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EVALUATION OF KNOWLEDGE AND ATTITUDE OF BASIC LIFE SUPPORT SKILLS AMONG MEDICAL AND DENTAL STUDENTS AND ASSESSMENT OF THE SAME POST A BASIC LIFE SUPPORT

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ABSTRACT

Background: Many studies have shown inadequate knowledge among medical students even after learning basic theory of cardiopulmonary resuscitation. Structured workshops have been shown to improve the knowledge and attitude towards Basic Life Support (BLS). But not many studies are done in our part of the country to assess the impact of this intervention. We studied the impact of BLS workshop on the knowledge and attitude of medical and dental students from a tertiary care teaching institute in Maharashtra. **Objectives:** To evaluate the knowledge, attitude and practice of basic life support skills among final year MBBS and third year BDS students. To Assess the improvement in knowledge and attitude of BLS after conducting a structured workshop. **Materials and Methods:** A questionnaire based survey to evaluate knowledge and attitude towards BLS was conducted pre and post a structured BLS workshop.25 questions were formulated under AHA Guidelines 2015 with approval from institutional ethical committee.90 medical students from the Final year MBBS and 90 BDS students from 3rd year participated. Statistical analysis: The results were tabulated and analyzed as per Wilcoxon Signed Rank Test for paired observations. **Results:** Out of the initial 180 applicants, 64.4%BDS students and 30%MBBS students reverted back for the post-workshop analysis. A significant increase in the knowledge score among MBBS students from 30% pre workshop to 58 % post workshop. Similarly BDS students showed improvement from 27% pre workshop to 45 % post workshop in knowledge based questions. The score for the increase in the attitude of BDS students is also significant. **Conclusion:** The existing knowledge of BLS is not adequate among medical and dental students and a significant increase is seen post workshop training so it justifies that BLS training should be included in the regular curriculum and frequent knowledge refreshment should be provided.

KEYWORDS :

INTRODUCTION

Management of cardiac arrest involves having a thorough knowledge of guidelines, mastery over requisite skills and ability to work in a team. It also needs presence of mind to mobilize whatever aids and resources that may be available and calling appropriate help depending on the scenario of arrest. All these varied aspects of the management have to be executed simultaneously. To add to these challenges is the race against time mandating prompt decision making without much scope for consultation with seniors. The American Heart Association states that CPR should start within 10 seconds of recognition of cardiac arrest to improve the chances of successful resuscitation.[1]Though the standard curriculum of MBBS includes basic life support (BLS) algorithms, studies [2,3,4,5] show that requisite knowledge and skills were below average in intern doctors and undergraduate medical and nursing students. It is important here to understand that mere textbook based learning may not be sufficient to properly manage cardiac arrest. A workshop based training focusing on the required algorithms and skills with simulation based learning should better equip the caregivers to manage cardiac arrest. In this study we have tried to assess the knowledge and attitude of MBBS and BDS (bachelor of dentistry) undergraduates about BLS and whether workshop based training leads to improvement in the knowledge, confidence and decision making ability of these students.

MATERIAL AND METHODS

This study compared the knowledge and attitude of students, pre and post a BLS workshop. The questions were prepared by American heart association (AHA) certified BLS and advanced cardiac life support (ACLS) instructors based on AHA 2015 guidelines. The questionnaire was validated by 4 AHA certified BLS and ACLS instructors. They evaluated if the questionnaire effectively captured the topic in given time and ruled out confusing, vague or leading questions. The first part was based on knowledge and included 15 questions. Second part of 10 questions assessed the attitude towards BLS. Total of 180 students, of which 90 were from MBBS and 90 from BDS, voluntarily enrolled for the study after being explained the nature of study and BLS workshop. The students solved the 'pre-test' questionnaire prior to attending the workshop. A regular BLS workshop was conducted by certified BLS instructors. It included training for management of cardiac arrest based on American heart association (AHA) 2015 algorithm. Mannequin based training was given to learn chest compressions and airway skills in adults and children. Practice with automated external defibrillator was done in different simulated scenarios. Management of respiratory arrest and choking was also included. Two weeks after the workshop the participants were re evaluated with 'post test' questionnaire.

Statistical Analysis

The number of students who gave correct answer for every question were noted in pre and post survey questionnaire. A Wilcoxon signed ranked test for paired observation was used for analysis. P value of less than 0.05 was considered statistically significant.

RESULTS

Out of the initial 180 participants, 64.4%BDS and 30 % MBBS students reverted back for post test survey. Table 1 and 2 show percentage of students giving correct answers for each question from knowledge and attitude part respectively. Table 3 shows significant improvement in the knowledge of BDS and MBBS students ($p<0.05$). There was significant improvement in the attitude of BDS students towards BLS after workshop.

Table 1: Percentage Of Students Giving Correct Response For Knowledge Based Questions

KNOWLEDGE	MBBS			BDS		
Correct response	Pre-work-shop	Post-work-shop	P value	Pre-work-shop	Post-work-shop	P value
1. What is the most common cause of cardiac arrest in children?	36%	72%	.278	15%	10%	.097
2. What is the third link in the adult out-of-hospital Chain of Survival	20%	16%	.097	19%	24%	.110
3. Which statement best describes sudden cardiac arrest?	64%	92%	.103	67%	63%	.834
4. Which is the first action you should take in this situation?	52%	96%	.003 *	24%	64%	<.00 1*
5. The man does not respond when you touch his shoulders and shout," Are you okay?" what is your next best action?	20%	72%	.004 *	15%	29%	.183

6. Several rescuers respond, and you ask them to activate the emergency response and retrieve the AED and emergency equipment. As you check for a pulse and breathing , you notice that the man is gasping for air and making 'snorting' sounds. You do not feel a pulse. What is your next best action?	0%	4%	.343	3.4%	3.4%	.056
7. What are the rate and depth for chest compressions on an adult?	8%	52%	<.001*	25%	65%	<.001*
8. What is the most appropriate first step to take as soon as the AED arrives at the victim's side?	36%	56%	.051	39%	50%	.013*
9. What is the correct compression to ventilation ratio for a 7yr old child when 2 or more rescuers are present?	64%	44%	.120	37%	50%	.138
10. Which victim would need only rescue breathing?	40%	76%	.123	56%	56%	.294
11. If a victim of cardiac arrest has an implanted pacemaker or defibrillator, what special steps should be taken?	16%	84%	<.001*	34%	60%	.002*
12. What action should you take when the AED is analyzing the heart rhythm?	36%	48%	.606	8.6%	29%	.051
13. You are performing abdominal thrusts on a 9 year old child when he suddenly becomes unresponsive. After you shout for nearby help, what is the most appropriate action to take next?	12%	36%	.840	24%	48%	.006*
14. Which action can rescuers perform to potentially reduce the risk of gastric inflation?	8%	36%	.048*	12%	31%	.087
15. What is the ratio of chest compressions to breaths when providing CPR to an adult?	44%	84%	.007*	34%	79%	.178

Table 2: Percentage Of Students Giving Correct Response To Attitude Based Questions

ATTITUDE	MBBS			BDS		
Correct response	Pre-workshop	Post-workshop	P value	Pre-workshop	Post-workshop	P value
1. Would you want to perform mouth-to-mouth ventilation during CPR?	74%	44%	.033	75%	69%	.433
2. Do you feel that your knowledge of CPR is sufficient?	22%	67%	.001*	9%	51%	<.001*
3. Would you want to learn CPR techniques?	96%	100%	.317	98%	98%	1.000
4. Do you think CPR training course should be mandatory for health science students?	100%	96%	.317	100%	98%	.317
5. I would feel unsure of how to act when present at the scene	18%	88.9%	<.001*	24%	46%	.016
6. I would consider my duty to intervene in a situation requiring CPR	96%	100%	.317	94%	96%	.655
7. I would feel secure in my CPR knowledge	25%	67%	.001	53%	75%	.024
8. I know what to do if cardiac arrests occur	25%	90%	.000	25%	73%	<.0001
9. I would see CPR as a chance to help	96%	100%	.317	100%	98%	.317
10. I would need gloves, face mask and other relevant items for self protection act	59%	48%	.439	51%	70%	.078

Table 3: Total Score For Knowledge Based Questions In Pre And Post Workshop Survey.

	Pre workshop	Post workshop	P value
Knowledge			
MBBS	30 %	58%	<0.05*
BDS	27%	45%	<0.05*

*Statistically significant.

DISCUSSION

Chances of survival reduce by 7 to 10 percent for every minute delay in CPR.[1] Most of the studies to assess the knowledge and attitudes and improvement after structured workshop based training are from south Indian states.[2,6] Ours is the only study from western Indian state of Maharashtra. Our study was a pre and post test survey to assess knowledge and attitude about BLS. Regarding attitude, the pre test showed only 9% BDS and 22% MBBS students felt their knowledge of CPR was sufficient (question 2). This was inspite of the fact that MBBS students had already studied cardiac arrest theoretically in their routine curriculum. Post test survey showed significant improvement in this regard. When asked if they felt they knew what to do if arrest occurs, only 25 % MBBS and 25 % BDS students answered 'yes' (question 8). This number increased to 90 % and 73% respectively after workshop. It is interesting to note that all students felt that this course should be mandatory for all health sciences students (question 4). Among the knowledge based questions, we found only 8% MBBS and 25 % BDS students accurately knew the rate and depth of compressions.(question 7) There was also not much clarity about the correct time and method of using automated external defibrillator (AED among most of the students. (question 8, 10). Considerable improvement was seen in these aspects after workshop.3 studied the awareness of BLS among intern doctors and found it to be below average. They also concluded that this awareness could be improved by conducting well designed certified courses. A study by Ruesseler et al,[7] students faced a performance-based assessment in a 10 station Objective Structured Clinical Examination (OSCE), within 4 months after completion of simulation based training. They concluded that simulation based training enhances students skill to handle emergencies like cardiac arrest and trauma. In a few other studies [2,6,8], the BLS knowledge among medical, dental and nursing students was found to be inadequate. Zaheer et al [9] found that only 14.9 % medical students among their study population had attended workshop based BLS training during their course and had significantly higher knowledge than others. In a recent study, Bhatnagar et al [10] surveyed doctors who had done BLS course 6 month to 1 year prior to study, to assess knowledge retention. They found deficiencies in their knowledge. They stressed the importance of refresher courses every 6 months to maintain the knowledge and to be well versed with newer guidelines. In a welcome move by Medical Council of India, a three hours workshop based training for basic life support has been included in foundation course for medical students before starting first year curriculum from 2019. The desired level of competency according to Millers pyramid is 'shows how'.[11] This training should be extended to all health care science students. Needless to say refreshers courses are important at least at internship and postgraduate level. AHA recommends refreshers courses after every two years for BLS and ACLS.[1] Our ultimate aim should be to systematically train all health care professionals in BLS.

Limitation

We could not include assessment of knowledge retention after one or two years of workshop in our study design due to logistics issues. Knowledge retention is known to reduce as time passes.[10] Though we included dental students, we could not include nursing students and other health care professionals in our study though they too can play an important role in resuscitation team. These were the limitations of our study.

CONCLUSION

The awareness about BLS is not upto the mark even among students who have learned the topic theoretically in their regular curriculum. Simulation based workshops have improved the knowledge and confidence among all the students. Structured workshops should be made part of regular curriculum particularly for management of emergencies like cardiac arrest.

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