







# Awareness, Knowledge, and Attitude of Saudi Students towards Basic Life Support: A Cross-Sectional Study

Arun Priya Srinivasan<sup>1</sup>, Metab Abduldayem Albalawe<sup>2</sup>, Rakhi Issrani<sup>3</sup>, Santosh Rayagouda Patil<sup>4</sup>, Namdeo Prabhu<sup>1</sup>, Sunitha Siddanna<sup>5</sup>

<sup>1</sup>Department of Oral & Maxillofacial Surgery and Diagnostic Sciences, College of Dentistry, Jouf University, Sakaka, Kingdom of Saudi Arabia.

<sup>2</sup>College of Dentistry, Jouf University, Sakaka, Kingdom of Saudi Arabia.

<sup>3</sup>Department of Preventive Dentistry, College of Dentistry, Jouf University, Sakaka, Kingdom of Saudi Arabia.

<sup>4</sup>Department of Oral Medicine and Radiology, New Horizon Dental College and Research Institute, Bilaspur, India.

<sup>5</sup>Department of Public Health Dentistry, JSS Dental College and Hospital, Mysore Karnataka, India.

**Correspondence:** Arun Priya Srinivasan, Department of Oral & Maxillofacial Surgery and Diagnostic Sciences, College of Dentistry, Jouf University, Sakaka, Kingdom of Saudi Arabia. **E-mail:** [dr.arun.srinivasan@jodent.org](mailto:dr.arun.srinivasan@jodent.org)

**Academic Editor:** Ana Maria Gondim Valença

**Received:** 23 February 2021 / **Review:** 11 May 2021 / **Accepted:** 17 May 2021

**How to cite:** Srinivasan AP, Albalawe MA, Issrani R, Patil SR, Prabhu N, Siddanna S. Awareness, knowledge, and attitude of Saudi students towards basic life support: a cross-sectional study. *Pesqui Bras Odontopediatria Clín Integr.* 2021; 21:e0043. <https://doi.org/10.1590/pboci.2021.142>

## ABSTRACT

**Objective:** To evaluate the knowledge and attitude in relation to basic life support (BLS) and cardiopulmonary resuscitation (CPR) skills among the dental undergraduates and interns in Sakaka, Saudi Arabia. **Material and Methods:** This cross-sectional study was undertaken between October 2019 and December 2019 in Sakaka, Saudi Arabia. One hundred and eighty randomly selected dental students aged over 18 years participated in the study. Their knowledge and attitude towards BLS were gathered through a questionnaire. **Results:** A total of 158 (out of 180) UG students and interns participated in this study, making the responses of 87.8%. The mean age of the participants was 24.6 years. The samples comprised 86 (54.4%) males and 72 (45.6%) females. The assessments showed that overall the participants had average knowledge towards BLS and CPR, with males responding significantly better than the females ( $p < 0.05$ ). Furthermore, as students climb the academic ladder, their knowledge regarding BLS and CPR tends to rise. Also, their attitude was positive, and they were willing to receive CPR training. **Conclusion:** Attitude toward acquiring knowledge about CPR was very positive. However, their knowledge about the topic was average. Students should understand the importance of such skills and efficiently involve in these life-saving procedures.

**Keywords:** Emergency Treatment; Cardiopulmonary Resuscitation; Survival.

## Introduction

As per the World Health Organization reports, cardiovascular disease was the most common cause of death in the Kingdom of Saudi Arabia (KSA), and approximately 25,000 people died each year because of a heart attack [1]. Furthermore, 80% of those heart attacks came at home. Also, recent research shows a tremendous increase in the number of road traffic accidents in KSA [2]. Needless to say that early recognition of signs and initial management of such medical emergencies will reduce the occurrence of uneventful things and thus improvise the survival rate of the patient [3].

A life-saving procedure and skills termed as basic life support (BLS) aids in rescuing the patient from medical emergencies until the advance life support is arrives [4].

Basic life support (BLS) involves immediate recognition of signs of sudden cardiac arrest (SCA), heart attack, stroke, and foreign-body airway obstruction (FBAO); activation of emergency response system, performing cardiopulmonary resuscitation (CPR) quickly; and rapid facilitation of defibrillation with an automated external defibrillator (AED). Basic Life Support is the foundation for saving lives after cardiac arrest [5].

The components of BLS include initial assessment, airway maintenance, breathing (rescue breathing; mouth-to-mouth ventilation) and chest compression; together, it is called cardiopulmonary resuscitation (CPR) [6]. Scientific data shows that the survival rate has significantly increased following early BLS and CPR [1]. There are two key factors to provide CPR successfully, firstly the presence of a CPR trained person to assess the situation swiftly without haste, and secondly, to perform the procedure away from the well-equipped hospital environment at the earliest [2]. Thus the goals of a BLS provider include protect life, lightening suffering, averting further illness or injury and facilitating recovery [2].

In the present-day situation, everyone should be aware of BLS and CPR techniques as it plays a vital role in attempting to save the patient, but its knowledge and awareness are of utmost importance to healthcare professionals and is also a pre-requisite for the healthcare professional. BLS and CPR skills are constantly stressed upon the students and faculty members.

Against this backdrop, the present study investigated dental students' awareness, knowledge, and attitude towards BLS and CPR skills. Another additional objective was to ascertain whether students' knowledge and attitude about BLS and CPR vary by their demographic features and academic years.

## Material and Methods

### Study Design

This cross-sectional study was performed between October and December 2019 in Sakaka city, Northwestern Province of KSA. Ethical clearance (approval no. LCBE 08-02/41) was obtained from the Institutional Review Board, and the procedures followed in this study were in compliance with the Helsinki Declaration.

### Sample Population, Size, and Characteristics

Sample size estimation was completed for 'Estimating Single Proportion with Finite population correction'. Expecting a 40% prevalence of knowledge and attitude about BLS and CPR, absolute precision of 5% and a 95% confidence interval, the target population size as 200, a sample size of 130 was found to be sufficient. Thus in the current study, 180 participants were included to allow for attrition and dropout.

The inclusion criteria considered were the male or female dental students aged over 18 years and are in 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> year or internship. The exclusion criteria includes 1<sup>st</sup> and 2<sup>nd</sup> year dental students since they have not started their clinical training. A random sampling technique was employed in selecting the participants in the study.

For the study purpose, a questionnaire with fifteen items (in Arabic and English Language as well) was suitably hand distributed to the undergraduate students (III<sup>rd</sup>, IV<sup>th</sup> and V<sup>th</sup> academic year) and Interns of College of Dentistry, Jouf University, KSA once the regularly scheduled classes ended. The participation was made voluntary and the main purpose of study was briefed to them before receiving verbal informed consent. At the beginning of the survey itself, it was assured that the results of the questionnaire would only be presented/ published as aggregate data maintaining the confidentiality of all personal information. The sample was further stratified based on gender and academic year.

### Research Questions

Each question was crafted based on knowledge from previous researches conducted on the Awareness, Knowledge and Attitude of health care students on Basic Life Support and CPR skills by Gajjar [7] and Chandrashekar et al. [8], which was developed based on the recommendations by American Heart Association (AHA) [5].

Questions were categorized with similar emphases on Awareness, Knowledge and Attitude towards Basic life support. The overall questionnaire consisted of fifteen closed-ended questions with various options that were divided into three sections as follow:

- Section I consisted of demographics such as gender, age, academic year, etc. - Questions 1-3;
- Section II comprise of questions related to knowledge on BLS and CPR - Questions 4-12; and
- Section III consists of questions related to knowing their attitude towards BLS and CPR - Questions 13-15.

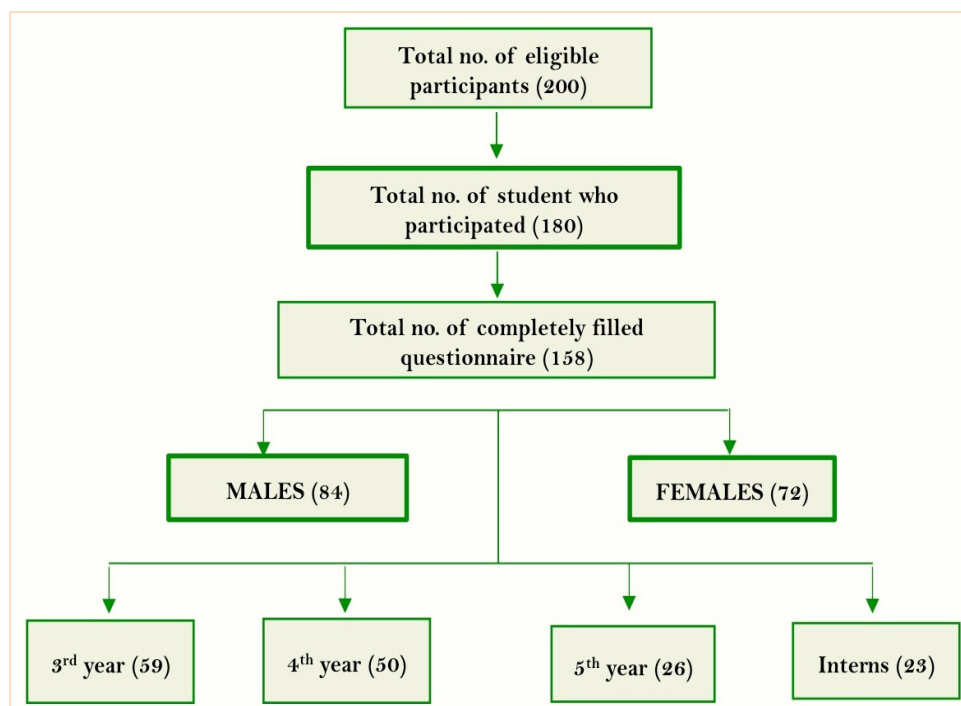


Figure 1. Flowchart of participants.

## Statistical Analysis

The collected data was statistically analyzed using Statistical Package for Social Sciences (SPSS) version 21. Descriptive responses to all of the items in the questionnaire were presented. Gender-wise comparisons of knowledge and attitude towards the various items of the questionnaire were done using Chi-square test. Academic year-wise comparison was carried out by Kruskal Wallis test. The level of statistical significance was set at  $p \leq 0.05$ .

## Results

A total of 158 (out of 180) UG students and interns participated in this study, making the response rate of 87.8%. The mean age of the participants was 24.6 years. The samples consisted of 86 (54.4%) males and 72 (45.6%) females. In comparison to the proportion of male students, the percentage of female students answering to this survey was lower as only four academic years of female dental students are currently enrolled in this institute as compared to the five academic years of male students and also interns, so gender differences, if any, may need to be read with care and interpreted as such.

The assessments showed that overall the participants have fair knowledge towards BLS and CPR. For most of the statements, male students showed better response to the statements related to BLS and CPR that was statistically significant ( $p < 0.05$ ). However, on statements like expansion of BLS and CPR, and the artery used to check an infant's pulse, female students responded better than the male students. The response rate among the male and female students for the statements related to the knowledge is presented in Table 1.

**Table 1. Comparison of responses to the statements related to knowledge by gender variables.**

Statements with Responses	Male N (%)	Female N (%)	p-value
What does BLS stand for?			
Basic Living Support	7 (8.1)	5 (6.9)	0.22
Basic Life Supervision	15 (17.4)	7 (9.7)	
Basic Life Support*	53 (61.6)	51 (70.8)	
Broad Life Support	11 (12.8)	9 (12.5)	
What does CPR stand for?			
Cardiac Passive Resuscitation	18 (20.9)	5 (6.9)	0.000**
Cardio Pulmonary Resuscitation*	34 (39.5)	53 (73.6)	
Chest Pulmonary Revival	21 (24.4)	9 (12.5)	
Cardio Pulmonary Rescue	13 (15.1)	5 (6.9)	
Correct sequence of resuscitation in BLS is			
Compressions, airway, breathing*	58 (67.4)	33 (45.8)	0.006**
Airway, breathing, compressions	3 (3.5)	8 (11.1)	
Breathing, airway, compressions	7 (8.1)	17 (23.7)	
Airway, breathing, circulation	18 (21.0)	14 (19.4)	
What is the location for chest compression?			
Left side of the chest	18 (21.0)	26 (36.1)	0.02**
Right side of the chest	14 (16.3)	21 (29.1)	
Mid chest (Lower half of sternum)*	25 (29.0)	10 (13.9)	
Xiphisternum	29 (33.7)	15 (20.9)	
What is the rate of compressions per minute as specified in the American Heart Association 2015 guidelines?			
At least 120	19 (22.1)	31 (43.2)	0.004**
80 to 100	10 (11.6)	20 (27.7)	
At least 100	21 (24.4)	6 (8.3)	
100 to 120*	36 (41.9)	15 (20.8)	
The correct depth of compression for an adult patient is			
1.5 to 2 inches	8 (9.3)	17 (23.7)	0.001**

At least 2 inches, not more than 2.4 inches*	54 (62.8)	27 (37.5)	
2 inches	10 (11.6)	8 (11.1)	
2.5 to 3 inches	14 (16.3)	20 (27.7)	
Which artery should be used to check an infant's pulse?			
Femoral	15 (17.4)	5 (6.9)	0.009**
Carotid	9 (10.5)	11 (15.3)	
Radial	16 (18.6)	3 (4.2)	
Brachial*	46 (53.5)	53 (73.6)	
In adults, the chest compression and ventilation ratio for single rescuer CPR is			
15:2	28 (32.5)	21 (29.1)	0.68
5:1	14 (16.3)	18 (25.0)	
30:2*	24 (28.0)	18 (25.0)	
15:1	20 (23.2)	15 (20.9)	
In children, the chest compression and ventilation ratio for 2 rescuer CPR is			
15:2*	38 (44.2)	21 (29.1)	0.051
5:1	17 (19.8)	14 (19.4)	
30:2	19 (22.1)	20 (27.7)	
3:1	12 (13.9)	17 (23.7)	

\*Correct Answer; \*\*Statistically Significant.

Out of 158 students, 59 (37.3%) were third year, 50 (31.6%) were fourth year, 26 (16.5%) belonged to fifth and 23 (14.6%) were interns. As students ascent, the academic hierarchy, their knowledge regarding BLS and CPR tends to increase. For most of the accounts, interns gave better ratings except for questions pertaining to the expansion of BLS and CPR, for which fifth-year students gave better responses and fourth-year students responded better for the location for chest compression. Table 2 shows the academic year-wise responses to the statements for knowledge.

**Table 2. Comparison of responses to the statements related to knowledge by academic year variables.**

Statements with Responses	IIIrd	IVth	Vth	Intern	p-value
	N (%)	N (%)	N (%)	N (%)	
What does BLS stand for?					
Basic Living Support	6 (10.2)	4 (8.0)	1 (3.8)	1 (4.3)	0.26
Basic Life Supervision	9 (15.2)	7 (14)	4 (15.4)	2 (8.7)	
Basic Life Support*	32 (54.2)	35 (70.0)	20 (76.9)	17 (73.9)	
Broad Life Support	12 (20.3)	4 (8.0)	1 (3.8)	3 (13.0)	
What does CPR stand for?					
Cardiac Passive Resuscitation	13 (22.0)	6 (12.0)	1 (3.8)	3 (13.0)	0.00**
Cardio Pulmonary Resuscitation*	20 (33.9)	36 (72.0)	21 (80.8)	10 (43.5)	
Chest Pulmonary Revival	18 (30.5)	6 (12.0)	3 (11.5)	6 (26.1)	
Cardio Pulmonary Rescue	8 (13.6)	2 (4.0)	1 (3.8)	4 (17.4)	
Correct sequence of resuscitation in BLS is					
Compressions, airway, breathing*	37 (62.7)	26 (52.0)	12 (46.2)	16 (69.7)	0.40
Airway, breathing, compressions	2 (3.4)	6 (12.0)	2 (7.7)	1 (4.3)	
Breathing, airway, compressions	7 (11.9)	9 (18.0)	5 (19.2)	3 (13.0)	
Airway, breathing, circulation	13 (22.0)	9 (18.0)	7 (26.9)	3 (13.0)	
What is the location for chest compression?					
Left side of the chest	16 (27.1)	13 (26.0)	10 (38.5)	5 (21.7)	0.34
Right side of the chest	15 (25.5)	10 (20.0)	5 (19.2)	5 (21.7)	
Mid chest (Lower half of sternum)*	10 (16.9)	16 (32.0)	7 (26.9)	2 (8.7)	
Xiphisternum	18 (30.5)	11 (22.0)	4 (15.4)	11 (47.8)	
What is the rate of compressions per minute as specified in the American Heart Association, 2015 guidelines?					
At least 120	17 (28.9)	21 (42.0)	5 (19.2)	7 (30.5)	0.31
80 to 100	11 (18.6)	10 (20.0)	6 (23.1)	3 (13.0)	
At least 100	12 (20.3)	8 (16.0)	5 (19.2)	2 (8.7)	
100 to 120*	19 (32.2)	11 (22.0)	10 (38.5)	11 (47.8)	
The correct depth of compression for an adult patient is					

1.5 to 2 inches	9 (15.2)	9 (18.0)	5 (19.2)	2 (8.7)	0.19
At least 2 inches, not more than 2.4 inches*	25 (42.4)	23 (46.0)	16 (61.5)	17 (73.9)	
2 inches	6 (10.2)	9 (18.0)	3 (11.6)	0 (0.0)	
2.5 to 3 inches	19 (32.2)	9 (18.0)	2 (7.7)	4 (17.4)	
Which artery should be used to check an infant's pulse?					
Femoral	9 (15.2)	5 (10.0)	5 (19.2)	1 (4.3)	0.64
Carotid	10 (16.9)	6 (12.0)	2 (7.7)	2 (8.7)	
Radial	6 (10.2)	6 (12.0)	4 (15.4)	3 (13.0)	
Brachial*	34 (57.7)	33 (66.0)	15 (57.7)	17 (73.9)	
In adults, the chest compression and ventilation ratio for single rescuer CPR is					
15:2	18 (30.5)	13 (26.0)	15 (57.7)	3 (13.0)	0.56
5:1	12 (20.3)	14 (28.0)	4 (15.4)	2 (8.7)	
30:2*	13 (22.0)	15 (30.0)	5 (19.2)	9 (39.1)	
15:1	16 (27.1)	8 (16.0)	2 (7.7)	9 (39.1)	
In children, the chest compression and ventilation ratio for 2 rescuer CPR is					
15:2*	27 (45.8)	17 (34.0)	4 (15.4)	11 (47.8)	0.11
5:1	10 (16.9)	11 (22.0)	9 (34.6)	1 (4.3)	
30:2	9 (15.2)	14 (28.0)	11 (42.3)	5 (21.7)	
3:1	13 (22.0)	8 (16.0)	2 (7.7)	6 (26.1)	

\*Correct Answer; \*\*Statistically Significant.

About 81.4% of the male students and 95.8% of the female students were willing towards undergoing BLS training. Similarly, 83.7% of the male participants and 95.8% of the female participants were willing to include BLS in the curriculum. But when questioned about why they did not undergo BLS training in the past, 89.5% of the male students and 57.0% of the female students responded the reason that was due to their busy schedule, whereas 33.3% of the female students thought that it was not important.

The advanced the year of study, the more optimistic the participants' attitudes were. Academic year-wise responses showed that majority of the participants were willing to undergo BLS training and thought that BLS training should be made mandatory in the curriculum. Most students quoted a busy schedule as the main hurdle for not taking the BLS training outside of college. Table 3 shows the gender- and academic year-wise responses to the statements related to attitude towards the BLS and CPR skills.

**Table 3. Comparison of responses to the statements related to attitude by gender and academic year variables.**

Statements with Responses	Gender			Academic Year		
	Male N (%)	Female N (%)	IIIrd N (%)	IVth N (%)	Vth N (%)	Intern N (%)
Total	86	72	59	50	26	23
Do you want more BLS training?						
Yes	70 (81.4)	69 (95.8)	49 (83.1)	45 (90.0)	23 (88.5)	22 (95.7)
No	15 (17.4)	3 (4.2)	10 (16.9)	5 (10.0)	2 (7.7)	1 (4.3)
I do not know	1 (1.2)	0 (0.0)	0 (0.0)	0 (0.0)	01 (3.8)	0 (0.0)
Do you think BLS training should be mandatory in the curriculum?						
Yes	72 (83.7)	69 (95.8)	45 (76.3)	48 (96.0)	25 (96.2)	23 (100.0)
No	12 (14.0)	3 (4.2)	12 (20.3)	2 (4.0)	1 (3.8)	0 (00)
I do not know	2 (2.3)	0 (0.0)	02 (3.4)	0 (0.0)	0 (0.0)	0 (0.0)
If you have had not taken BLS training outside of college, what was the reason?						
I think it is not important	8 (9.3)	24 (33.3)	9 (15.3)	8 (16.0)	8 (30.8)	7 (30.4)
Busy schedule	77 (89.5)	41 (57.0)	48 (81.4)	37 (74.0)	17 (65.4)	16 (69.6)
Not interested	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Cost of the course	1 (1.2)	7 (9.7)	2 (3.3)	5 (10.0)	1 (3.8)	0 (0.0)

## Discussion

Awareness and knowledge pertaining to BLS and CPR play a central role in undergraduate students, especially those interested in a medical or a dental career, as they will be the potential life savers in case of an emergency [9]. In addition, there is a higher possibility in a healthcare professionals' life that they will come across a life-saving situation both within or outside the college that requires performing a BLS and CPR intervention, which could assist in improving the medical condition of the patient before transporting to a hospital [2].

This study attempted to assess the knowledge and attitude of dental students towards BLS and CPR skills. Although limited to a single source at the university, the study sheds light on the nature and extent of the deficiencies that affect the academic goal and the standards set by dental council.

An average knowledge of students towards BLS and CPR skills in the present study is similar with the findings of studies done by Poudel et al. [10], Ahmad et al. [11] and Baduni et al. [12] but is inconsistent with the findings of the studies conducted by Jarrah et al. [13], Gajjar et al. [7], Al-Shamiri et al. [9], Khedher et al. [14], Alotaibi et al. [15], Jamalpour et al. [16], Zaheer and Haque [17] and Chandrasekaran et al. [8] where the data showed poor knowledge towards BLS. Furthermore, previous studies have found that many participants had come upon a situation that demanded the use of CPR, but only a few of them could perform it. This was mostly due to a lack of knowledge [2,13,18].

In the present study, even though the overall knowledge of the male and female dental students was average, the males were significantly better than the females. The outcome of male was more knowledgeable than female is dependable with the findings of study conducted by Alazmi and Alzahran [1], whereas Ahmad et al. [11] in their study showed that the correct response of male and female students was nearly similar.

In the current study, the comparison of participants' knowledge between all the academic years showed that the overall knowledge of students was average, and the interns responded better among all the participants. This could be attributed to the fact that the interns were more exposed to clinical scenarios and had more opportunities to discuss clinical cases with faculty members as compared to students of other academic years. Similar results were reported in the study conducted by Akritia et al. [19], where an inadequate knowledge about BLS and advanced cardiac life support in undergraduate medical students was noted as compared to an average knowledge in dental interns and postgraduate students, whereas Sharma and Attar [20] found that medical and dental interns who had finished their internship had meager knowledge about BLS.

Healthcare specialty wise results of the previous studies shows varied findings as the study conducted Ahmad et al. [11] revealed better performance by the students of emergency medical services while the lowest score was chosen by the students of nursing background. Chandrasekaran et al. [8] found that the dental students, interns and faculty members did not possess good knowledge and awareness on BLS compared to paramedical staff. Additionally, Srinivas et al. [21] revealed highly disappointing results when dental students were considered as compared to the medical and nursing students.

Many studies have been done among community members, non-medical students, school going children and their parents regarding the knowledge of BLS, owing to the fact that everyone should be aware of BLS and CPR techniques as it plays a vital role in attempting to save the patient during the 'Golden Hour'. However, the results of these studies have emphasized a critical issue that a majority of these target populations have restricted knowledge about BLS and CPR skills [1,2,22].

In the current study, the participants' attitude was found to be positive and they were willing to receive training. This finding is similar to the findings of the studies conducted by Alotaibi et al. [15] and Narayan et al. [23], whereas it is inconsistent with the studies of Alsayali et al. [2], Poudel et al. [10], Jarrah et al. [13] and Khedher et al. [14] where the participants' overall attitude towards BLS was negative. However, in this study, most of them showed a positive attitude when they asked if it should be mandatory for everyone and included in the curriculum similar to the findings of the study done by Saquib et al. [24]

In the current study, when questioned about why not taking BLS training outside of college, 32 (20.3%) replied that they thought it was not important. This could be due to the fact that students were not aware of their lack of knowledge in BLS, as they would have rarely handled such emergencies by themselves in an institutional set up. Similar findings were noted by Alazmi and Alzahran [1]. A lot of previous studies have emphasized making it mandatory to undertake the BLS and CPR training/courses and refreshing the skills periodically as found by many authors' where attending courses on BLS and CPR has helped students to improve their knowledge concerning these skills and helped them to confidently respond to an emergency [2,25,26].







The study insisted on providing lectures coupled with hands-on practices to dental professionals and to consider BLS and CPR skills as part of the dental curriculum. First, such training programs should be easily accessible for everyone and the best way to this if it can be provided at their workplace. Second, if it is added as part of the educational curriculum, it would be great to achieve a high number of trained individuals. Because of the constant updating of the guidelines every 5 years, repetitive training is needed to ensure the changes. Thus, the upshots of this study will be supportive for education and healthcare service providers of the Saudi kingdom as a whole and for Jouf region.

The small sample size was one of the study's limitations. In addition, data were collected from one place only if multiple sites were used; there could be more versatility in the sampled population. Despite these limitations, the current study provides an insight into the state of BLS and CPR training outcomes among students in this institute and provides possible avenues for improving the outcomes.

## Conclusion

Thus, the overall attitude towards BLS and CPR was positive with average knowledge on the topic. In this study, the author further understood about how well the participants were aware and updated about BLS and CPR, did they require further training, are they were interested in training, and it should be suggested to be made as a part of the curriculum. Beyond this, the present study will definitely be an eye-opener to our participants in self-realization of their knowledge level in BLS and CPR skills, which is expected to be up to date in health care professionals. Furthermore, it will further initiate them to obtain further training as early as possible. Hence, it was suggested that BLS training should be a part of the curriculum, which includes hands-on and scenario-based training to prepare the students in managing emergencies.

## Authors' Contributions

APS		<a href="https://orcid.org/0000-0002-0414-3194">https://orcid.org/0000-0002-0414-3194</a>	Conceptualization, Methodology, Formal Analysis, Investigation, Data Curation, Writing - Original Draft and Writing - Review and Editing.
MAA		<a href="https://orcid.org/0000-0002-1216-0816">https://orcid.org/0000-0002-1216-0816</a>	Conceptualization, Methodology and Data Curation.
RI		<a href="https://orcid.org/0000-0002-0046-3529">https://orcid.org/0000-0002-0046-3529</a>	Formal Analysis and Writing - Review and Editing.
SRP		<a href="https://orcid.org/0000-0003-0715-497X">https://orcid.org/0000-0003-0715-497X</a>	Formal Analysis and Writing - Review and Editing.
NP		<a href="https://orcid.org/0000-0001-8699-4779">https://orcid.org/0000-0001-8699-4779</a>	Writing - Review and Editing.
SS		<a href="https://orcid.org/0000-0002-0131-5675">https://orcid.org/0000-0002-0131-5675</a>	Writing - Review and Editing.

All authors declare that they contributed to critical review of intellectual content and approval of the final version to be published.



## Financial Support

None.

## Conflict of Interest

The authors declare no conflicts of interest.

## Data Availability

The data used to support the findings of this study can be made available upon request to the corresponding author.

## References

- [1] Alazmi AA, Alzahran FA. Knowledge and attitude of basic life support in the community of Dammam city, Saudi Arabia. *Int J Sci Study* 2020; 8(1):14-8.
- [2] Alsayali RM, Althubaiti AQA, Altowairqi RM, Alsulimani FA, Alnefaie BM. Awareness, knowledge, attitude and practices of first aid skills among medical and non-medical students at Taif University. *Middle East J Fam Med* 2019; 17(11):34-43.
- [3] Sangamesh NC, Vidya KC, Pathi J, Singh A. Awareness, attitude, and knowledge of BLS among medical, dental, and nursing faculties and students in the university hospital. *J Int Soc Prevent Communit Dent* 2017; 7(4):161-7. [https://doi.org/10.4103/jispcd.JISPCD\\_240\\_17](https://doi.org/10.4103/jispcd.JISPCD_240_17)
- [4] Tipa RO, Bobirnac G. Importance of basic life support training for first and second year medical students - a personal statement. *J Med Life* 2010; 3(4):465-7.
- [5] Kleinman ME, Brennan EE, Goldberger ZD, Swor RA, Terry M, Bobrow BJ, et al. Part 5: Adult basic life support and cardiopulmonary resuscitation quality: 2015 American Heart Association guidelines update for cardiopulmonary resuscitation and emergency cardiovascular care. *Circulation* 2015; 132(18 Suppl 2):S414-435. <https://doi.org/10.1161/CIR.0000000000000259>
- [6] Handley AJ. Basic Life Support. *B J Anaesth* 1997; 79(2):151-8. <https://doi.org/10.1093/bja/79.2.151>
- [7] Gajjar R. Awareness of basic life support among intern doctors: a questionnaire study. *IOSR J Dent Med Sci* 2017; 16(3):41-5. <https://doi.org/10.9790/0853-1603024145>
- [8] Chandrasekaran S, Kumar S, Bhat SA, Kumar S, Shabbir PM, Chandrasekaran V, et al. Awareness of BLS among medical, dental, nursing students and doctors. *Indian J Anaesth* 2010; 54(2):121-6. <https://doi.org/10.4103/0019-5049.63650>
- [9] Al-Shamiri HM, Al-Maweri SA, Shugaa-Addin B, Alaizari NA, Hunaish A. Awareness of basic life support among Saudi dental students and interns. *Eur J Dent* 2017; 11(4):521-5. [https://doi.org/10.4103/ejd.ejd\\_44\\_17](https://doi.org/10.4103/ejd.ejd_44_17)
- [10] Poudel M, Bhandari R, Giri R, Chaudhary S, Uprety S, Baral DD. Knowledge and attitude towards basic life support among healthcare professionals working in emergency of BPKIHS. *JBPkiHS* 2019; 2(1):18-24. <https://doi.org/10.3126/jbpkihs.v2i1.24962>
- [11] Ahmad A, Akhter N, Mandal RK, Areeshi MY, Lohani M, Irshad M, et al. Knowledge of basic life support among the students of Jazan University, Saudi Arabia: is it adequate to save a life? *Alex J Med* 2018; 54(4):555-9. <https://doi.org/10.1016/j.ajme.2018.04.001>
- [12] Baduni N, Prakash P, Srivastava D, Sanwal MK, BP. Awareness of BLS among dental practitioners. *Natl J Maxillofac Surg* 2014; 5(1):19-22. <https://doi.org/10.4103/0975-5950.140159>
- [13] Jarrah S, Judeh M, AbuRuz ME. Evaluation of public awareness, knowledge and attitudes towards basic life support: a cross-sectional study. *BMC Emerg Med* 2018; 18(1):37. <https://doi.org/10.1186/s12873-018-0190-5>
- [14] Khedher YZ, Shawwa L, Alamri AA, Farraj MM, Bayoumi ME. Knowledge and attitude of basic life support among medical students at King Abdul-Aziz University. *Egypt J Hosp Med* 2017; 69(8):3066-76. <https://doi.org/10.12816/0042857>
- [15] Alotaibi O, Alamri F, Almufleh L, Alsougi W. Basic life support: Knowledge and attitude among dental students and staff in the college of Dentistry, King Saud University. *Saudi J Dent Res* 2016; 7:51-6. <https://doi.org/10.1016/j.sjdr.2015.06.001>
- [16] Jamalpour MR, Asadi HK, Zarei K. Basic life support knowledge and skills of Iranian general dental practitioners to perform cardiopulmonary resuscitation. *Niger Med J* 2015; 56(2):148-52. <https://doi.org/10.4103/0300-1652.153407>
- [17] Zaheer H, Haque Z. Awareness about BLS (CPR) among medical students: status and requirements. *J Pak Med Assoc* 2009; 59(1):57-9.
- [18] Bagahizel AM, Ghouth HGM. Basic Life Support: What is the knowledge, attitude and practice level among Yemeni medical/paramedical personnel? *Yemeni J Med Health Res* 2019; 8:37-43.
- [19] Akritia S, Mayankb M, Arushic D. Basic life support and advanced cardiac life support: knowledge of medical students in New Delhi. *J Young Med Res* 2014; 1:1-9.

- [20] 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. <https://doi.org/10.1055/S-0040-1703580>
- [21] Srinivas HT, Kotekar N, Rao SR. A survey of BLS awareness among final year undergraduate medical, dental and nursing students. *Int J Health Allied Sci* 2014; 3:91-4. <https://doi.org/10.4103/2278-344X.132692>
- [22] Ghrayeb FA, Amro NRN, Rahseed O, Yagi H, Amro R, Amro B. Knowledge and attitude of basic life support (BLS) among school teachers in Hebron, Palestine. *Int J Res Med Sci* 2017; 5(6):2477-82. <https://doi.org/10.18203/2320-6012.ijrms20172432>
- [23] Narayan DPR, Biradar SV, Reddy MT, Sujatha BK. 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):118-22. <https://doi.org/10.5847/wjem.j.1920-8642.2015.02.006>
- [24] Saquib SA, Al-Harathi HM, Khoshhal AA, Shafer AA, Al-Shammari AB, Khan A, et al. Knowledge and attitude about basic life support and emergency medical services amongst healthcare interns in university hospitals: a cross-sectional study. *Emerg Med Int* 2019:9342892. <https://doi.org/10.1155/2019/9342892>
- [25] Ojifinni K, Motara F, Laher AE. Knowledge, Attitudes and perceptions regarding basic life support among teachers in training. *Cureus* 2019; 11(12):e6302. <https://doi.org/10.7759/cureus.6302>
- [26] Mani G, Annadurai K, Danasekaran R, Ramasamy JD. A cross-sectional study to assess knowledge and attitudes related to Basic Life Support among undergraduate medical students in Tamil Nadu, India. *Prog Health Sci* 2014; 4(1):47-52.