CPR, and performance on steps of CPR. **Conclusions:** As BLS is a lifesaving maneuver, it is essential for all citizens to know the basics and respond to emergency situations such as heart attack, drowning, and accidents. A significant change in attitude-behavior and awareness can be noted in students who underwent training and educational intervention.

KEY WORDS: Cardiopulmonary Resuscitation; Knowledge; Learning; Sudden Cardiac Arrest

INTRODUCTION

Heart disease is one of the most common diseases worldwide causing high morbidity rate and high health-care expense.^[1-3] Cardiac arrest is a common etiology of mortality in developed countries.^[4] According to the American Heart Association (AHA), cardiac arrest is defined as: “The

cessation of cardiac mechanical activity confirmed by the absence of a detectable pulse, unresponsiveness, and apnea.”^[5] Most individuals suffering from cardiac arrest die before reaching the hospital.^[6] Thus, immediate intervention in terms of performing cardiopulmonary resuscitation (CPR) is critical for increasing chances of patient’s survival until emergency personnel arrive.^[6] Cardiac arrest patients who are resuscitated immediately have higher survival rate compared to those who did not receive immediate CPR (8.2% vs. 2.5%, respectively).^[7] CPR is an “emergency procedure performed as an attempt to restore spontaneous circulation by performing chest compressions with or without ventilations.” In the event of cardiac arrest, basic life support (BLS) can be effective to reduce the chance of death. According to the 2015 AHA guidelines,^[8] there are four links in the chain of survival: Early

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recognition and call for help, early performance of CPR, early defibrillation, and post-resuscitation care. Scientific evidence suggests that survival rates can be improved significantly at each link in the chain.^[9-12] For example, immediate CPR can double or triple survival rates^[13] and CPR plus defibrillation within 5 min can result in survival rates between 50% and 75%.^[14] There are two critical components to successful resuscitation and reducing preventable deaths: (1) The presence of a person with knowledge to perform CPR and (2) the successful performance of CPR at the earliest possible time. To increase the likelihood of having a CPR-skilled person present at the cardiac event, there must be an adequate number of people trained in the community.

Objectives

The objectives of this study were as follows:

1. To assess the knowledge on CPR among degree students
2. To conduct educational intervention regarding CPR measures
3. To conduct post-test to assess the knowledge and their performance on CPR after educational intervention.

MATERIALS AND METHODS

The study was conducted at Silver Jubilee Degree College, Kurnool, Andhra Pradesh, India. The ethical clearance was taken from the institutional ethical committee. Informed consent of those who are willing to participate in the study was taken. The study was conducted from November 1, 2018, to December 31, 2018. A total of 200 degree students from 550 male students voluntarily attended the education and training session. A total of 200 degree students ranged from 17 to 22 years of different study years and different study courses were given a pre-test questionnaire. Test questionnaire included symptoms of heart attack, types of chest pain, and knowledge on BLS. BLS which includes CPR and steps on CPR. After pre-test students were educated in detail regarding BLS and a hands-on training for CPR steps on November 1. After a gap of 10 days, each their level of performance was observed and training was given based on the mistakes they performed. A total of three sessions were conducted including educational intervention and hands-on training. A post-test questionnaire was conducted on December 28 to test their level of retention, awareness, and knowledge and steps of performing CPR were noted. The post-test performance was observed on correct order of steps of CPR and data collected.

Data Analysis

Data entry MS Excel 2007. Descriptive inferential analysis SPSS 2022. The Chi-square and Fisher's exact test were used to detect the significance of parameters on categorical scale between before and after educational intervention.

RESULTS

The age of the study participants ranged from 17 to 22 years with the 1st year 155 and the 2nd year 45 students, respectively, studying B.A - 40 students, B.Com - 50 students, and B.Sc - 110 students, respectively. Study participants: Fathers education was classified as illiterate - 92, primary - 16, secondary - 43, intermediate - 26, graduate - 21, and postgraduate - 22, respectively. Study participants: Father's occupation was classified as unskilled - 10, semiskilled - 20, skilled - 30, farmer - 60, semi-profession - 60, and professional - 40, respectively [Tables 1-6].

DISCUSSION

The study shows that lifesaving maneuvers can be effectively taught to college students. Although there are still some open questions regarding the ability to retain these skills in the medium and long term, our study confirms other data reported in literature that there is "NO" ideal age when first aid training is more effective. Indeed, researchers on memorizing

Table 1: Distribution according to their pre-test knowledge on heart attack

Variable	Frequency (%)	
	Yes	No
Types of chest pain	16 (8)	184 (92)
Identifying the chest pain/heart attack	42 (21)	158 (79)

Table 2: Distribution according to their pre-test knowledge on CPR

Variable	Frequency (%)	
	Yes	No
CPR full form	24 (12)	176
Unresponsive/responsive	30 (15)	170
Position of patient	16 (8)	184
Locking of hands	14 (7)	186
Where to place to hands	45 (22.5)	155
Number of compressions	29 (14.5)	171
Depth of compressions	18 (9)	182
Opening airway	12 (6)	188
Number of breaths per cycles	12 (6)	188
Most imp component	17 (8.5)	183
Call for help	14 (7)	186

CPR: Cardiopulmonary resuscitation

Table 3: Distribution according to their post-test knowledge on heart attack

Variable	Frequency (%)	
	Yes	No
Types of chest pain	182 (91)	18 (9)
Identifying the chest pain/heart attack	166 (83)	34 (17)

psychomotor skills suggest that early training contributes to maintain a high level of skills overtime. Apart from practical skills, which require constant retraining to be maintained overtime, BLS courses can change the attitude and behavior of youngsters at a time of life when they easily absorb new information. The conclusion of a study conducted in Norway observing the behavior of trained children (4–5 years) confirms that beginning education to first aid at an early age leads to include it in the activities and in the habits of everyday life and contributes to keep empathy toward other active. Another study conducted in a school in Barcelona concludes that school offers the best setting to study these maneuvers and such training increases the self-esteem of

children, and it could potentially contribute to saving lives. Involving students in programs to teach lifesaving maneuvers can respond, even in the long-term, to the need to increase the percentage of population that is able to respond in case of emergency, as schools and colleges offer privileged access to a large population of the community including members of families. Even in the short term, it is important that students at least know how to alert emergency system correctly since many cardiac arrests occur at home often in the presence of relatives and friends. The involvement of teachers could, however, be a key factor to spread the culture of emergency and to facilitate frequent training. In fact, many studies have shown that teachers and students if properly trained are preferably be able to teach their students and friends the main maneuvers.

Table 4: Distribution according to their post-test knowledge on CPR

Variable	Frequency (%)	
	Yes	No
CPR full form	200 (100)	200 (100)
Unresponsive/responsive	183 (92.5)	17 (8.5)
Position of patient	191 (95.5)	09 (4.5)
Locking of hands	200 (100)	0
Where to place to hands	200 (100)	0
Number of compressions	179 (89.5)	21 (10.5)
Depth of compressions	166 (83)	34 (17)
Opening airway	190 (95)	10 (5)
Number of breaths per cycles	197 (98.5)	03 (2.5)
Most important component	188 (94)	12 (6)
Call for help	192 (96)	08 (4)

CPR: Cardiopulmonary resuscitation

Limitations

This study was conducted in a single college and between the age group of 17 and 22 years; the generalizability of these findings to the whole district and state is a limitation of this study. This study was not retested for long-term memory after 4 months.

Recommendations

Implementing the laws that make first aid training compulsory either at school/college/in the workplace or when applying for a driving license. To raise the awareness within the institutions, the importance of CPR including the teaching of first aid maneuvers in school and college curriculum. They should conduct regular workshops on BLS. Assessing skills

Table 5: Comparison of knowledge on heart attack between pre-test and post-test

Variable	Pre-test		Post-test		X ² value	P-value
	Yes	No	Yes	No		
Types of chest pain	16	184	182	18	275.59	<0.05
Identifying the chest pain/heart attack	42	158	166	34	154.01	<0.05

Table 6: Comparison of knowledge on CPR between pre-test and post-test

Variable	Pre-test		Post-test		X ² value	P-value
	Yes	No	Yes	No		
CPR full form	24	176	200	0	-	-
Unresponsive/responsive	30	170	183	17	235.08	<0.05
Position of patient	16	184	191	09	306.63	<0.05
Locking of hands	14	186	200	0	-	-
Where to place to hands	45	155	200	0	-	-
Number of compressions	29	171	179	21	225	<0.05
Depth of compressions	18	182	166	34	220.45	<0.05
Opening airway	12	188	190	10	316.87	<0.05
Number of breaths per cycles	12	188	197	03	342.94	<0.05
Most important component	17	183	188	12	292.59	<0.05
Call for help	14	186	192	08	317.13	<0.05

CPR: Cardiopulmonary resuscitation

regularly and share teaching materials. Medical education institutions should be involved in the training of students for CPR.

CONCLUSIONS

As BLS is a lifesaving maneuver, it is essential for all citizens to know the basics and respond to emergency situations such as heart attack, drowning, and accidents. A significant change in attitude-behavior and awareness can be noted in students who underwent training and educational intervention. Emergency situations do occur either naturally or accidentally in our day-to-day life either at homes, in working places, or in public places. Training and teaching all students and teachers from eligible and trained persons regularly can create awareness and attention toward first aid and can save many lives.

In India, we are still a long way from including these skills in schools and college curricula and even among teachers learning emergency maneuvers are left to the will of the individual and the sensitivity of the community.

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