Knowledge of basic life support among Medical and Dental students: A comparative study

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Abstract

Basic life support (BLS) is the medical procedures and skills which are used to save the victim from life-threatening emergencies until medical care is provided at the hospital. BLS procedures include cardiopulmonary resuscitation (CPR), bleeding control, artificial ventilation and basic airway management. Fatal medical emergencies may occur at any time. However, there are no set standards introduced in India to date. These life-saving maneuvers can be given through the structured resuscitation programs, which are lacking in the academic curriculum. The present study assessed the level of awareness toward basic life support (BLS) among medical and dental students. A cross-sectional study was carried out among dental and medical students in 2019. The study participants were people of the age group between 18-25 years. A convenient sample size of 250 was studied. A total of 250 subjects of age groups 18-25 years were analyzed in the study. The majority of students were not aware of BLS, with medical students fairing slightly better than dental students. The present study demonstrates poor knowledge among medical and dental students regarding BLS and showed the urgent need for continuous refreshing courses for this critical topic.

Keywords: Knowledge; basic life support; medical students; dental students

Introduction

Life-threatening emergencies can occur anytime and anywhere. The lack of coaching and incompetence to handle these emergencies can have tragic consequences. Basic resuscitation skills, including prompt and effective CPR (CPR), increases the survival rate following cardiac arrest. Theoretical knowledge with practical demonstrations and regular practice with up-to-date recommendations is vital in maintaining the potential...
of basic life support (BLS) and advanced life support (ALS) providers. Saving people's lives involves a sequence of steps that constitute the chain of survival. This includes four stages:

- Early approach to a cohesive medical emergency
- Early initiation of BLS
- Early defibrillation
- ALS

Sudden cardiac arrest is the most common cause of death worldwide with a large variation in survival rates between different communities. Early detection of cardiac arrest and initiation of CPR has been shown to decrease mortality and morbidity.

In recent years several publications have highlighted the deficiencies in CPR quality, both out-of-hospital and in-hospital, which have partly been addressed in the newest BLS guidelines. Individuals in the community at least the health professionals should know how to perform BLS as they encounter such situations very often. This study was aimed to explore the level of knowledge towards BLS among medical, dental students in BMCH, Chitradurga.

Materials & Methods

Study type
Cross-sectional study

Sample size
All undergraduate students studying in the dental and medical college of BMCH, Chitradurga.

Study duration
3 months (April to September 2019)

Sampling method
Convenient sampling method of all medical and dental students of BMCH, Chitradurga.

Study population
Undergraduate students studying in medical and dental college BMCH, Chitradurga.

Study tool
The self-administered, semi-structured, pretested questionnaires were used. A Questionnaire was prepared to encompass 2 main domains:

1. Demography and professional qualification of the participant
2. Theoretical and practical knowledge of the participants related to BLS (20 MCQ's)

Inclusion criteria
Undergraduate students studying in the medical and dental college of BMCH, Chitradurga.

Exclusion criteria
- Students not available or absent
- Students who do not give consent

Data collection. The students were approached in their lecture halls and recruited for the study. A total of 150 medical undergraduate students and 100 dental undergraduate students were sampled. The purpose of the study was explained to the respondents and their verbal and written consents to participate in the study were sought and obtained before the questionnaires were administered. The confidentiality of the participants was guaranteed, and they were informed that the data will be analysed at a group level in order to de-identify the participants.

Data analysis. The collected data were calculated with MS Excel and then statistical analysis was made by statistical package for social science (SPSS) 20 version. Qualitative data were presented in frequencies and percentages. Quantitative data were presented in means and standard deviation. Chi-square test was applied as a test of significance for qualitative data and t-test/ANOVA test was a test of significance for quantitative data. The level of significance was set at p value <0.05.

| Knowledge about First response in an emergency | MBBS | BDS | P value |
|-----------------------------------------------|------|-----|---------|
| Open airway                                  | 21 (14%) | 30 (30%) | <0.001 |
| Start chest compression                      | 18 (12%) | 28 (28%) |         |
| Look for safety                              | 107 (71.3%) | 34 (34%) |         |
| Give two breathing                            | 4 (2.7%) | 8 (8%) |         |
| Immediate action if found unresponsive        |       |       |         |
| Start CPR                                    | 79 (52.7%) | 60 (60%) | 0.04 |
| Activate EMS                                 | 47 (31.5%) | 17 (17%) |         |
| Recovery position                            | 19 (12.7%) | 15 (15%) |         |
| Observe                                      | 5 (3.3%) | 8 (8%) |         |
Results

In our study, among 250 subjects mean age was 19.79 years with S.D.1.4 and the majority were females (63.6%).

Overall, the respondents showed a poor level of knowledge with respect to first response in an emergency; the proportion of correct answers varied greatly, with significant differences between MBBS and BDS and data shown in Table 1.

Table 2 Shows the knowledge of study participants about CPR in adults and neonates/infants/children. It is clear that, both MBBS and BDS students have very poor knowledge about CPR.

| Knowledge about CPR | MBBS | BDS | P value |
|---------------------|------|-----|---------|
| Location for chest compression | Left side of chest | 43 (28.7%) | 45 (45%) | 0.02 |
| | Right side of chest | 8 (5.3%) | 7 (7%) |
| | Mid chest | 65 (43.3%) | 36 (36%) |
| | Xiphisternum | 34 (22.7%) | 12 (12%) |
| Mouth to mouth CPR | Mouth mask ventilation and chest compression | 21 (14%) | 9 (9%) | <0.001 |
| | Chest compression only | 26 (17.3%) | 22 (22%) |
| | Bag mask ventilation with chest compression | 19 (12.7%) | 46 (46%) |
| | No CPR | 84 (54%) | 23 (23%) |
| Depth of compression | 1.5-2 inch | 32 (54.7%) | 30 (30%) |
| | 2.5-3 inch | 43 (28.7%) | 30 (30%) | <0.001 |
| | 1-1.5 inch | 18 (12%) | 26 (26%) |
| | 0.5-1 inch | 7 (4.7%) | 14 (17%) |
| Rate of compression in adults and children during CPR | 100/min | 21 (14%) | 20 (20%) |
| | 120/min | 100 (66.7%) | 34 (34%) | <0.001 |
| | 80/min | 18 (12%) | 27 (27%) |
| | 70/min | 11 (7.3%) | 19 (19%) |

| Knowledge about CPR in neonates/infants/children | MBBS | BDS | P value |
|---------------------------------------------------|------|-----|---------|
| Location for chest compression in infants | One finger breadth below nipple line | 49 (32.7%) | 30 (30%) | 0.02 |
| | One finger breadth above nipple line | 27 (18%) | 21 (21%) |
| | Inter mammary line | 44 (29.3%) | 21 (21%) |
| | Xiphisternum | 30 (20%) | 28 (28%) |
| Infant rescue breathing | Mouth to mouth with nose pinched | 90 (60%) | 53 (53%) | 0.07 |
| | Mouth to mouth and nose | 8 (5.3%) | 11 (11%) |
| | Mouth to nose | 3 (2%) | 7 (7%) |
| | Mouth to mouth without nose pinched | 49 (32.7%) | 29 (29%) |
| Depth of compression in children | 1.5-2 inch | 36 (24%) | 28 (28%) |
| | 2.5-3 inch | 21 (14%) | 14 (14%) | 0.24 |
| | One half to one third depth of chest | 55 (36.7%) | 25 (25%) |
| | 0.5-1 cm | 38 (25.3%) | 33 (33%) |
| Depth of compression in neonates | 1 and 1/2 inches | 32 (21.3%) | 12 (12%) |
| | 2 and 1/2 inches | 28 (18.7%) | 13 (13%) | 0.07 |
| | 1/2-1 cm | 49 (32.7%) | 50 (50%) |
| | 1/2-1/3 depth | 41 (27.3%) | 25 (25%) |

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Table 4. Knowledge about choking

| Knowledge about choking | MBBS | BDS | P value |
|-------------------------|------|-----|---------|
| First response for choking in adults | Give abdominal thrusts | 70(46.7%) | 13(13%) | <0.001 |
|                        | Give chest compressions | 14(9.3%) | 17(17%) |
|                        | Confirm foreign body | 18(12%) | 24(24%) |
|                        | Give back blows | 48(32%) | 46(46%) |
| First response for choking in infants | Start CPR | 6(4%) | 6(6%) | 0.718 |
|                        | Try removing foreign body | 49(32.7%) | 32(32%) |
|                        | Back blows & compressions | 87(58%) | 54(54%) |
|                        | Give water | 8(5.3%) | 8(8%) |
| First response to a submerged adult in freshwater | CPR for 2min | 36(24%) | 10(10%) |
|                        | CPR for 1min | 10(6.7%) | 15(15%) | 0.008 |
|                        | Abdomen compression | 97(64.7%) | 67(67%) |
|                        | Keep him in recovery position | 7(4.7%) | 8(8%) |

Discussion

The present study was done to understand the awareness of BLS among medical and dental students. Among 250 subjects, 60% belong to MBBS and 40% from BDS. A study using a similar questionnaire by S Chandrasekaran et al. (9) was conducted among 1054 participants in Tamil Nadu. Table 5 shows a detailed comparison of the two studies.

The participants displayed poor knowledge in our study as well as in similar studies conducted by Chandrasekaran et al. (9), Srinivas et al. (10), Sudeep et al. (11), Aroor et al. (12), Zaheer et al. (13) and Alanazi et al. (14).

Conclusion

From our study, we conclude that lack of awareness regarding BLS among medical and dental students is a serious issue that needs to be addressed promptly. BLS and other resuscitation skills should be part of the undergraduate curriculum and students should master the skills during their studies. More research is warranted in our setup also involving other medical personnel and to determine an appropriate and efficient course design.

Table 5. Comparison between the present study and study by Chandrasekaran et al.

| Sl. No | Questions | % of Right responses in our study | % of Right responses in Chandrasekaran et al. (9) |
|--------|-----------|----------------------------------|-----------------------------------------------|
| 1      | Abbreviation of BLS | 90.4 | 68.6 |
| 2      | First response if the person is found unresponsive | 56.4 | 41.1 |
| 3      | Immediate action | 25.6 | 10.6 |
| 4      | Location for chest compression | 40.4 | 26.1 |
| 5      | Location for chest compression in infants | 31.6 | 27.1 |
| 6      | Mouth to mouth CPR | 42.8 | 16.6 |
| 7      | Infant rescue breathing | 07.6 | 14.2 |
| 8      | Depth of compression | 17.6 | 33.3 |
| 9      | Depth of compression in children | 32.0 | 17.0 |
| 10     | Depth of compression in neonates | 26.4 | 64.5 |
| 11     | Rate of compression | 16.4 | 35.1 |
| 12     | Rate of CPR single rescuer in adults | 52.4 | 14.9 |
| 13     | Rate of chest compression to ventilation in newborn | 16.0 | 25.5 |
| 14     | AED abbreviation | 35.6 | 33.5 |
| 15     | EMS abbreviation | 80.0 | 56.0 |
| 16     | First response for choking in adults | 16.8 | 16.4 |
| 17     | First response for choking in infants | 56.4 | 29.6 |
| 18     | First response to as a submerged adult in freshwater | 06.0 | 12.9 |
| 19     | Response for slurred speech and weakness of right upper limb | 44.8 | 43.7 |
| 20     | Differential diagnosis for retrosternal pain, sweating, vomiting | 57.6 | 54.2 |

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