



Study to Know the Effect of “Compression Only Life Support” Training Among the Lay Persons

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Financial Support: None declared
Conflict of Interest: None declared
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How to cite this article:
Jarwani BS, Gajjar M, Gupta SD, Makwana H, Thakor A, Modi UP. Study to Know the Effect of “Compression Only Life Support” Training Among The Lay Persons. *Natl J Community Med* 2019; 10(5): 294-298

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Date of Submission: 18-02-19
Date of Acceptance: 20-04-19
Date of Publication: 31-05-19

ABSTRACT

Introduction: Out of hospital cardiac arrest (OHCA) is one of the leading causes of death in India. And “Compression-only CPR (COLS)” is as effective as conventional CPR for cardiac arrest at home, at work or in public. This study intends to know the attitude and knowledge among the laypersons towards performing compression only CPR, use of AEDs and effect of training sessions of COLS on attitude and imparting technical skills among them.

Method: Pre-validated questionnaire-based study was conducted on “World Head Restart Day” (23rd Oct.,2018). 2 hours of training session was arranged and effect was statistically studied.

Results: Total 298 volunteers successfully did participate in training and filled up the forms, of which 68% were male, 32 % female. Mean age 34+12 years. There was significant positive change in the attitude score from 4 to 22 (p=0.003). On the knowledge front average gain in score of volunteers pre-training v/s post-training was 1 v/s 9 (p<0.05). Main gains were in the knowledge of compression rate (2 % to 80%, p=0.001), compression depth (1% to 78%, p=0.002), how to operate AED (0% to 90%, p<0.001).

Conclusion: These kinds of training programs (COLS) have a significant effect on lay rescuer to impart the COLS to the victims.

Key Words: CPR, COLS, compression only CPR, AED

INTRODUCTION

Out of hospital cardiac arrest (OHCA) is one of the leading causes of death in India. Seventy per cent of out-of-hospital cardiac arrests occur either at home or workplace and 90% of persons these victims die¹. Every minute counts and every minute lost reduces the chance of survival by 7%-10%²

CPR technique is defined as a chain of survival by American Heart Association as this technique has provided the greatest chance of survival to the patient of cardiac arrest

Previously CPR training was meant only for health care professionals. Later, it was noticed that many of these events occurred outside the hospital (OHS) setting and early CPR needs to be performed by the

bystanders who witnessed the event. Hence, CPR is said to be a skill for all people².

Compression-only CPR is as effective as conventional CPR one in the out of the hospital settings. Many randomised controlled trials have shown that the “compression-only CPR” is as effective as the traditional one done by lay person. Compression-only CPR should be taught to all, as it can save many lives.^{2,3}

There are very few studies in India, on the outcome after cardiopulmonary resuscitation (CPR) in patients with OHCA¹. Studies have shown that bystander CPR is associated with good outcome in OHCA with a significant improvement in survival and alive at discharge as compared with the no bystander CPR. In one study from India, although

56.5% of OHCA events were witnessed by a bystander, only 1 (1.3%) of these arrests received bystander CPR (<0.001). This is very poor in comparison to the 18%-55% rates reported from the West. Hence, there is an urgent need of national initiatives to strengthen bystander resuscitation⁴.

Considering these facts, guideline of CPR has been developed by the Resuscitation Council, under the Indian Society of Anaesthesiologists (ISA) for resuscitating cardiac arrest victims outside the hospital by layperson - the compression-only life support (COLS). The aim of the COLS guideline is to provide a stepwise guideline for the optimal outcome^{2,3}.

We intend to study the awareness, community attitude towards performing CPR and learning COLS (compression only CPR).

OBJECTIVES

Cross sectional survey-based study was conducted to know the prevailing knowledge and attitude about the cardiopulmonary resuscitation in the community and also to study the effect of “cardiopulmonary resuscitation” training among the lay persons.

METHOD

The World Restart Heart Day is celebrated across the globe on the 23rd October, every year. We departed training among the community lay person about the cardiopulmonary resuscitation on this very appropriate day.

Training was given to all the lay person as per the standard guidelines issued by ASA².

This well validated questionnaire, previously used in such other studies^{5,6} was studied, modified and translated into local language locally. The questionnaire had been reviewed by an expert panel, which included three cardiologists, two registered nurses and a health educator and the content validity index (CVI) was 0.94.

Information about the purpose, procedure, potential risk and benefit of the study was explained to volunteers verbally by our trained residents written consent was obtained. Respondents were allowed to withdraw from the study at any time.

Questionnaire was based on topics like CPR knowledge, attitudes toward CPR and factors which might affect CPR practice. One mark was assigned for each correct answer for knowledge questions resulting in a possible total score ranged from 0 to 10.

For the part on attitudes toward CPR, each item in

this scale scored between 1 “strongly disagree” and 5 “strongly agree”. The scores from the individual items were totalled, with potential scores ranging from 5 to 25.

A pilot test was successfully conducted with patient relatives and it required not more than 15 min for them to complete the questionnaire.

On the World Heart Restart Day, 23th Oct, 2018, lay people from the community were invited voluntarily to attend the COLS program. They were invited by circulating the leaflets and putting banner about this activity at community level. This was initiated one week prior and details about the contact person and venue of activity was highlighted.

Cardiopulmonary resuscitation training is arranged in 2-hour sessions. Of which initial half hour was the presentation based on the standard accepted guidelines. This was followed by hands on training. It was done in 4 sessions.

They were given time to fill up the survey form before the training and same form was filled by the same person after training to know their learning.

The first portion of the form was about demographic profile. The second portion of the form was about the attitude of the lay persons to CPR. Third portion of the form collected the basic knowledge and awareness about the guidelines about the CPR among the lay persons.

Statistical method:

The data from the pre-formatted questionnaire will be captured in Microsoft Access 2016. It will be analysed using EPI2k with the help of statistician of your department.

RESULTS

We enrolled 324 patients, 26 forms were incompletely filled up, hence rejected. Total number of forms analysed were 298 (n=298). So, we entered the data from the form of 298 volunteers. Of which 68% were male and 32 % were female. Median age of the volunteers studied was 34 years ±12 years.

Table 1. showing means, SD and p values of the scores, pre-training v/s post-training

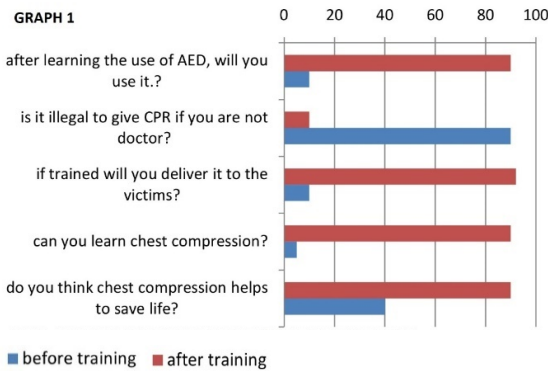
Survey/score	Mean score	SD	P value
Questions about attitude			
Pre-training	4	3	0.003
Post-training	22	4	
Questions about the knowledge			
Pre-training	1	1	0.0031
Post-training	9	2	

Table 2. showing the basic knowledge (about CPR) of the volunteers pre/vs training (values suggests % of volunteers got it correct)

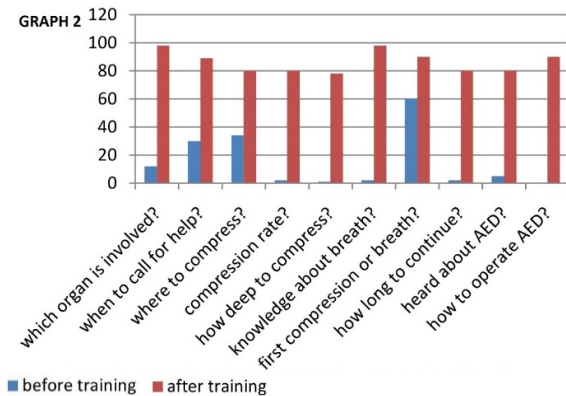
Questions regarding attitude towards CPR	Before training	After training
Do you think chest compression helps to save life?	40	90
Can you learn chest compression?	5	90
If trained will you deliver it to the victims?	10	92
Is it illegal to give CPR if you are not doctor?	90	10
After learning the use of AED, will you use it.?	10	90

Table 3. showing the basic knowledge (about CPR) of the volunteers pre/vs training (values suggests % of volunteers got it correct)

Questions Asked:	Before training	Post training
Which organ is involved?	12	98
When to call for help?	30	89
Compression rate?	34	80
How deep to compress?	2	80
Knowledge about breath?	1	78
First compression or breath?	2	98
How long to continue?	60	90
Heard about AED?	2	80
How to operate AED?	5	99
	0	90



Graph 1: Score change in attitude before and after training session



Graph 2: Score change in knowledge before and after training session

As per department of school education and literacy (ministry of human resource management), Primary education means from first class to fifth class, Secondary education from sixth class to 10th class, Upper primary education means education from 6th to 8th class. In our data 78% had taken primary education, 14% had upper primary education and rest 8% had taken secondary level of education.

Table 1 shows the means of the score, SD and p values of the volunteers pre-training v/s post-graining about the attitude towards “compression only CPR” and it was 4 v/s 22 (p=0.003). On further analysing the attitudinal questions, there were apparent misconcepts about CPR and lack of confidence of learning the same (table 2). Before training only 10% were willing to deliver CPR if required, but after training it was 92%. On further probing many of them (76%) not willing to give CPR, may were willing to give to the close relatives only.

On knowledge front the means (and SD, p values) of the scores of volunteers pre-training v/s post-training was 1 v/s 9 (p=0.0031). On further analysing the knowledge front, only 20 % of volunteers even are aware which organ is basically involved (12% responded lung as a culprit, 54% responded brain, rest 22% responded either liver (12%), kidney (2%). Their knowledge about compression techniques improved markedly on all the fronts post training (table3). 34 %knew the exact site of compression, 2% knew rate of compression and 98% believed giving breath is vital. Only 5 % had head of AED and of which none knew how to operate it before the training. Significant gains were there in the knowledge of compression rate, compression depth and how to operate AED (table3).

DISCUSSION

The study shows there is significant issues towards attitude about “compression only CPR” in community and that can be improved by such training. The issues in attitude are because they are never trained about the same in their schools.

Only 5 % volunteers showed willing to perform CPR before training, other such studies showed 10-15% willingness that is because they are worried about their insufficient practical skills^{7, 8}. This was

significantly improved to 92% post training, showing the strong effect on changing attitude among the community by such training sessions. However, long term change in attitude needs to be seen. Willingness was higher for giving CPR to the close relatives in our studies and as found in other studies as well^{9, 10}.

On further analysing, it was found that 90% volunteers thought it is illegal to give COLS if you are not qualified medics/para-medics before training v/s 10% after the training. In one study most respondents (53.2%) were worried about legal issues.⁷ Many studies reported the same^{12, 13}. These factors can be mitigated by such training nationwide by the experts.

5% believed it is very difficult to learn CPR before training v/s 90% after training. The result was comparable to other studies done in middle income countries^{14, 15}.

Only 5 % volunteers had head of AED and practically none knew how to use it. Then there is no point of keeping AEDs at public places, but after training sessions 90% would be able to use it. That also suggests the needs of such training sessions among the community. The same results were observed by Jin Lee in Korea where Public awareness of automated external defibrillators increased¹¹

Many studies^{12, 13} done at community levels also suggest robust gain of basic knowledge and significant increase in willingness^{15,16} to deliver compression only CPR among volunteers undergoing such training.

There are many studies done among the school children, college students or hospital attendants¹⁷.

Few studies have even brought in concept of brief and ultra-brief CPR learning thru videos for the lay person compression only CPR¹⁸. That may be promising way of teaching CPR to the lay person at the community level.

With such a gain in the knowledge and change their attitude toward "Compression only CPR" would enable them to deliver chest compression to their exposure environment and save lives. They would be able to use AED that is widely deployed nowadays at main public gathering places. Hence such training is very important to modulate their attitude towards CPR. Training community in such a short period of time can be lifesaving in long run.

Limitations of the study:

The study was carried out in community; the scenario may be quite different in school and college level. Attitude and learning of technique vary as per the socio-economic standards and academic

qualification of the lay persons that is not a part of this study. For that a separate study needs to be designed and implemented. Long term retention of knowledge imparted to lay person by such structured cardiopulmonary resuscitation training is yet to be studied. How to update them regarding new guidelines needs to be looked at.

CONCLUSION:

Out of the hospital, compression only CPR or COLS can bring about changes in the survival pattern of the "Out of Hospital Cardiac Arrest" Victims. These kind of training programs have a significant effect on addressing and changing the attitude of the lay rescuer to impart the aid to the victims. This study also shows significant effect on learning "compression only CPR" at the community level.

Acknowledgement

We are thankful to ASI to developing such a comprehensive guidelines "COLS" and choosing the World Heart Restart Day to launch such a massive drive with a noble cause.

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