

A Study to Assess the Retention of Knowledge of Basic Life Support Skills in Young Doctors of a Tertiary Care Setup

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Abstract

Aim: The aim of the study was to investigate the retention of knowledge of Basic life Skills among young doctors who have done the course of Basic life Skills.

Method: A total of 200 doctors were included in this cross sectional study who have done the BLS course within one year either as a part of their requirement for the training or the ones who did the course due to their interest. Data was collected through the American heart association BLS checklist and a self-prepared questionnaire about the knowledge of BLS based on 2015 AHA guidelines.

Result: A total of 200 (125 male, 75 female with average age of 26±0.7years) doctors were included. Regarding the terminology of the CPR, 100% of the participants know the correct terminology. 100% of the subjects were aware of the new sequence. About 86% of the participants were retaining the knowledge of this important step as this delays the delivery of quality effective CPR. The number of chest compressions delivered per minute during CPR is an important determinant of return of spontaneous circulation (ROSC) and survival with good neurologic function, only answered rightly by 59% of participants. Only 05% of the participants were not able to answer the right compression to ventilation ratio. 54% of the patients exactly know the 2 inches chest compression figure. Majority (78%) answered correctly about the correct hand position during CPR. Proper ventilation ratio aids in maintaining the minimum concentration of oxygen was answered correctly by 68% of the participants.

Conclusion: Retention of Basic Life Support (BLS) among doctors needs to be improved as shown by our study that by time, the knowledge gets rusted which must be refreshed by repeated fresher courses and lectures and also emphasis on application of the knowledge in daily life.

Keywords: Basic Life Support, cardiopulmonary resuscitation, survival, cardiac arrest

1. INTRODUCTION

Basic Life Support (BLS) includes recognition of signs of sudden cardiac arrest (SCA), heart attack, stroke and foreign-body airway obstruction (FBAO); providing cardiopulmonary resuscitation (CPR) and defibrillation with an automated external defibrillator (AED).⁽¹⁾ Basic life support (BLS), which is the key component of the chain of survival decreases the cardiac arrest – CPR interval, better chances of survival with rapid recovery and increases the rate of early hospital discharge.⁽²⁾ It is estimated that about 75-80% of all out-of-hospital cardiac arrests occur at home, so it is important that people in

the community knows this skill to save lives and improve and contribute towards the quality of the family's as well as society's health.⁽³⁾

This becomes even more important for the professionals, like doctors and paramedical staffs, who are facing life threatening situations on almost daily basis. Knowledge of first aid amongst medical students and house officers has always been a neglected subject. Hence it should not be surprising to note that even junior doctors at certain hospitals cannot perform the first aid skills satisfactorily.⁽⁴⁾ The significance of training health care professionals in first aid and basic life support is now acknowledged

worldwide ⁽⁵⁾ and also been included as mandatory for the training residents in Pakistan. Several publications have highlighted the deficiencies in CPR quality for both out of hospital and in hospital cardiac arrest and that knowledge varies. ⁽⁶⁻⁹⁾

BLS knowledge and skills tend to degrade after sometime and regular training and practice as an update course is recommended. ^(8, 10) This study was conducted at Jinnah Hospital, Lahore, Pakistan in the post graduate residents who have to attend and pass the BLS course as mandatory requirement which is done at CPSP as per AHA rules and standards. Participants for the study were the young doctors who completed their BLS courses in CPSP within last 01 year according to AHA guidelines for CPR 2015 guidelines and have successfully passed the test as well. The aim was to explore the level of retention of knowledge and attitude towards BLS as no previous study in this hospital or even in Lahore has been done up to the best of our knowledge.

2. METHODOLOGY

This cross-sectional study was conducted at Jinnah Hospital, Lahore. The study subjects were young doctors who were trained according to AHA 2015 COR guidelines, in the CPSP during last 01 year and further it was than divided into those who did the course in a period of <6 months and those who did it in >6 months. A questionnaire was prepared along with an AHA BLS checklist to assess the knowledge of participants. Those unwilling to participate and returned incomplete questionnaire were excluded from the study. Skills of Basic Life Support were checked using the American Heart Association's accredited checklist for 1-rescuer adult CPR. The validity of the questionnaire was determined by piloting in a small group of 10 subjects, before it was finalized for the study. The study was approved by the hospital ethical committee. Written informed consent was obtained before the respondents were given the questionnaire. The author went to the various departments of the hospital and distributed the questionnaire to the subjects, and collected the questionnaire as they were completed at the same time.

The collected data was analyzed by Statistical Analysis for Social Sciences (SPSS) version 20. Categorical Variables were presented as frequencies and percentages.

3. RESULTS

A total of 200 (125 male, 75 female with average age of 26±0.7years) doctors were included the study from various medical departments of the hospital. Regarding the terminology of the CPR, 100% of the participants know the correct terminology as it stands for cardiopulmonary resuscitation. 100% of the subjects were aware of the new sequence and know the importance. About 86% of the participants were retaining the knowledge of this important step as this delays the delivery of quality effective CPR. There has been a modification of chest compression rate in 2015 guidelines from 100/min to 100-120/min. This variable was the most forgotten one to recall by the participants, only answered rightly by 59% of the participants. There is different protocol of compression to ventilation ratio for single rescuer and two rescuers. Only 05% of the participants were not able to answer the right compression to ventilation ratio. About 54% of the patients exactly know the 2 inches chest compression figure while 44% were answering a less depth which may result in inadequate CPR quality. Majority (78%) of the participants were able to answer correctly about the correct hand position during CPR. Proper ventilation ratio aids in maintaining the minimum concentration of oxygen, which was answered correctly by 68% of the participants. (Table 1)

Table1

Variables	Frequency%
CPR stands for	
Cardiopulmonary rate	00
Cardiopulmonary resuscitation	200(100%)
Any other	00
Don't know	00
BLS algorithm	
ABC	00
CAB	200(100%)
Any other	0
Don't know	0
First step in adult chain of survival	
Early recognition	86%
Defibrillation	02%
Call for help	12%
Any other	00
Don't know	00
Compression rate in adults	
100/min	35%
>100/min	59%
120/min	01%
Any other	00
Don't know	00

Compression to ventilation ratio adults	
15:2	05%
30:2	95%
Any other	00
Don't know	00
Depth of compressions in adults	
1.5inches	44%
2 inches	54%
Any other	02%
Don't know	00
Location of hand for compressions	
Upper sternum	07%
Lower sternum	78%
Middle sternum	15%
Any other	00
Don't know	00
Frequency of the breaths	
1 breath every 8-10 seconds	04%
1 breath every 6-8 seconds	87%
1 breath every 6 seconds	09%
Any other	00
Don't know	00

4. DISCUSSION

Many studies have shown that early and effective cardiopulmonary resuscitation (CPR) improves the chances of survival in victims of patients having cardiac arrest.⁽¹¹⁻¹⁴⁾ The knowledge and the skill of CPR doesn't remain the same amongst healthcare professionals (HCPs), and this holds true even in those countries where emergency services are adequately developed.^{(12), (15)} Effective CPR involves effective compressions as well as breaths and the early use of defibrillation.⁽¹²⁻¹³⁾ Many of the cardiac arrest victims do not receive CPR and, even if it is provided by the trained personnel's, the approach and methodology may not be adequate or incorrect.⁽¹⁶⁾

This was a local study restricted to one hospital only, done to assess the level of knowledge and skills of basic life support in trained medical staff of this hospital in last one year. Participants were only the post graduate trainees who haven't done there fellowship so no senior doctor was involved. Both female and male residents were the participants. All participants were trained with the video-based course of 2015 BLS guidelines, formulated by American Heart Association at CPSP. The course content is strictly followed in keeping with the AHA format.

The retention of knowledge and skills of Basic Life Support training in Health Care Professionals is a major problem. Some studies have shown that skills and knowledge of CPR decline rapidly, even few days after a course is completed.⁽¹⁷⁾

Our study also showed that the retention of BLS knowledge declines over time which may even be less than to 6 months.

The sequence of the BLS algorithm got a remarkable change in the 2010 guidelines (which is continuously being practiced in 2015 guidelines) as in 2005 it was ABC (air way, breathing, circulation) because the most important aspect of patient's survival is restoration of cardiac activity and circulation so look listen feel step was emitted and the first step is to go for compressions.

The study revealed that participants although were lacking in many aspects of knowledge and skills of basic life support, the basic theme of the CPR science was retained fairly though with some aspects needing continuous revision. CPR training significantly influenced the BLS knowledge of the participants. Those who were trained in last 6 months performed better than those whose training period was beyond 6 months. The study performed in Nepal also concludes that those who were involved in resuscitation frequently performed better as compared to those who did it infrequently. Regular updates and simulation training in CPR skills have been shown to help HCPs remain competent and knowledgeable.

Effective compressions are the key component and backbone of the BLS⁽¹⁸⁾ and also was the main thing to be answered less correctly. There were four questionnaires about the compressions with being the depth and rate of the compressions the most important parts. Depth of compressions (54%) followed by rate of compressions (59%) were the most incorrectly answered among the four queries about the compressions. Ventilation is also a pivot part of BLS sequence. Regarding the frequency of the breaths, 68% of the participants were able to answer correctly.

Our study also showed that some steps of skills and knowledge of BLS have been mixed up or forgotten. Even then, the retention of knowledge and skills were adequate, and the number of answer/skills done correctly were statistically

significant. In our study, the questions about compressions were answered correctly by 71.5%. The question about frequency of breaths were answered correctly by 87%. Collectively the adult chain of survival was correctly answered by 56%.

The study showed that the new 2015 BLS guidelines as video-based instructions for skills development and practice is able to provide high quality training in BLS.

It was also noted that participants who used to do CPR in real time scenarios on day to day bases as the ones working more frequently in emergencies, were the ones who did better than those in out-patient department or in other places, labs etc. who seldom practiced basic life support. Studies done by Eliff et al, and Mohamed et al, also observed that previous experience in real life resuscitation increased the incidence (reference) of correct answers.

It is widely emphasized that both BLS and ACLS training programs must be the mandatory program of the residents and even the house officers and the paramedic staff because time is myocardium and the knowledge of these skills save the time. Asad Abbas et al ⁽¹⁹⁾ showed that knowledge of trained student was found to be better than untrained student.

5. CONCLUSION

Retention of Basic Life Support (BLS) among doctors needs to be improved as shown by our study that by time, the knowledge gets rusted which must be refreshed by repeated fresher courses and lectures and also emphasis on application of the knowledge in daily life.

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