

## Original Article

# Knowledge, attitude and anxiety pertaining to basic life support and medical emergencies among dental interns in Mangalore City, India

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**BACKGROUND:** This cross-sectional study aimed to assess the knowledge, attitude and anxiety pertaining to basic life support (BLS) and medical emergencies among interns in dental colleges of Mangalore city, Karnataka, India.

**METHODS:** The study subjects comprised of interns who volunteered from the four dental colleges. The knowledge and attitude of interns were assessed using a 30-item questionnaire prepared based on the Basic Life Support Manual from American Heart Association and the anxiety of interns pertaining to BLS and medical emergencies were assessed using a State-Trait Anxiety Inventory (STAI) Questionnaire. Chi-square test was performed on SPSS 21.0 (IBM Statistics, 2012) to determine statistically significant differences ( $P < 0.05$ ) between assessed knowledge and anxiety.

**RESULTS:** Out of 183 interns, 39.89% had below average knowledge. A total of 123 (67.21%) reported unavailability of professional training. The majority (180, 98.36%) felt the urgent need of training in basic life support procedures. Assessment of stress showed a total of 27.1% participants to be above high-stress level. Comparison of assessed knowledge and stress was found to be insignificant ( $P = 0.983$ ).

**CONCLUSION:** There was an evident lack of knowledge pertaining to the management of medical emergencies among the interns. As oral health care providers moving out to the society, a focus should be placed on the training of dental interns with respect to Basic Life Support procedures.

**KEY WORDS:** Basic life support; Cardiopulmonary resuscitation; Dental interns; Medical emergencies; State-Trait anxiety inventory

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## INTRODUCTION

Basic life support (BLS) refers to maintaining airway and supporting breathing as well as circulation. BLS comprises of the following elements: initial assessment, airway maintenance, expired air ventilation (rescue breathing; mouth-to-mouth ventilation) and chest compression. The combination of all the above is termed as cardiopulmonary resuscitation (CPR). The purpose of BLS is to maintain adequate ventilation and circulation

until a means can be obtained to reverse the underlying cause. Medical emergencies can occur in a dental practice setting. The dentist has a responsibility to recognize them and initiate primary emergency management procedures in an effort to reduce morbidity and mortality when such adverse events arise.

There are a couple of studies documented in the literature reporting the knowledge and attitude of dental interns pertaining to BLS and medical emergencies.<sup>[1-3]</sup>

To our knowledge, there are no studies that have assessed the anxiety regarding BLS and correlated it with the knowledge level. Thus this study aimed to assess the knowledge, attitude and anxiety pertaining to BLS and medical emergencies among interns of dental colleges in Mangalore City, Karnataka, India.

## METHODS

A cross-sectional study was carried out during August – September 2015 using a questionnaire to assess the knowledge, attitude and anxiety pertaining to BLS and medical emergencies among dental interns in all four Dental Colleges of Mangalore City, Karnataka, India. All procedures performed in the study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 *Helsinki declaration* and its later amendments or comparable ethical standards.

### Participants

The study comprised of 183 dental interns who volunteered for the study. Informed consent was obtained from all study subjects. Eligibility for the study was consent to the study and thus, all the interns from the four dental colleges were included.

### Questionnaire

To assess the knowledge and attitude, a questionnaire (30 items) was prepared based on Basic Life Support Manual from American Heart Association and Medical Problems in Dentistry by Scully C and Cawson RA.<sup>[4,5]</sup> The prepared questionnaire was divided into three parts. First part consisted of 10 closed-ended questions. This part contained 8 questions to assess the attitude of dental interns to medical emergencies and BLS procedures and 2 questions to assess the knowledge. The second part consisted of 10 multiple choice questions of which 8 assessed the knowledge of BLS procedures. One question required self-rating of knowledge of BLS procedures and the other question why they believed there was a lack of BLS knowledge among interns in dental colleges. The third part of the questionnaire consisted of 10 multiple choice questions pertaining to emergency drugs and management. The prepared questionnaire was pre-tested among 30 dental interns (who were not part of the study) to check for the internal consistency reliability (Cronbach's Alpha value=0.91). State-Trait Anxiety Inventory (STAI) [Form Y] was used for the self-assessment of the anxiety pertaining to BLS and medical emergencies.<sup>[6]</sup>

## Procedure

Protocol for the study was presented before the University Ethics Committee and ethical clearance was obtained for the same. Permission to conduct the study was obtained from the Dean/Principal of constituent Dental Colleges in Mangalore City, Karnataka, India. The study questionnaire was given to all the interns of the four dental colleges to assess the knowledge and attitude on BLS and medical emergencies.

The knowledge assessment was done based on the correct responses and the study participants were divided as "above average (>50% correct responses)" and "below average ( $\leq$ 50% correct responses)" knowledge. State-Trait Anxiety Inventory (STAI) (Form Y) form consist of Form 1 – State Anxiety Inventory (SAI) and Form 2 – Trait Anxiety Inventory (TAI). State Anxiety Inventory (SAI) measures the State Anxiety – A temporal condition experienced in specific situations and Trait Anxiety Inventory (TAI) measures the Trait Anxiety – A general tendency to perceive situations as threatening. The range of anxiety scores were between 20 to 80 for State Anxiety Inventory (SAI) and Trait Anxiety Inventory (TAI). The average levels of anxiety for a college-going student between the age of 19–39 years were male (36.54 $\pm$ 10.22) and female (36.17 $\pm$ 10.96) based on which five levels of anxiety are categorized – low, moderately low, average, moderately high and high levels of anxiety. Data were then subjected to statistical analysis (Figure 1).

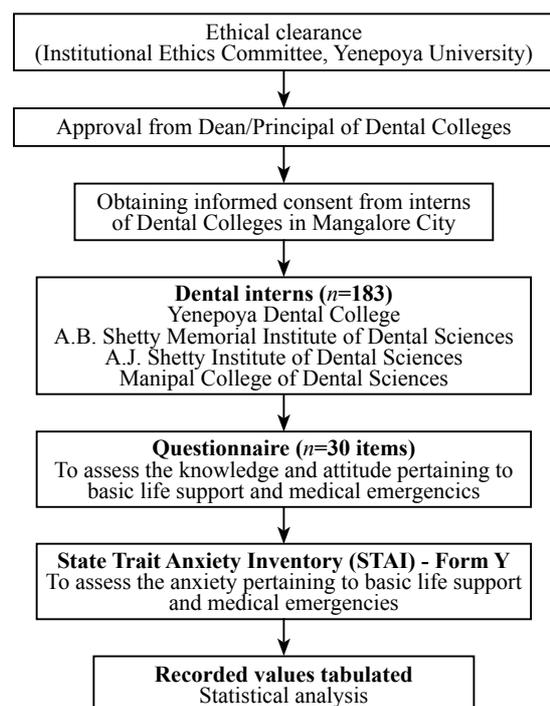


Figure 1. Study procedure.

**Statistical analysis**

Descriptive statistics were used for the analysis of data obtained (Mean, Standard Deviation and Frequency Distribution). Chi-square test was used to test the difference between assessed knowledge and anxiety. Statistical significance was set at 5%. Statistical tests were done using SPSS 21.0 (Statistical Package for Social Sciences; IBM Statistics, 2012).

**RESULTS**

The study sample comprised of 183 respondents [39 (21.31%) males and 144 (78.68%) females]. The average age of the study participants was 23.17±1.22. All participants (183) responded that BLS training should be a part the curriculum. A total of 149 (81.42%) said that BLS should be done only in hospital settings. Only 3 (1.64%) participants reported that they have done BLS (CPR) on a patient. Frequency distribution of responses to various questions regarding knowledge and attitude assessment of dental interns was summarized (Table 1). Results of assessment of knowledge on BLS among the dental interns based on the questionnaire showed that 39.89% of the study participants were below average. A positive attitude pertaining to BLS and medical emergency training was seen among more than 98% of the study participants.

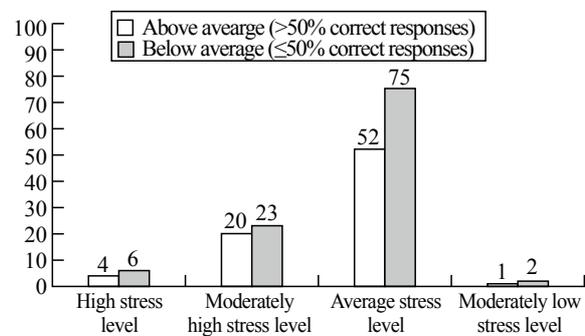
**Table 1.** Dental interns responses to questions for knowledge and attitude assessment

Question	Response	n (%)
Do you know the emergency drugs used?	Yes	105 (57.37)
	No	78 (42.63)
Do you know exact dosage and route of administration of drugs?	Yes	27 (14.76)
	No	156 (85.24)
Do you think that all interns need to know about Basic Life Support (BLS)?	Yes	182 (99.54)
	No	1 (0.54)
Have you ever attended a workshop on Basic Life Support?	Yes	89 (48.64)
	No	94 (51.36)
Do you feel you require training in managing medical emergencies?	Yes	180 (98.36)
	No	3 (1.64)
Reason for lack of knowledge about Basic Life Support (BLS)	Busy curriculum	28 (15.30)
	Lack of interest	19 (10.39)
	No professional training available	123 (67.21)
	Don't consider it important	13 (7.10)
Most commonly encountered medical emergency	Syncope	172 (93.98)
	Allergic reaction	1 (0.56)
	Seizures	5 (2.73)
	Anaphylactic reaction	5 (2.73)
Self-rating of knowledge on Basic Life Support (BLS) by dental interns from all the four dental colleges	Poor	37 (20.21)
	Below average	47 (25.68)
	Average	96 (52.45)
	Good	3 (1.66)

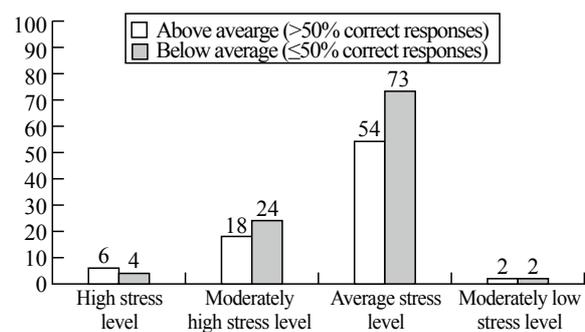
Assessment of State Anxiety Inventory (SAI) showed that 51 (27.86%) of the study participants were having high levels (sum of moderately high and high levels) of state anxiety (Table 2). Comparison of assessed State Anxiety Inventory (SAI) and assessed knowledge levels (Figure 2) among dental interns showed no statistical significance (Chi-square value  $\chi^2=0.166$ ;  $P=0.983$ ). Analysis of Trait Anxiety Inventory (TAI) showed that 46 (25.13%) of the study participants had high levels (sum of moderately high and high levels) of trait anxiety. There was no statistical difference (Chi-square value  $\chi^2=0.181$ ;  $P=0.165$ ) between assessed Trait Anxiety Inventory (TAI) and assessed knowledge among the study participants (Figure 3).

**Table 2.** Anxiety levels pertaining to basic life support and medical emergencies assessed among dental interns

Anxiety	Anxiety level	n (%)
State Anxiety Inventory (SAI)	Moderately low stress	3 (1.64)
	Average stress	127 (69.40)
	Moderately high stress	43 (23.50)
	High stress	10 (5.46)
Trait Anxiety Inventory (TAI)	Moderately low stress	4 (2.19)
	Average stress	127 (69.40)
	Moderately high stress	42 (22.95)
	High stress	10 (5.46)



**Figure 2.** Comparison of assessed State Anxiety Inventory (SAI) and assessed knowledge levels among dental interns.



**Figure 3.** Comparison of assessed Trait Anxiety Inventory (TAI) and assessed knowledge among dental interns.

## DISCUSSION

BLS is the foundation for saving lives following cardiac arrest. Fundamental aspects of BLS include immediate recognition of sudden cardiac arrest (SCA) and activation of the emergency response system, early CPR, and rapid defibrillation with an automated external defibrillator (AED). Initial recognition and response to heart attack and stroke are also considered part of BLS.<sup>[4]</sup> Immediate recognition and activation, early CPR, and rapid defibrillation (when appropriate) are the first three BLS links.

Dental procedures themselves can jeopardize the airway, which must be adequately protected. In any situation, the basic principles of resuscitation should be remembered, i.e., attention to the airway, breathing, and circulation (A, B, C).<sup>[7]</sup> It is of utmost importance that future oral healthcare providers be in a position to handle any medical emergency for which the knowledge and skill pertaining to all emergency drugs is essential.<sup>[8]</sup>

Acknowledgement that any dental patient may have a medical emergency during dental treatment is a key starting point. Identification of at-risk patients will allow modifications to be made to the treatment planning and may highlight those patients whose treatment may be more appropriately conducted at specific times or in specialist centres. Medical emergencies can be alarming to any clinician but these situations are less alarming if proper preparation has been made.

The respondents in the present study were mostly females (78.68%) as compared to males (21.32%). A similar gender distribution was reported in a study conducted by Chew and Yazid.<sup>[9]</sup> The participants in the present study showed a positive attitude towards learning and training in BLS procedures to combat medical emergencies during clinical practice. This finding was in concordance with the results reported by Narayan et al<sup>[1]</sup> and Roshana et al.<sup>[10]</sup>

In the present study, there is an alarming lack of knowledge on BLS and medical emergencies. A total of 39.89% of the study participants had below-average knowledge. Studies conducted by Elanchezhiyan et al<sup>[3]</sup>, Reddy et al<sup>[11]</sup>, Baduni et al<sup>[12]</sup> and Ehigiator et al<sup>[13]</sup> reported that a considerable portion of the study population in the respective studies had knowledge scores below average and recommended that proper strategies should be devised to bridge the lacunae in the knowledge pertaining to medical emergencies among dental graduates.

In India, the Dental Council of India (DCI) have included the medical emergency training under the

subjects of General Medicine and Oral and Maxillofacial Surgery in the undergraduate curriculum.<sup>[14]</sup> This shows a gap in the existing curriculum which needs to be bridged. The majority of the study participants of the present study reported that BLS training should be a part of the dental curriculum and raised the point that there was no professional training available. A recommendation to develop undergraduate health courses and strategies to teach professionals and students appropriate theoretical as well as practical knowledge, behaviour and attitudes when facing life-threatening emergencies was reported in a study conducted by Carvalho et al.<sup>[15]</sup>

The present study assessed the anxiety using a standardized evaluation tool by Spielberger<sup>[6]</sup> which assessed the state as well as trait anxiety (State Anxiety – A temporal condition experienced in specific situations and Trait Anxiety – A general tendency to perceive situations as threatening) among the dental interns which revealed that a portion (State Anxiety – 27.86% and Trait Anxiety – 25.13%) had stress levels above average for a college going student. When the anxiety scores were compared to that of knowledge scores, there was no statistical significance. To our knowledge, this is the first study in the literature to report about the anxiety pertaining to BLS and medical emergencies. Though a low percentage of the study population was assessed as having high anxiety levels, this finding is of great clinical importance (high levels of anxiety are related to low levels of confidence to face life threatening situations). This finding highlights the fact that there exists no professional training at clinical levels to face medical emergencies.

Since the present study showed that most dental graduates had a positive attitude towards learning BLS procedures, focus should be placed on the training of dental students during their clinical learning courses to ensure that they are free of any kind of stress.

## CONCLUSION

A considerable percentage of the study participants had a significant lack of knowledge pertaining to the management of medical emergencies. The high stress levels seen in the present study which were more than the average stress levels for a college going individual of a particular mean age makes the situation an alarming one. As oral health care providers moving out to society, a focus should be placed on the training of dental interns with respect to BLS procedures. Nothing is more valuable than life. Incorporating training in the

management of medical emergencies as either a part of or as a separate course in the basic curriculum could save a life one day.

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**Conflicts of interest:** The authors declare that no competing interest and no personal relationships with other people or organizations that could inappropriately influence their work.

**Contributors:** Somaraj V designed and drafted the manuscript. All authors have each made a substantial contribution to the study.

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