



Original Research Article

Attitude of School Children towards Basic Life Support in Punjab, India

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Received: 21/03/2014

Revised: 11/04/2014

Accepted: 25/04/2014

ABSTRACT

Introduction: Basic life support performed by bystanders improves outcomes in cardio respiratory collapse, yet less than 1% of the general population can perform it effectively. Training school children in CPR has been strongly advocated by European Resuscitation Council. Integrating CPR training throughout the school career appears an effective strategy. The present study is aimed to assess the attitude towards Basic Life Support Techniques among 9th standard school students in selected schools of Ludhiana, Punjab. **Material and Methods:** We recruited 301 9th standard school students from five conveniently selected schools of Ludhiana, Punjab. Sociodemographic data was collected through structured sociodemographic sheet. Attitude toward Basic Life Support was assessed using five point Likert scale. Test retest reliability coefficient of attitude scale was $r=0.914$. The split half Spearman-Brown prophecy reliability coefficient was $r=0.895$. Participants were given full disclosure of the study and written informed consent was obtained from each participant. Written permission for data collection was obtained from the concerned school principal. **Results:** Mean age of study sample was 14.29 ± 0.85 year (range 13-17 years). Slightly more than half (56.66%) of the students were male. Mean attitude score of the sample was 54.20 ± 7.99 which shows positive inclination of the sample towards Basic Life Support. However, the mean score of the female students (55.87 ± 7.74) was significantly more (p value = 0.001) as compared to their male counterparts (52.93 ± 7.98). **Conclusion:** Positive attitude of secondary school students reflects a fertile ground on which the crop of lay rescuer can be sown. If, BLS training is provided to them their positive attitude can make them a responsible lay rescuer to save a life of cardiac arrest victim in a country where the incidence of out of hospital cardiac arrest is advancing.

Key words: Basic Life Support, Attitude, School Students.

INTRODUCTION

The risk of coronary artery disease in Indians is 3-4 times higher than White Americans, 6-times higher than Chinese, and 20-times higher than Japanese. [1,2] Coronary artery disease and coronary risk factors in India are two or three times higher among the urban compared with the rural subjects, which may be due to greater

sedentary behaviour and alcohol intake among Indian urban. It was estimated [3] that nearly 30 million Indians had cardiovascular disease in 2003, which represented a prevalence of 8-10% among urban Indians. Another side of the coin is that Indians are prone as a community to CAD at a much younger age. [4,5] In the Western population, incidence of CAD in the young is up to 5%

as compared to 12-16% in Indians. [6-7] In some studies from India, the percentage of patients below the age of 45 years suffering from acute myocardial infarction is reported as high as 25-40%. [8-9] This has a huge public health impact with a significant loss in potentially useful life-years due to premature, unexpected cardiovascular deaths. Most sudden death events in the community are due to cardiac causes, most commonly secondary to CAD which may include ventricular tachyarrhythmia either ventricular tachycardia or ventricular fibrillation.

Approximately 4280 out of every one lakh people die every year from SCA in India alone. [10] Furthermore, the mean age of the patients who die suddenly is younger (60 years) as compared to the western nations (75 years). Most of the SCD events occurs out-of-hospital before any contact with health professionals. It's estimated that more than 70% of ventricular fibrillation victims die before reaching the hospital. [11]

Basic life support or cardiopulmonary resuscitation performed by bystanders improves outcomes in cardio respiratory collapse, yet less than 1% of the general population can perform it effectively. It has been estimated that if 15-20% of the population could perform basic life support, out of hospital mortality could be significantly reduced. Successful outcome after an out-of-hospital cardiac arrest is directly related to the promptness with which the chain of survival is implemented. The presence of a bystander who activates the emergency medical service immediately and begins basic life support techniques (BLS) significantly increases the incidence of the return of spontaneous circulation and the number of patients with out-of-hospital cardiac arrest finally discharged from hospital. However, bystanders attempt CPR in only 32% of cases [12] mostly because lack of training and

fear of causing damage, contracting an infectious disease, and not being able to provide adequate resuscitation. [13]

The ideal situation would be to train the whole population, but it seems impossible to train the whole population in a resources limited country like India. Moreover, the scarcity of resources usually requires that training be targeted to certain groups e.g. Police personnel etc.

In an attempt to maximize the number of potential BLS lay providers in the community, several societies and organizations have suggested that a BLS programme should be included in the school curriculum within the mandatory schooling period because this is the final setting where a large proportion of a community's youth is assembled in specific institutions before being released to society. In 2003, the International Liaison Committee on Resuscitation recommended CPR training in schools [14] and in 2010 the American Heart Association suggested CPR to be a requirement for high school graduation. [15] Several research studies also have suggested that CPR training should be integrated throughout the school years. It can serve as an effective strategy to increase the number of trained bystander in the community. [16,19] Fleishhackl and co-workers [20] reported that students as young as 9 years were able to successfully and effectively learn basic CPR skills, including automated external defibrillator deployment, correct recovery position, and emergency calling. If taught to thousands of students, they will not only be more willing to come forward and help if they see someone collapsing but will also feel good about saving lives "without being a doctor."

If a person receives CPR within five minutes of collapsing, his or her chances of survival without any effect to the brain are 70%. If there is nobody around who knows CPR, chances of the person's survival are

just 30%. Therefore, it will do tremendous good if students are taught CPR. [21] Parnell MM et al [22] assessed the Knowledge and attitudes towards resuscitation in New Zealand high-school students. Findings of the study suggested that most high-school students are willing and motivated to learn CPR. Oscar Miro et al [23] conducted a study to identify the view of head teachers towards teaching basic life support to 12-16 year olds in Barcelona schools. It was reported that 63% from private and 37% from public secondary schools with 85% of head teachers being interested in incorporating a basic CPR programme in the school curriculum. Jasna Petric et al [24] also assessed attitudes of students and their parents toward basic life support training in primary schools, along with perceptions of students' fears toward applying and training BLS. The questionnaires were completed by 301 school children and 361 parents. The study reported that students' attitude was significantly more positive than that of the parents ($P < 0.001$). In India, there is paucity of work which explores the attitude of school students' towards BLS. The present study is aimed to assess the attitude towards Basic Life Support Techniques among 9th standard school students in selected schools of Ludhiana, Punjab.

MATERIALS AND METHODS

We recruited 301 9th standard school students from five conveniently selected schools of Ludhiana, Punjab. Sociodemographic data was collected through structured sociodemographic sheet. Attitude toward Basic Life Support was assessed using five point Likert scale (Strongly Agree, Agree, Uncertain, Disagree, and Strongly Disagree). It consists of total sixteen statements out of which 8 were positive statements and 8 were negative statements. Max score on Likert scale was 80 and min score was 16. Content

validity of the tools was established from experts in the field of Resuscitation, Medicine, Surgery and Nursing. Necessary modifications were done as per experts' opinions. Test retest reliability coefficient of attitude scale was $r=0.914$. The split half Spearman- Brown prophecy reliability coefficient was $r=0.895$ showing good internal consistency of the scale. Readability formulas were applied to calculate the average grade level, reading age, and text difficulty of Structured Attitude Scale. Based on 8 readability formulas, [25] the text of tool has been scored as:

- Reading Level: fairly difficult to read.
- Reader's Age: 11-13 yrs. old (Sixth and Seventh graders)

Participants were given full disclosure of the study and written informed consent was obtained from each participant. Written permission for data collection was obtained from the concerned school principals. Sociodemographic sheet and attitude scale was distributed to the students in the classroom and they filled the required information at their own.

RESULT

Mean age of study sample was 14.29 ± 0.85 year (range 13-17 years). Slightly more than half (56.66%) of the students were male. Slightly more than half 169 (56.33%) of the students were Sikhs followed by 127 (42.33%) Hindu, and 4 (1.33%) were Christian. Mean attitude score of the sample was 54.20 ± 7.99 which shows positive inclination of the sample towards Basic Life Support. However, the total mean score of the female students (55.87 ± 7.74) was significantly more (p value =0.001) as compared to their male counterparts (52.93 ± 7.98). Most of subjects (89.66%) agreed that "Basic life support should be learnt voluntarily by every citizen". Similarly; 74% subjects responded positively that

“Basic life support, if administered on time can save the life of a cardiac arrest victim”. More than half of the study sample showed positive inclination to start chest compression, instead of no cardiopulmonary resuscitation, in the absence of barrier devices for mouth to mouth ventilation.

However, less than 1/3rd of the sample disagreed that “It is harmful to administer mouth to mouth breathing with barrier devices”. More than half of the sample agreed that fear of legal actions can hinder them to perform Basic life support.

Table 1: Attitude of school students towards Basic Life Support.

S. No.	ITEMS/STATEMENTS	Response in f (%)				
		SA	A	?	SD	D
1	Basic life support should be learnt voluntarily by every citizen of the country	180 (60%)	89 (29.66%)	25 (8.33%)	3 (1%)	3 (1%)
2	Basic life support, if administered on time can save the life of a cardiac arrest victim	111 (37%)	102 (34%)	47 (15.66%)	21 (7%)	19 (6.33%)
3	If you encounter a person lying unresponsive; you will not immediately start Basic life support.	62 (20.66%)	66 (22%)	60 (20%)	64 (21.33%)	48 (16%)
4	It is harmful to administer mouth to mouth breathing with barrier devices.	71 (23.66%)	83 (27.66%)	56 (18.66%)	21 (7%)	69 (23%)
5	It is better to start chest compression, instead of no cardiopulmonary resuscitation, if you don't have barrier devices with you for mouth to mouth ventilation.	78 (23%)	95 (31.66%)	62 (20.66%)	23 (7.66%)	42 (14%)
6	Government should install automatic external defibrillators at all the public places so that number of out of hospital deaths can be prevented due to cardiac arrest.	117 (39%)	62 (20.66%)	60 (20%)	29 (9.66%)	32 (10.66%)
7	Basic life support should not be included in school curriculum of secondary class students.	52 (17.33%)	59 (19.66%)	59 (19.66%)	85 (28.33%)	45 (15%)
8	As a basic life support provider you feel that it is your responsibility to train at least your family members in this skill.	109(36.33%)	93 (31%)	37 (12.33%)	27 (9%)	34 (11.33%)
9	You will never provide basic life support to the strangers.	40 (13.33%)	60 (20%)	63 (21%)	88 (29.33%)	49 (16.33%)
10	Learning basic life support is not useful until unless we don't have nationwide uniform emergency medical service (EMS) number.	49 (16.33%)	65 (21.66%)	64 (21.33%)	74 (24.66%)	48 (16%)
11	Basic life support training should be provided mandatorily to certain group of people (i.e. policemen, fire-workers, home guards) as they handle casualties routinely.	95 (31.66%)	68 (22.66%)	68 (22.66%)	36 (12%)	33 (11%)
12	Fear of legal actions can hinder you to perform Basic life support.	58 (19.33%)	101(33.66%)	58 (19.33%)	30 (10%)	23 (7.66%)
13	It is not your moral duty to learn and provide basic life support to your country people whenever needed.	63 (21%)	41 (13.66%)	52 (17.33%)	89 (29.22%)	55 (18.33%)
14	Basic life support should be strictly given by professionals (doctors/nurses) only.	61 (20.33%)	58 (19.33%)	59 (19.66%)	74 (24.66%)	48 (16%)
15	Basic life support training for school children should be adequate to prepare them for providing Basic life support.	118 (39.33%)	90 (30%)	42 (14%)	26 (8.66%)	24 (8%)
16	Basic life support training would instill confidence to provide basic life support.	127 (42.33%)	75 (25%)	54 (18%)	27 (9%)	17 (5.66%)

SA- Strongly agree, A- Agree, ?- Uncertain, SD- Strongly disagree, D- Disagree.

Slightly less than of 2/3rd of the sample expressed positively that government should install automatic external defibrillators at all the public places so that number of out of hospital deaths can be prevented due to cardiac arrest. Slightly more than 1/5th of the study sample was uncertain whether to provide BLS to strangers; usefulness of learning BLS unless we don't have

nationwide uniform EMS number and mandatory training to certain group of people (i.e. policemen, fire-workers, home guards) as they handle casualties routinely. More than 2/3rd of the students responded positively that basic life support training would instill confidence to provide basic life support and Basic life support training for school children should be adequate to

prepare them for providing Basic life support. Slightly more than 1/3rd opinioned positively that it is not their moral duty to learn and provide basic life support to country people whenever needed. Slightly less than 1/5th (19.66%) of the students were uncertain whether the basic life support should be included in to secondary school curriculum; however 43.33% students favored that basic life support should be included in the curriculum of the secondary class.

Significantly more of the female students (77.6%) as compared to male students (65.88%) agreed that Basic life support, if administered on time can save the life of a cardiac arrest victim ($p=0.04$). Similar trend was observed in relation to responsibility to train at least your family members in this skill. Significantly more of the female students (26.92%) as compared to male students (10.58%) disagreed that fear of legal actions can hinder them to perform Basic life support. Almost similar trend was observed in opinion in relation to whether Basic life support should be strictly given by professionals (doctors/nurses) only. The groups difference was found to be non significant on items other than mentioned above on attitude scale.

DISCUSSION

The sample of the study consisted of 9th class school students with mean age of 14.29 ± 0.85 year. Male students dominated the study sample (56.66%). Almost similar sample characteristics have been reported by previous studies. [22,26] Our study showed that 9th class students had positive attitude toward BLS training in schools and they strongly believed that it would greatly benefit students' self-confidence. A more positive attitude of female students toward Basic life support may be because of more sensitive nature of female. Our results are consistent with previous reports. [20,21,27,28]

Abdullah A et al [29] also reported that the overall attitude of secondary school students is positive towards CPR.

The greatest fear expressed by the students was that of 'legal actions' can possibly lead toward failure to provide help. We believe that such opinion is related to unawareness of the school students about the legal issues. Hubble MW et al [30] also reported that fear of infection, legal consequences, and fear of harming the patient are the most frequently cited reasons for not providing basic life support among high school students. Such fears could be countered through wide-spread training and public campaigns. Secondly, most of the students didn't show favourable attitude toward mouth to mouth ventilation. Our findings are consistent with the previous research conducted by Omi W among Japanese high school students. [31]

With the rate of more than 8% of cardiac arrests witnessed by students, [24] proven psychological and physical readiness of 13-14 years school students by numerous research studies worldwide [31,32] positive correlations between BLS training and willingness to apply it, and positive attitude of school students towards Basic Life Support we believe that compulsory BLS training should be implemented in secondary schools in India.

A limitation of our study is that sampling was not randomized, and it only included students in public schools of one city in Ludhiana, Punjab. Therefore, it is possible that a larger or more diverse sample could have yielded different results. The attitudes of students could also be subject to family experiences with cardiac arrests or other illnesses, previously experienced accidents, as well as social and cultural differences. We also did not measure the willingness of students to perform BLS in real-life situations; however studies have shown that BLS training greatly improves

both the willingness and the rates of bystander-administered BLS. [33-35] Implementing compulsory BLS training in secondary schools as suggested by Lewis R

et al [36] and American Heart Association could help subside students' fears, increase their confidence and globally help increase survival from out of hospital cardiac arrest.

Table 2: Comparison of attitude between male and female students

S. No	ITEMS/STATEMENTS	Response in f (%)					Gender	Chi-square statistics
		SA	A	?	SD	D		
1	Basic life support should be learnt voluntarily by every citizen of the country	105 (61.76)	43 (25.29)	18 (10.58)	2 (1.17)	2 (1.17)	M	5.3699 P=0.251
		75 (57.69)	46 (35.38)	7 (5.38)	1 (0.769)	1 (0.769)	F	
2	Basic life support, if administered on time can save the life of a cardiac arrest victim	51 (30)	61 (35.88)	33 (19.41)	14 (8.235)	11 (6.47)	M	9.98 P=0.04*
		60 (46.153)	41(31.538)	14(10.769)	7 (5.38)	8 (6.15)	F	
3	If you encounter a person lying unresponsive; you will not immediately start Basic life support.	41 (24.11)	36(21.176)	36(21.176)	34 (20)	23 (13.53)	M	4.48 P=0.345
		21 (16.15)	30 (23.07)	24 (18.46)	30 (23.07)	25 (19.23)	F	
4	It is harmful to administer mouth to mouth breathing with barrier devices.	40 (23.529)	44 (25.88)	38 (22.35)	14 (8.23)	34 (20)	M	5.70 P=0.22
		31 (23.846)	39 (30)	18(13.846)	7 (5.38)	35 (26.92)	F	
5	It is better to start chest compression, instead of no cardiopulmonary resuscitation, if you don't have barrier devices with you for mouth to mouth ventilation.	46 (27.05)	50 (29.41)	39 (22.94)	12 (7.05)	23(13.529)	M	2.03 P=0.729
		32 (24.615)	45(34.615)	23 (17.69)	11 (8.46)	19 (14.61)	F	
6	Government should install automatic external defibrillators at all the public places so that number of out of hospital deaths can be prevented due to cardiac arrest.	64 (37.647)	35(20.588)	35(20.588)	20 (11.76)	15 (8.82)	M	2.90 P=0.574
		53 (40.769)	27(20.769)	25 (19.23)	9 (6.92)	16(12.307)	F	
7	Basic life support should not be included in school curriculum of secondary class students.	29 (17.058)	36(21.176)	41(24.117)	42 (24.70)	22 (12.94)	M	7.35 P=0.118
		23 (17.69)	23(17.69)	18(13.846)	43(33.076)	23(17.69)	F	
8	As a basic life support provider you feel that it is your responsibility to train at least your family members in this skill.	57 (33.529)	44(25.88)	25(14.705)	21 (12.35)	23(13.529)	M	12.52 P=0.01*
		52 (40)	49(37.69)	12 (9.23)	6 (4.61)	11 (8.46)	F	
9	You will never provide basic life support to the strangers.	28 (16.47)	29(17.058)	38 (22.35)	48(28.235)	27 (15.88)	M	5.14 P=0.272
		12 (9.23)	31(23.846)	25 (19.23)	40(30.769)	22 (16.92)	F	
10	Learning basic life support is not useful until unless we don't have nationwide uniform emergency medical service (EMS) number.	21 (12.35)	39 (22.94)	38 (22.35)	45 (26.47)	27 (15.88)	M	4.81 P=0.307
		28 (21.538)	26 (20)	26 (20)	29 (22.30)	21 (16.15)	F	
11	Basic life support training should be provided mandatorily to certain group of people (i.e. policemen, fire-workers, home guards) as they handle casualties routinely.	50 (29.41)	36 (21.17)	40 (23.529)	23 (13.529)	21 (12.35)	M	2.56 P=0.633
		45 (34.615)	32(24.615)	28(21.538)	13 (10)	12 (9.23)	F	
12	Fear of legal actions can hinder you to perform Basic life support.	60 (35.29)	57(33.529)	35(20.588)	9 (5.29)	9 (5.29)	M	16.64 P=0.002*
		28 (21.538)	44 33.846)	23 (17.69)	21 (16.15)	14 (10.77)	F	
13	It is not your moral duty to learn and provide basic life support to your country people whenever needed.	35 (20.588)	29 (17.05)	33 (19.41)	49 (28.82)	24(14.117)	M	8.20 P=0.08
		28 (21.538)	12 (9.23)	19(14.615)	40(30.769)	31(23.846)	F	
14	Basic life support should be strictly given by professionals (doctors/nurses) only.	35 (20.588)	32 (18.82)	43 (25.29)	38 (22.35)	22 (12.94)	M	9.52 P=0.049*
		26 (20)	26 (20)	16(12.307)	36 (27.69)	26 (20)	F	
15	Basic life support training for school children should be adequate to prepare them for providing Basic life support.	62 (36.47)	50 (29.41)	26 (15.29)	17 (10)	15 (8.82)	M	2.47 P=0.65
		56(43.076)	40(30.769)	16(12.307)	9 (6.92)	9 (6.92)	F	
16	Basic life support training would instill confidence to provide basic life support.	71 (41.76)	36 (21.17)	34 (20)	20 (11.76)	9 (5.29)	M	6.62 P=0.157
		56 (43.07)	39 (30)	20 (15.38)	7 (5.38)	8 (6.15)	F	

SA- Strongly agree, A- Agree, ?- Uncertain, SD- Strongly disagree, D- Disagree, M-Male, F-Female

Nursing implications: Community health nurse and School health nurse should plan and implement Basic life Support techniques training to secondary school children in the light of their favourable attitude. They should be provided more clarifications in those issues in which their attitude need to be modified while delivering training to the students.

CONCLUSION

Positive attitude of secondary school students reflects a fertile ground on which the crop of lay rescuer can be sown. If, BLS training is provided to them their positive attitude can make them a responsible lay rescuer to save a life of cardiac arrest victim in a country where the incidence of out of cardiac arrest is advancing. Central board of secondary education and other state secondary education boards need to include basic life support training in to mandatory school period as well as make it a mandate to get qualified for secondary school certificate.

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How to cite this article: Patidar AB, Sharma A. Attitude of school children towards basic life support in Punjab, India. *Int J Health Sci Res.* 2014;4(5):193-201.

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