Knowledge and attitudes among young adults attending Basic Life Support training in a tertiary care institution

Varghese George[1], Rajalakshmi Aiyappan[2], Sherin B Abraham[3], Rajeev Aravindakshan[4*]

[1] Associate Professor, Department of Cardiology, Pushpagiri Institute of Medical Sciences and Research Centre, Tiruvalla, Kerala, India
[2] Tutor, Department of Community Medicine, Pushpagiri Institute of Medical Sciences and Research Centre, Tiruvalla, Kerala, India
[3] Associate Professor, Department of Community Medicine, Pushpagiri Institute of Medical Sciences and Research Centre, Tiruvalla, Kerala, India
[4] Additional Professor, Department of Community and Family Medicine, All India Institute of Medical Sciences, Mangalagiri, Andhra Pradesh, India

Abstract

Acute emergencies outside hospitals warrant the need for awareness of general public in basic life support (BLS) in the absence of trained personnel for enhancing the survival of victims. This study focuses on the knowledge, attitude and its associated factors among the youth regarding BLS. A cross sectional study was conducted in a tertiary care institution among 172 young adults, who attended cardiac life support training programme. A data sheet comprising of demographic variables and a content validated questionnaire for knowledge and attitude regarding BLS was administered prior to training. Higher scores meant higher knowledge and attitude levels. Mean age of respondents was 23.73 years ± 6.47 with majority (90.1%) of them belonging to 20 to 30 year age group. 124 (72.2%) had poor knowledge before training. The attitude level was good in 49.4% of study participants. Those who had prior BLS training, higher age group and married were significantly associated with attitude levels of the participants. Overall, the attitude was good in spite of low knowledge level emphasizing the need of inclusion of such training sessions in various institutions to act in the golden hour for victims' survival.

1. Introduction

The proportion of deaths occurring outside hospitals is on rise, the leading cause being sudden cardiac arrest. Cardiopulmonary resuscitation (CPR) involving BLS and cardiac life support is the first step in the chain of interventions for ensuring victims' survival if initiated immediately [1, 2]. BLS is the immediate medical care to sustain victims' life presenting with life-threatening emergencies until they get full medical care at the hospital, initiated by trained emergency medical technicians and paramedics [3, 4, 5, 6, 7]. However, there is a need for trained personnel from community to tackle the events occurring outside hospitals in the absence of health professionals [6]. In case of emergency, fast and structured patient management is crucial for a favorable outcome for patients [8]. Everyone should possess basic knowledge of emergency care and skills to manage common emergencies, which necessitates the need for this to be included in any curriculum. Moreover, BLS course may prove to be beneficial in improving their awareness regarding BLS and to act during emergency situations, thereby improving the quality of community health. Studies have showcased inadequate knowledge regarding the typical signs and threats associated with serious medical conditions among public [9]. This study was aimed at assessing the knowledge and attitudes of BLS among youth who were attending BLS training in a tertiary care centre in Kerala.

2. Materials and methods

A cross-sectional study was conducted in a tertiary care institution for one and a half years, where a hands-on training on BLS was organized in different sessions of 30 participants each by cardiology department. The target population comprised of students and faculty above 18 years from various non-medical institutions of Pathanamthitta district who voluntarily attended the training. The minimum sample size required was 138 based on awareness levels (42.5%) [2] From previous studies, using N= $(Z_{1-\alpha/2})^2 pq/d^2$, where p= 0.42, q=0.58 and d=20% of p and value of normal deviate at considered level of confidence 5% (α=5%). Applying the exclusion criteria, 172 participants were recruited for the study by non-probability sampling. The knowledge, attitudes and practices were explored by a pre-designed pretested content validated questionnaire reviewed by an expert panel of cardiologist, physician, and community medicine specialist. Prior to data collection, permission was obtained from the cardiology department. The purpose of study was fully explained to the study participants and written consent was obtained after assuring anonymity of the participants and confidentiality of the data collected. The questionnaire was administered in English language and consisted of personal information, and information related to CPR knowledge and attitude. The knowledge level was assessed using a nine-item questionnaire where positive

responses were given a score of 1 and negative responses, 0 score. The attitudes were analyzed using a five-item Likert type scale with scores of 0, 1, 2 for negative, neutral and positive attitudes respectively. The practices and responses to emergency situation were assessed using two questions related to their experiences in life and their response to emergency situation. The questionnaire was administered prior to the training session by the investigators after giving proper instructions to eligible participants who attended BLS training that occurred once in every month in the institution. The responders were given thirty minutes time to mark and to return the completed questionnaire. The collected data was entered into a spreadsheet and cleaned. The data was analyzed using statistical software. Descriptive variables and positive responses for knowledge and attitude were expressed in frequency and percentage. Knowledge and attitude scores were summated and grouped as above 75% (above average), 50-75% (average) and less than 50% (below average) denoting good, moderate and poor knowledge and attitude levels respectively. The association with knowledge, attitude and other variables were looked for by using chi-square test and Fishers' exact test. A p value less than 0.05 were considered significant.

3. Results and Discussion

All 172 distributed questionnaires were completed and returned indicating a response rate of 100%. Among the participants, more than half were females (94; 54.7%). Mean age of the respondents was 23.73 years ± 6.47 (SD) with majority (90.1%) belonging to 20-30 year age group. More than three-fourths (152; 88.4%) were unmarried. Parents of all the respondents had educational qualification of high school and above with majority of fathers being graduates (58; 33.7%) and mothers possessing higher secondary education (62; 36%). More than three-fourths (141; 82%) of mothers were unemployed, whereas 157 (91.2%) of fathers were employed. Majority (157; 91.3%) of respondents had not received any prior training on BLS.

Apart from health professionals, general public must have a sound knowledge regarding Basic Life Support (BLS). Overall, participants' performance on knowledge assessment was low. Nearly three-fourth of the participants (124; 72.2%) had poor knowledge level (50% and below). Two (1.2%) among them were not at all aware of any aspect of BLS. Only 4 out of 172 had scored above average for the pre-test conducted prior to training. (Figure 1) These findings were in agreement with other studies among teachers as per Ghrayeb et al. (Hebron; 57.5% low knowledge) and Enizzi Baa et al. (Saudi Arabia; Mean =4.0, SD = 1.62) [2, 6]. A study on public knowledge and attitudes towards CPR in Hong Kong by Chair et al. found that the overall CPR knowledge level of the participants was low with only four (0.4%) answering all questions correctly[1]. Studies performed in various parts revealed that the overall performance was low which points the need for creating awareness regarding CPR among the general population.

The highest proportion of correct responses in our study was for ambulance number (107; 62.2%) and more than half (93; 54.1%) responded correctly for BLS expansion. Only 33 (19.2%) knew the correct location for chest compression while giving CPR and the condition for adopting head tilt and chin lift position where as 139 (80.8%) were not aware of the same (Table 1). According to Ghrayeb et al, 81.9% knew regarding the emergency phone number and stepwise sequence of events when someone is not responding (58.1%). However, they had inadequate knowledge regarding chest compression depth in infants (21.9%) and initial response to be done when finding someone unresponsive (25.2%) [2]. Awareness related to practical aspects must have to be strengthened when comparing both study findings.

The attitude towards BLS training was good in spite of low knowledge level among the respondents (Figure 2). According to Sangamesh NC et al. (2017, Odisha) among 659 health related participants, 94% had positive attitude toward BLS similar to current study findings with average knowledge regarding the individual components of BLS [10]. Similarly, Narayan et al. demonstrated average knowledge level regarding BLS with good attitude score [11] among dental interns and post graduates. These studies were performed in health related professionals whereas current study was conducted among non-medical individuals that might have created this contradiction. Moreover, the present study was able to convey the analogous attitude in both health care providers and general population in spite of their modest knowledge in health care.

Majority of respondents reported that BLS training is mandatory for all the citizens (154; 89.5%) and nearly same proportion (147; 85.5%) insisted on inclusion of BLS as part of curriculum, consistent with Kanstad BK et al (86%) [12]. Though 142 (82.6%) were fearless in performing CPR, only half of them (90; 52.3%) were confident to perform CPR. Nearly three fourths (124; 72.1%) had an opinion that 'BLS should not be done in hospitals alone'. (Table 2) 83% of our study participants were willing to perform bystander CPR in a given situation with cardiac arrest even though 11.6% (20) had prior exposure to an emergency situation. Among them, 6 (3.5%) had tried to perform CPR and remaining 14 (8.1%) called for help. When asked about responses to an emergency situation, only 2 (1.2%) would leave the situation unnoticed similar to Taniguchi et al [13], where 70% had experienced CPR training more than once, 1.2% responded as leaving the situation un-noticed. However, only 10-30% were willing to perform CPR, which was contrary to that of present study findings where, in spite of low knowledge level, showed positive response in performing CPR. Hung et al added supporting evidence for current study [8].

Table 3 shows the relationship between knowledge and socio-demographic variables. For further analysis, knowledge has been regrouped into 0-25%, 25.1-50%, and more than 50%. Marginally higher scores were obtained by youngest age group (30.3%). There was not much difference in scores in relation to marital status and parents' education (Table 3). However, higher favorable attitude was significantly associated with higher age group, married and those who had prior BLS training. Among those who were more than 30 years of age, 94.1% (16) showed better attitude when compared with 20 to 30 year age group where only 44.5% (69) had good attitude score (p=0.001). The older the person was, the more confident and willingness they showed towards performing CPR in spite of inadequate training according to Dobbie et al. [14] These findings are pertinent since the older people are often the victims of emergencies outside the hospital. In relation to their marital status, 44.1% (67) had good attitude scores among unmarried group whereas 90% (18) among married had positive attitude in performing BLS (p=0.001) similar to Hawkes et al. [15] All the individuals who had received

prior BLS training had an attitude score between 75-100. On the other hand, among those who received no training in BLS, 44.6% had good, 47% moderate and 8.3% poor attitude towards BLS (p=0.001). These findings were consistent with Hung *et al* and Abolfotouh MA *et al* (2017), where positive attitudes were observed in those who attended the BLS-AED course (64.8%) than their counterparts (53.4%) [8, 16] (Table 4).

The present study covered younger adults from various institutions in and around Thiruvalla, Kerala, India. This gives a rough description of knowledge and attitude levels of non-medical individuals within a revenue division. Study sample was a convenient sample and not randomly selected, so an issue of generalizability certainly arises. We were not able to collect data from institutions located in inner rural pockets of our district which needs to be investigated further. A post assessment of knowledge and attitude level following few months of training would have given a clear picture on the impact of intervention on knowledge and attitude levels. Moreover, it is essential to determine the impact of social grade, working status on their awareness and attitudes towards CPR that is not explored in present study.

4. Tables and Figures

Table 1: Percentage of correct responses for Knowledge Questions

Question	Frequency(n)	Percentage (%)
Full form of BLS	93	54.1
Full form of AED	79	45.9
Location for chest compression	33	19.2
Ambulance number	107	62.2
Effective method of rescue breaths	37	21.5
Response to choking, awake and silent	56	32.6
Unresponsive patient	101	58.7
Condition for head tilt and chin lift	33	19.2
BLS sequence	64	37.2

Table 2: Attitude of study participants towards BLS

Question	Frequency(n)	Percentage (%)
BLS training is required for all		
Agree	154	89.5
Neutral	13	7.6
Disagree	5	2.9
BLS should be part of curriculum		
Agree	147	85.5
Neutral	18	10.4
Disagree	7	4.1
Confidence to do CPR		
Agree	90	52.3
Neutral	44	25.6
Disagree	38	22.1
Attitude towards a situation on BLS		
Comfortable	142	82.5
Uncomfortable	30	17.5
BLS to be done only in hospitals		
No	124	72.1
Not sure	40	23.3
Yes	8	4.7

Table 3: Knowledge score and socio-demographic variables

Variables	Percentage of knowledge scores				
	0-25 N (%)	25.1-50 N (%)	50.1 and above N (%)	Chi-square value	P value
Age (years)					
20-30	41(26.5)	67(43.2)	47(30.3)	4.550	0.103
>30	6(35.3)	10(58.8)	1(5.9)		
Marital status					
Married	6(30)	9(45)	5(25)	0.128	0.938
Single	41(27)	68(44.7)	48(28.3)		
Education (Father)					
High school	13(23.6)	27(49.1)	15(27.3)	1.672	0.947
Higher secondary	13(26)	22(44)	15(30)		
Graduate	19(32.8)	24(41.4)	15(25.9)		
Post graduate	2(22.2)	4(44.4)	3(33.3)		
Education (Mother)					
High school	14(29.8)	22(46.8)	11(23.4)	7.432	0.283
Higher secondary	22(35.5)	25(40.3)	15(24.2)		
Graduate	9(17)	24(45.3)	20(37.7)		
Post graduate	2(20)	6(60)	2(20)		

Received prior BLS training					
Yes	1(6.7)	8(53.3)	6(40)	3.697	0.157
No	46(29.3)	69(43.9)	42(26.8)		

Table 4: Attitude scores with socio-demographic variables

Variable	Percentage of attitude score				
	Up to 50 n (%)	50 to 75 n (%)	75 to 100 n (%)	Chi-square	P value
Age (Years)					
20-30	12(7.7)	74 (47.7)	69 (44.5)	15.813	.001*
>30	1 (5.9)	0 (0)	16 (94.1)		
Marital status					
Married	1(5)	1(5)	18(90)	15.34	.001*
Single	12(7.9)	73(48)	67(44.1)		
Education (father)					
High school	4(7.3)	28(50.9)	23(41.8)		
Higher Secondary	4(8)	22(44)	24(48)	5.148	.525
Graduate	3(5.2)	22(37.9)	33(56.9)		
Post graduate	2(22.2)	2(22.2)	5(55.6)		
Education (mother)					
High school	5(10.6)	22(46.8)	20(42.6)		
Higher Secondary	3(4.8)	27(43.5)	32(51.6)	4.811	.568
Graduate	3(5.7)	21(39.6)	29(54.7)		
Post graduate	2(20)	4(40)	4(40)		
Occupation father					
Unemployed	1 (6.7)	13(86.7)	1(6.7)	5.148	.525
Unskilled to semiskilled Skilled	6 (54.5)	2(18.2)	3(27.3)		
Semiprofessional to	30 (27)	47(42.4)	34(30.6)		
professional	10 (28.6)	15(42.9)	10(28.6)		
Occupation mother					
Unemployed	11(7.8)	64(45.4%)	66(46.8)		
Employed	2(11.8)	10 (58.9)	5(29.4)	7.607	.268
Received prior BLS training					
No	13(8.3)	74(47.1)	70(44.6)		
Yes	-	-	15(100)	16.82	.001*

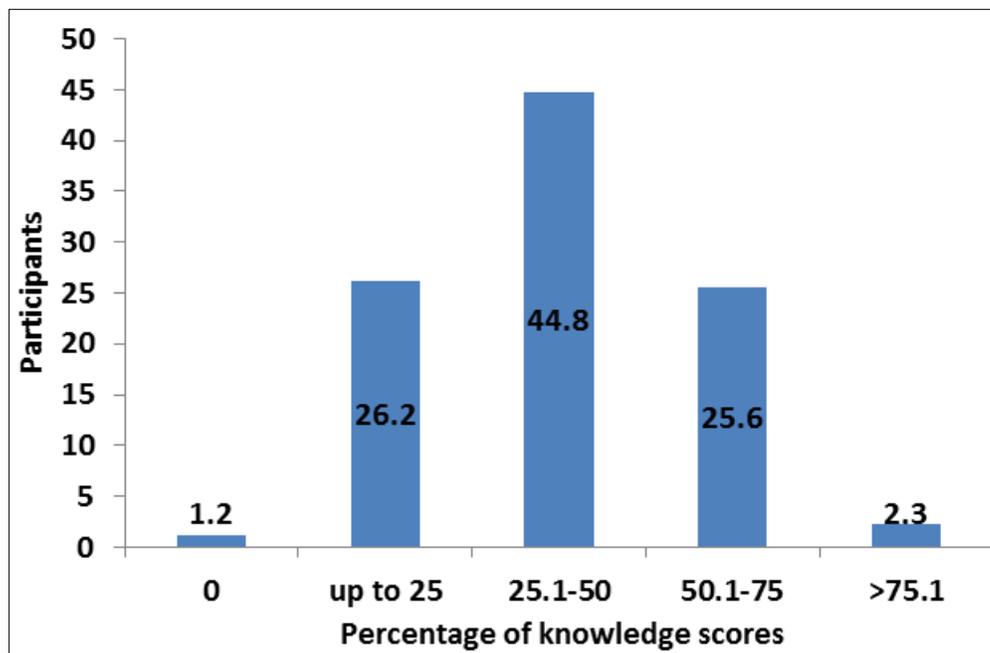P*- significant<0.05 Chi-square; Fishers exact test

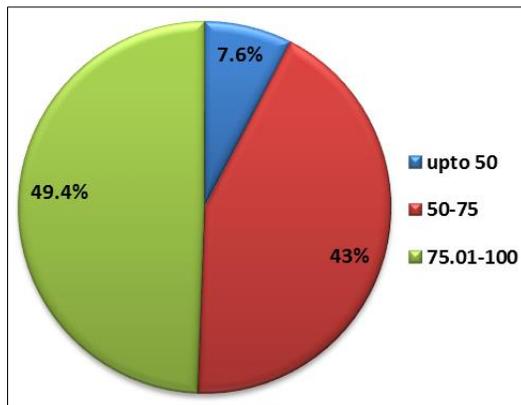**Fig 1:** Knowledge level on BLS of study participants

Fig 2: Percentage of Attitude scores obtained by the respondents

8. Conclusions
Non-medical individuals possess low level of knowledge regarding BLS. In spite of low knowledge level, nearly half of the respondents had good attitude scores. Awareness classes must be conducted emphasizing the need of knowing BLS. Training classes must focus on younger age-group as they form the enthusiastic group who could work actively with courage in times of need and enhancing their knowledge and attitude levels towards BLS will provide courage in times of need.

9. Appendix -Nil
10. Acknowledgments

11. References
1. Public knowledge and attitudes towards cardiopulmonary resuscitation in Hong Kong: telephone survey. HKMJ [Internet]. [cited Aug 26], 2017. Available from: http://www.hkmj.org/abstracts/v20n2/126.htm
2. Ghrayeb FA, Amro NRN, Rahseed O, Yagi H, Amro R, Amro B. *et al*. Knowledge and attitude of basic life support (BLS) among school teachers in Hebron, Palestine. Int J Res Med Sci. 2017; 5(6):2477.
3. Udwadia FE. Principles of Critical Care [Internet]. Oxford University Press, 1996. Available from: https://books.google.co.in/books?id=cYFrAAAAMAAJ
4. Wolfson AB, Cloutier RL, Hendey GW, Ling LJ, Rosen CL, Schaider JJ. *et al*. Harwood-Nuss' clinical practice of emergency medicine. 6th ed. Wolters Kluwer Health Adis (ESP), 2014, 1860 p.
5. Palatty Babum Urumese ES, Vasnaik Mabel. Cordeiro. Chapter-01 Cardiopulmonary Resuscitation. In: Palatty Babu Urumese ES Vasnaik Mabel Cordeiro, editor. Essentials of Emergency Medicine [Internet].Jaypee Brothers Pvt Ltd, 2003, p. 8. Available from: http://dx.doi.org/10.5005/jp/books/10275_1
6. Enizi BAA, Saquib N, Zaghloul MSA, Alaboud MSA, Shahid MS, Saquib J. *et al*. Knowledge and Attitudes about Basic Life Support among Secondary School Teachers in Al-Qassim, Saudi Arabia. Int J Health Sci. 2016; 10(3):415.
7. Sharma R, Attar NR. Adult basic life support (BLS) awareness and knowledge among medical and dental interns completing internship from deemed university. NUJHS, 2012; 2:6-13.
8. Hung MSY, Chow MCM, Chu TTW, Wong PP, Nam WY, Chan VLK. *et al*. College students' knowledge and attitudes toward bystander cardiopulmonary resuscitation: A cross-sectional survey. Lee A, editor. Cogent Med [Internet]. 2017 May 26 [cited Nov 29], 2017; 4(1). Available from: https://www.cogentoa.com/article/10.1080/2331205X.2017. 1334408
9. Zeng Y, He GP, Yi GH, Huang YJ, Zhang QH, He LL. *et al*. Knowledge of stroke warning signs and risk factors among patients with previous stroke or TIA in China. Available fromhttps://www.ncbi.nlm.nih.gov/pubmed/22985321
10. Sangamesh NC, Vidya KC, Pathi J, Singh A. Awareness, attitude, and knowledge of basic life support among medical, dental, and nursing faculties and students in the university hospital. J Int Soc Prevent Communit Dent, 2017; 7:161-7
11. Narayan DPR. Assessment of knowledge and attitude about basic life support among dental interns and postgraduate students in Bangalore city, India. World J Emerg Med. 2015; 6(2):118.
12. Kanstad BK, Nilsen SA, Fredriksen K. CPR knowledge and attitude to performing bystander CPR among secondary school students in Norway. Resuscitation. 2011; 82(8):1053-9.
13. Taniguchi T, Omi W, Inaba H. Attitudes toward the performance of bystander cardiopulmonary resuscitation in Japan. Resuscitation. 2007; 75(1):82-7.
14. Dobbie F, MacKintosh AM, Clegg G, Stirzaker R, Bauld L. Attitudes towards bystander cardiopulmonary resuscitation: Results from a cross-sectional general population survey. Lazzeri C, editor. PLOS ONE. 2018; 13(3):e0193391.
15. Abolfotouh MA, Alnasser MA, Berhanu AN, Al-Turaif DA, Alfayez AI. Impact of basic life-support training on the attitudes of health-care workers toward cardiopulmonary resuscitation and defibrillation. BMC Health Serv Res [Internet]. 2017 Dec [cited Dec 17], 2017; 17(1). Available from: http:// bmchealthservres. biomedcentral.com /articles/10.1186 /s12913-017-2621-5
16. Hawkes CA, Brown TP, Booth S, Fothergill RT, Siriwardena N, Zakaria S. *et al*. Attitudes to Cardiopulmonary Resuscitation and Defibrillator Use: A Survey of UK Adults in 2017. J Am Heart Assoc [Internet]. 2019 Apr 2 [cited Dec 26], 2019; 8(7). Available from: https://www.ahajournals.org/doi/10.1161/JAHA.117.008267