Original Research Article

Assessment of Awareness of Basic Life Support among Doctors Practising in a Tertiary Care Hospital

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Abstract

Background: The cardiac and respiratory arrest has high mortality rate which can be easily prevented with simple maneuver and skills and CPR which is an effective procedures if adopted under BLS within early critical minutes of cardiac and respiratory arrest. The aim of this study is to determine the level of awareness of basic life support (BLS) among doctors. *Methods:* Cross-sectional study conducted on doctors working in Liaquat University hospital Hyderabad and Jamshoro. A multi-section questionnaire regarding awareness of Basic Life Support. In total 348 doctors were selected through convenient non-probability sampling technique. Analysis was done in SPSS version 22.0 & Chi-square test was applied to seek association between variable of interest. *Results:* The relationship of awareness about BLS to age & gender of respondents cumulatively showed significant association (p=0.01). Regarding years of job experience, 60.91% had experience 2-6 years; another 11.8% participants had experience of more than 14 years. Regarding previous experience of BLS, 69% of respondents replied that they had previous experience of BLS. Around 94.0 respondents were of the opinion that CPR procedure should bemandatory to all health care providers. There were 71.8% respondents who had complete knowledge about all components of chest compression during CPR. *Conclusions:* Despite the high level of awareness about BLS among doctors & enabling environment of hospitals, there is a gap in practicing it. This gap needs to be filled through continuous persuasion of health care providers.
Keywords: Basic life support, cardiac arrested patient, doctors, nurses, cardiopulmonary resuscitation.

INTRODUCTION

Saving the life of someone is a responsibility of each and every individual having any role in society; the health care providers are the prime responsible persons for this matter. There are number of persons who experience difficulty in breathing and malfunctioning of cardiac system in numerous ways anytime, anywhere which need to be resolved rapidly, otherwise it creates rapid complications that leads to death. Moreover, various systemic conditions of health like myocardial infarction, congestive cardiac failure, stroke and cessation of breathing leading to even sudden death of an individual. Cardiovascular disease (CVD) is the most common cause of death in developed countries [1]. Cardio respiratory failure is topmost cause of death, accounting for 40% of all deaths throughout the world [2, 3].

It is reported that in developing countries about 17.3 million people die annually due to CVD [4]. Furthermore, sudden cardiac arrest developing from coronary artery disease (CAD) accounts for 60% of death and also leading cause of the death; this accounts to 700, 000 casualties per anum and usually occurring out of the hospital that leads to death; moreover the survival rate of such cases are very low [5].

In Pakistan more than 50% of deaths in the adult population are due to cardiovascular diseases and about 30% of all deaths are due to cardiovascular causes and the highest number of death due to CVD are reported in Pakistan around i.e. half a million and lowest in Qatar i.e. around eight hundred only. There

are reported 1.4 million in 22 countries of Eastern Mediteranean Region (EMRO) and the most common global causes of CVD related to death is rheumatic heart disease, ischemic heart disease, cerebrovascular diseases, hypertensive disorders, cardiomyopathy and myocarditis, atrial fibrillation and flutter, aortic aneurysm, peripheral vascular disease, and endocarditis [6].

There is a global commitment to reduce premature cardiovascular diseases (CVD) by 25% by the year 2025, this target is set by United Nations Organization (UNO) for the risk factors of cardiovascular diseases which need to be addressed [7]. The risk factors of CVD must be considered in mind when treating the cardiac disease. Seventy percent of cardiac arrest occurs at out of the hospital (at home) and estimated 50% percent are unwitnessed and there are only 10% of adult population patients with non-traumatic cardiac arrest who have been received for emergency treatment and survived to discharg. Moreover, the in-hospital cardiac arrest had better outcome and survival ratio of 22.3 to 25.5% percent of adult population as compared to outside of the hospitals [8]. There are different ways by which the occurrence of death of an individual may be prevented by keeping the risk factors in the mind. They include the instructions given and medications prescribed by health professionals, diet, and physical exercises. In addition to these ways, basic life support (BLS) in case of medical emergencies is key element for saving a life. The BLS refers to rapid assessment of the patient, establishing and maintaining an airway and supporting breathing and circulation without using any equipment [9]. Moreover, the usage of automated electrical device (AED) is crucial element in survival of the victims of cardiac arrest.

The American Heart Association (AHA) initiated a program named Basic Life Support (BLS) which is the foundation for saving the person's life in response to cardiac and respiratory arrest [10]. It is a mandatory element of training for all health care professionals either working in health care organizations in public sector or private sector or in the community. Moreover, it is basically the assessment of cardiac arrested person, activation of emergency response, early start of cardiopulmonary resuscitation (CPR) and attachment of automated external device (AED). It is the early recognition and early rehabilitation of ventilationas well as circulation. In BLS chest compression and mouth to mouth breathing is given to patient of cardiac arrest. In western world, BLS is supposed to be a prehospital prerequisite for safety of a patient facing cardio respiratory arrest [11]. In developing countries it's a serious concern that not even the common people but the qualified health care providers do not have these skills [12]. Cardiac and respiratory arrest has high mortality rate which can be easily prevented with simple maneuver and skills and

CPR which is an effective procedures if adopted under BLS within early critical minutes of cardiac and respiratory arrest [13]. Doctors are important team member of health care professionals who are expected to perform key role in the basic skills and attitude towards the restoration in the function of cardiac and respiratory arrest patient because they always perform the role of a team leader in the resuscitations. Therefore their knowledge and decision making skills matter in the saving the patient's life because of time, and time matters in this condition. Delay in any decisions in starting the basic steps of CPR will affect victims condition and cause complication or even death of the patient. Unfortunately, the health care providers including doctors, nurses and paramedical staff in our set up are less aware about these life saving techniques of BLS.

Though being a real important issue, there is still too less attention given to this aspect of training to health care providers in our set up. In recent years, several publications have highlighted the deficiencies in CPR quality, both out-of-hospital and in-hospital. This highlights a wide gap of research on this aspect of medical profession and iclusion of BLS training in medical curriculum.

METHODS
OBJECTIVES
1. To identify the level of the awareness of Basic Life Support (BLS) among doctors.
2. To assess determinants of lack of awareness of BLS among study subjects.

Study Setting

All the medical allied and surgical allied wards at Liaquat University of Medical and Health Sciences Jamshoro/Hyderabad in Sindh province of Pakistan which is a tertiary care hospital comprising of fifty two wards.

Study Design: Cross-sectional study.

Sampling Technique: Non probability convenience sampling.

Sample Size
The sample size was separately calculated for doctors as under:

$$n = \frac{z^2 \times p \times q}{e^2}$$

Where

n= sample size
z= critical value at 95% confidence interval = 1.96
p= prevalence of doctors using BLS
q= 100-p
e= margin of error

Putting values together

$$n = \frac{1.96 \times 1.96 \times 29 \times 71}{5 \times 5}$$

$$n = \frac{3.8416 \times 2059}{25}$$

$$n = \frac{9709}{25}$$

$$n = 316$$

Adding 10% non-responders, the sample size was 348.

Inclusion Criteria

All doctors of both genders working on full-time basis in designated hospital, giving consent to be the part of research were enrolled as research participants.

Exclusion Criteria

In order to get valid results, all those doctors who refused to give written informed consent or who were working as part time care providers or on contract basis, were excluded from study.

Variables

A. Demographic Variables
1. Age
2. Gender
3. Years of experience
4. Awareness about BLS

B. Variables of Special Interest
1. Previous experience of BLS
2. Resource availability status.
3. Reasons of lack of knowledge about BLS.

Data Collection Tool

The data was collected on a pre-formed questionnaire tool designed by principle researcher and partially adopted by Meena Kumari et al form their research on the topic of "Clinical Awareness of Do's and Don'ts of Cardiopulmonary Resuscitation (CPR) Among University Medical Students-A Questionnaire Study". The questionnaire consisted of total twenty seven items arranged in four sections related to the socio-demographic data of the respondents, their awareness and attitude towards basic life support. The data was collected on a Likert scale. The cumulative expected score by the subjects varied between 0 to 27.

The response scores were divided into three categories as under:

0 - 09 = Inadequate knowledge
10 - 18 = Some knowledge
>18 = Highest knowledge

Piloting of research was done on 25 subjects and alpha Cronbach reliability index was computed as 0.72.

Data Collection Method

Data was collected after approval from Research Ethics Committee (REC), of Liaquat University of Medical and Health Sciences Jamshoro. The participants were enrolled after obtaining written consent.

Data Analysis plan

The data was compiled and analyzed through Statistical Package for Social Sciences (SPSS) for window (SPSS) version 22.0. For categorical variables e.g. designation, previous experience of BLS and awareness about BLS etc. frequencies and percentages were calculated along with their graphical presentations.. For continuous variables e.g., age and years of experience etc., mean ± standard deviations were used as summary measures. Chi-square test was applied for categorical variables and the level of significance was set at p-value ≤ 0.05 at 95% confidence interval.

RESULTS

The age distribution of respondents was 33.90 ± 7.01 years. There was female preponderance among study participants i.e. 63.50% females as compared to 36.50% males. The relationship of awareness about BLS & these two variables cumulatively showed significant association (p=0.01). Regarding years of job experience, 60.91% had experience 2-6 years; another 11.8% participants had experience of more than 14 years. Regarding previous experience of BLS, 69% of respondents replied that they had previous experience of BLS; but when explored about training status in past two years, there were only 30% who declared that they had such training in previous two years.

Chart-1 depicts the level of awareness about importance of BLS among study participants.
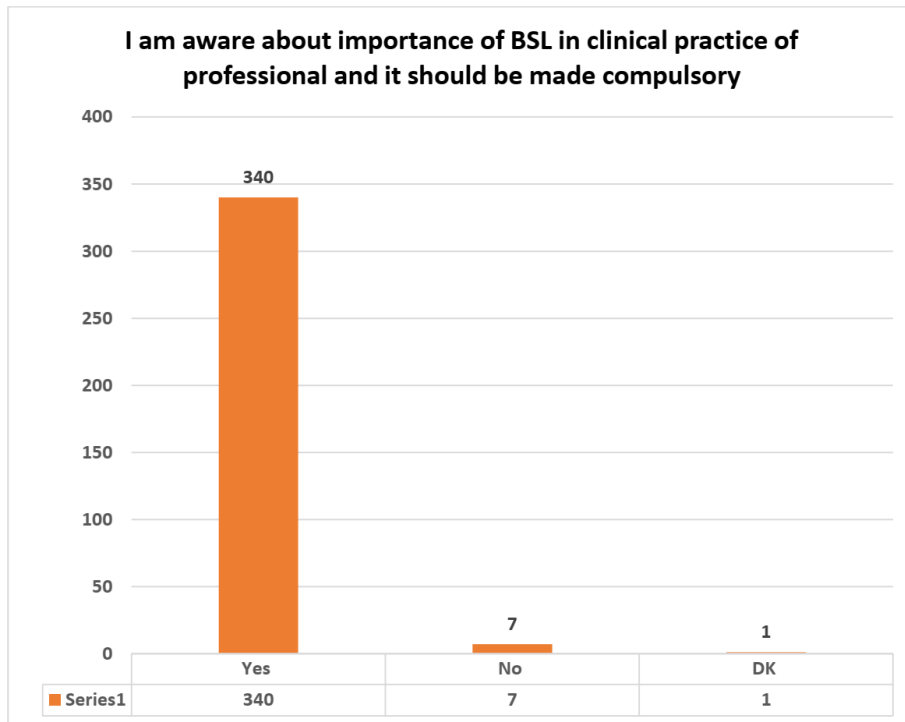
I am aware about importance of BSL in clinical practice of professional and it should be made compulsory

	Yes	No	DK
■ Series1	340	7	1

Chart-1: Awareness Regarding Importance of BLS among Study Participants

When asked whether knowledge of correct CPR procedure is mandatory to all health care providers, 94.0% respondents replied in affirmation.

Table-1: Awareness Regarding Basic Life Support Among Study Participants

S. No	Criteria of Awareness	Doctors			p-value
01	I am aware about importance of CPR in clinical practice professionals and it should be made compulsory.	Yes	No	Do not know	< 0.01
		340 (97.7%)	5 (1.4%)	3 (0.9)	
02	CPR is an emergency procedure which is attempted in an effort to return life in cardiac arrest.	340 (97.7%)	7 (2.0%)	1 (0.3%)	< 0.01
03	It has to be attempted always inside the hospital not outside.	Yes	No	DK	< 0.01
		148 (42.5%)	195 (56.0%)	5 (1.4%)	

Regarding to query related to critique of I am aware about importance of CPR in clinical practice professionals and it should be made compulsory, 97.7% doctors said yes in contrast to 76.7% nurses replied as 'yes' (p<0.01) and related to CPR is an emergency procedure which is attempted in an effort to return life in cardiac arrest, 97.7% doctors verbalized yes while 73.1% nurses said Yes to this option (p < 0.01). Moreover, related to critique of 'It has to be attempted always inside of a hospital not outside 42.5% doctors said 'Yes' in compare to 59.6% nurses verbalized yes to that question and p value is less than (p<0.01)

Table-2: Knowledge Of Study Participants Regarding Recommended Procedures For Chest Compression

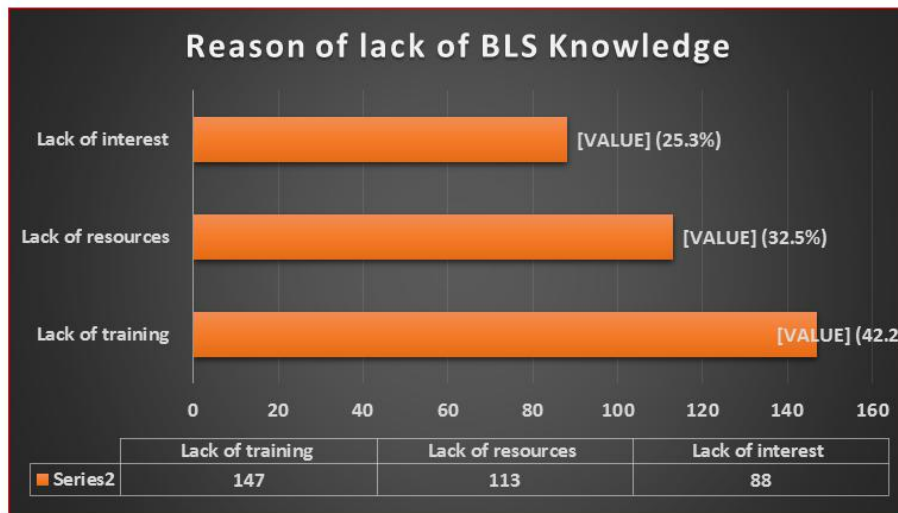| Options	Frequency (%)
Depth of adults and children is about 5 cm (2 inches)	44 (12.6%)
In infant it is 4 cm (1.5 inches)	10 (2.9%)
In adult, rescuer should use two hands for the chest compression	27 (7.8%)
In children they should use one hnads	4 (1.1%)
With infants two fingers (index and middle fingers)	13 (3.7%)
All of the above	250 (71.8%)

Chart-2: Reasons of lack of BLS Knowledge Among study Participants

DISCUSSION

This study was conducted to identify the awareness regarding basic life support among doctors working in tertiary care hospital. The study was conducted on a total sample of three hundred forty eight (348) participant.

The result of study shows that majority of participant 43.4% were in the 25-30 years of age, with mean age of 33.9 ± 7.01 years. Another study conduted in Pakistan with the similar objectives concluded that 81.4% doctors having age of 23-25 years [14]. Similarly there was a research on the same subject conducted in Karachi, Pakistan which revealed this figure as 88.8% among doctors having 20-29 years of age [15], but these studies did not report significant difference. These mean differences could be because of the researcher's inclusion of different age groups in study.

Regarding the already experience of BLS, the participant showed that 69.0% had already experience of BLS and as same finding comes from an other study which was conducted at Karachi, Pakistan which shows that 67.4% doctors had already trained for BLS [16], incontinuation to that an other study while an other study shows that 47.1% had already experience of BLS [17].

As far as CPR awareness was concerned the current study findings suggest that 94.5% research participants were aware of the importance of CPR.

As far as concerned for the current order of updated cardiopulmonary resustitation, 41.3% participant had chest compressions, Airway, Breathing (CAB) in the study. Another researchwhich is conducted in India showed 84.5% of the doctors as having correct knowledge of the recommended sequence of CPR related activities [18].

As for as concern of recommended universal compression to ventilation ratio with compression rate of at least 100 per minutes in all age groups is, 78.0% replied that 30:2 for adults, children and infant if only a single rescuer is present. Another study was conducted at Karachi that shows that 53.0% doctors had correct correct compression to ventilation ratio that is 30:2 [14]. Another study conducted in India showed that 84.9% doctors had correct knowledge of chest-compression: ventilation ratio and regarding rate of chest compression showed 35.6% of the doctors having correct knowledge of rate of chest compression 18]. An other study which is conducted on doctors that shows that 28.2% participant knew about the chest compression ventilation ratio that 30:2 correctly [11].

As for as concern for depth of chest compression the currect study shows that 67.8% narrated as 'Yes'. Another comparative study showed that 43.2% participant verbalized that chest compressions be at atleast 100 per minutes [14]. Another study conducted in Rawalpindi-Islamabad, Pakistan showed that 26.7% research participant were aware of rate and depth of chest compression and chest compression to ventilation ratio in different age groups [11]. A hospital-based research in Karachi, Pakistan showed that only 14.2% research participant had correct knowledge of chest compression depth [14]. In comparison to it, an Indian research reported that 29.7% research participant had correct knowledge about the depth of chest compression 19].

Concerning the query about the association between survival rate and time of initiation of CPR, 71% respondents were of the opinion that the survival rate would be high if immediate CPR is done followed by defibrillation within 3–5 minutes of sudden cardiac arrest" doctors replied yes as 71%. This finding is quite comparable with two other studies' results revealing aroud 70-72% doctors confirming the same views [20, 21].

As far as concerned ror the reasons of lack of awareness of BLS, 42.2% research participant had verbalized that lack of training, 32.5% had said that lack of resources, and 25.3% had said that they had lack of interest. Another study which is conducted in Karachi, Pakistan on doctors and nurses that reaearch participant shows lack of proper knowledge is because of limited number of trainings and unavailability of resources were the reason of not having adequate awaresess of BLS [17]. As in currect study majority of the research participant verbalized that they have a need of BLS trainings, same finding were highlighted the possible short of BLS tainings and these will be addressed soon for increasing awarenees of BLS and the survey also found poor knowledge in the sample population, as well as poor access to training [22]. These findings were endorsed by another research showing lack of proper awareness of CPR as attributed to busy schedule, lack of training and lack of resources available [19].

CONCLUSIONS

The study was conducted on a total sample of 348 doctorss revealed majority of participant 43.0% were in the 25-30 years of age, with mean age of 33.57 ± 6.672 years. Arround 64.0% were having 2-5 years of experience. Only 27.5% had received the BLS training. Encouragingly, 94.5% research participant were aware of importance of cardio pulmonary resuscitation. The study showed that more than 80% doctors answered correct about defibrillator.

All authors hereby declare that
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