Saudi Journal of Oral and Dental Research (SJODR) **ISSN 2518-1300 (Print)**
Scholars Middle East Publishers **ISSN 2518-1297 (Online)**
Dubai, United Arab Emirates
Website: http://scholarsmepub.com/

Knowledge and Attitude of Undergraduate Dental Students and Interns in College Of Dentistry, Taibah University toward BLS and Medical Emergencies

Al Sharif Dhuha[1], Zahran Dalia H[2]*
[1]BDS, College of Dentistry, Taibah University, Saudi Arabia
[2]Associate Professor, Department of Oral Basic and Clinical Sciences, College of Dentistry, Taibah University, Saudi Arabia

Original Research Article

***Corresponding author**
Zahran Dalia H

Article History
Received: 23.02.2018
Accepted: 07.03.2018
Published: 30.03.2018

DOI:
10.21276/sjodr.2018.3.3.3

Abstract: To evaluate and compare the knowledge and attitude about Basic Life Support (BLS) and medical emergencies among undergraduate dental students and interns at the College of Dentistry, Taibah University, Al Madinah , Saudi Arabia. A previously validated, self-administered, anonymous, closed structured online questionnaire was distributed by email to the clinical year's students and interns. The questionnaires consisted of demographic data, knowledge and attitude of the participants toward BLS and Medical emergencies. 112 questionnaires were filled, with a response rate of (55.4%). Most of participants knew the abbreviation of BLS and half of them answered the questions of knowledge correctly. Most of participants thought that all dental students and staff need to know more about BLS. The knowledge of undergraduate students and interns about BLS is inadequate and need to be improved but they have a positive attitude toward it.
Keywords: BLS, Knowledge, attitude, dental, students, Saudi Arabia.

INTRODUCTION

Medical emergencies can happen at any time and to anyone in the dental office due to the increased possibility of stress often associated with dental treatment [1]. Fortunately, the serious complications that may arise in dental clinics are rare [2]. The most commonly seen medical emergencies in the dental office are Syncope, hypoglycaemia and hyperventilation [3]. Effective management of the adverse effects of medical emergencies necessitates that all dental students and staff who are dealing with patients are well prepared to manage medical emergency.

They also must be well trained to offer Basic Life Support (BLS), take a thorough medical and drug history and to monitor the vital signs [1,4,5].

BLS is a simple life saving procedure following cardiac arrest, heart attack and foreign body airway obstruction. The aim of BLS is to retain adequate ventilation and circulation until the cause is reversed and/or experienced medical help arrives [6]. An immediate and effective BLS leads to better outcomes and increase the patients' survival rate [7,8].

One key to predict and minimize the adverse effects that may happen in dental office is to obtain a thorough Medical history, including complete drug history, and monitoring vital signs of the patients [9].

Previous Studies have evaluated the knowledge of BLS and preparedness of dental students and staff to manage medical emergencies and the results of these studies were unsatisfactory [10-13]. In Saudi Arabia, few studies assessed the Knowledge of BLS among dental students [14-16]. About one third of the dentist feels incompetent to manage the medical emergencies in Eastern Province of Saudi Arabia [3]. Also, AlOtaibi *et al*. demonstrated that the knowledge and attitude of BLS among dental students and staff in King Saud University were inadequate. Nevertheless, there is no information regarding the knowledge and attitude of the dental students and practitioners about the importance of thorough medical and drug history and monitoring the vital signs [16].

The aim of the present study is to evaluate and compare the knowledge and attitude about BLS and medical emergencies among undergraduate dental students and interns in College of Dentistry, Taibah University, Al Madinah, and Saudi Arabia.

MATERIALS AND METHODS

The present study is a cross section analytical observational study. A self-administered, anonymous, closed structured online questionnaire was distributed by email to the clinical years students (3rd, 4th and 5th years) and interns (total of 202) at the College of Dentistry, Taibah University.

The questionnaire was previously validated [9, 16] .It was distributed among the participants with a covering letter explaining its title, nature, confidentiality and voluntary participation. It consisted of twenty eight questions addressing three major aspects; demographic data including gender and academic level, Knowledge and attitude about BLS and Medical emergencies.

The collected data were entered and coded into Microsoft Excel. Statistical Package for Social Sciences (SPSS) version 22.0 was used for data analysis. Chi square test was used to compare between males and females and between undergraduate students and postgraduates. The level of significance used was $p < 0.05$. The study protocol was reviewed and approved by the Ethics Committee at the College of Dentistry, Taibah University.

RESULTS

The sample of 112 questionnaires was used in analysis of the results. Out of the respondents, 81 (72.32%) were females, and 31 (27.68%) were males (figure 1). They consisted of four groups according to their academic level (figure 2).

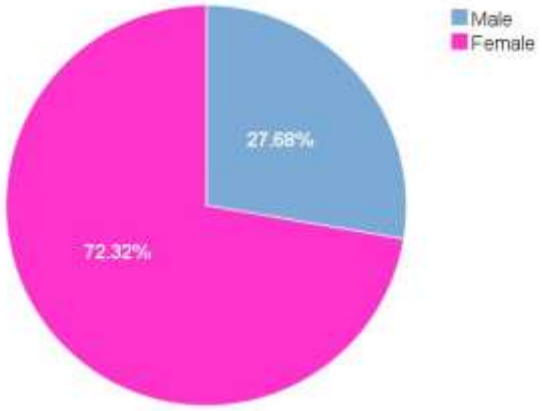

Fig-1: This pie chart shows the percentage of male and female respondent

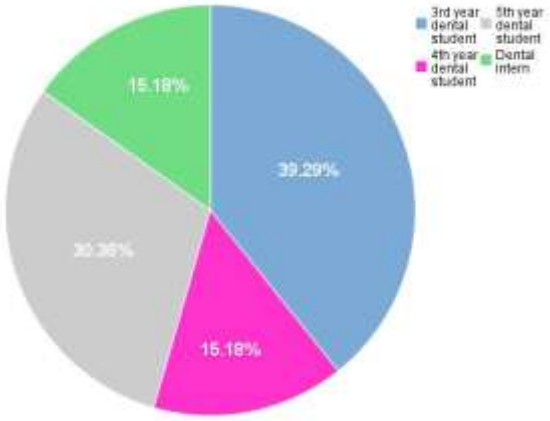

Fig-2: The study sample consisted of four groups divided according to the academic level as shown in this figure

Most of respondents take a Medical History including medication and allergy (96.77% males and 87.65% females). Also most of them obtained filled proforma from the patient (90.3% males and 90.12% females) About two thirds of male participants (64.5%) and only one third of females (32.09%) obtained the vital signs for the patients before starting treatment, with a highly significant difference between male and female (p=0.002).Less than one third of the participants (males 25.8% and females 23.45%) thought that they can handle any emergency condition at dental office. And only less than one third of them (males 25.8% and females 22.2%) have emergency kit at their dental office. Less than half of the participants (males 45.16% and females 40.7%) can give an intramuscular injection whereas a small percentage of them (16.1% of males and 13.58% of females) can give intravenous injection.

Most of males (90.3%) and females (95.06%) participants thought that all dental students and staff should know about BLS. And about (87.09%) of males and (98.76%) of females thought that BLS training should be part of dental curriculum, and this was significantly different between gender (P = .007) The Females thought that BLS training should be part of dental curriculum more than males did.

A relatively large number of the participants were reluctant to perform CPR to a stranger (48.38% males and 28.39% females). There is a significant difference between gender regarding this issue where males are more likely to show reluctance to perform CPR to a stranger than females. Regarding the reason of reluctance , The most common reason chosen by males was Fear of causing further harm or injury to patients (36.36%) followed by " Not confident " (27.27%). On the other hand, the most common reason chosen by females was "Not Confident" (30.5%) followed by Fear of causing further harm or injury to patients (28.8%). Half of males (51.6%) and (48.1%) females rated themselves on BLS knowledge as "average". Concerning the reasons of lack of BLS knowledge, half of male participants (51.6%) chose various combination of multiple factors, whereas (45.67%) of females chose no professional training available (Table1).

Most of males (93.5%) and females (86.4%) participants knew the abbreviation of BLS and about one third of males (35.48%) and females (33.3%) have done or seen BLS CPR on a patient. Almost all males (93.5%) and females (96.29%) had attended a workshop on BLS. And about (35.48%) of males and (30.86%) females knew that the first step if they confirm unresponsive person is to activate EMS.

About (22.58%) of males and (37.03%) were able to answer the question about option of resuscitation if you do not want to give mouth-to mouth CPR. Females (29.6%) could identify the correct Rate of chest compression in adult and children more than males while only (9.67%). The difference between males and females was statistically significant (P=0.027). The correct location of chest compression in adult was correctly identified by about two thirds of males (67.74%) and half of females (51.85%). Regarding the question on compression to ventilation Ratio, half of females (46.9%) and (41.9%) of males were able to identify the correct Compression to ventilation Ratio of CPR, single rescuer in adult. While a relatively low percentage of males (16.1%) and females (12.3%) knew how to give rescue breathing in infants. None of males and only (6.17%) of females were able to identify the chest compression and ventilation ratio in a new born. The right way to manage the choking adult was identified by one third of males (29.03%) and only (11.11%) of females with a significant difference between them (P= .021) where males were more able to identify the right way than the females. Finally, more than half of the participants (females 64.19% and 54.8% of males) were able to identify the right way of management of choking infant (Table2).

Table-1: comparison of the Attitude in relation to gender

Question :	Male	Female	*P* value
Do you enquire about Medical history including medication and allergy?	30(96.77%)	71 (87.65%)	.147
Do you obtain filled health history proforma of the above from the patients?	28 (90.3%)	73 (90.12%)	.553
Do you obtain the vital signs (blood pressure, pulse, respiration, temperature) of patients before commencing any treatment?	20 (64.5%)	26 (32.09%)	.002
Do you think you can handle any emergency condition at your dental office?	8(25.8%)	19(23.45%)	.795
Are emergency kits available at your dental office?	8(25.8%)	18(22.2%)	.688
Can you give an intramuscular injection?	14(45.16%)	33(40.7%)	.671
Can you give an intravenous injection?	5(16.1%)	11(13.58%)	.730
All dental students and staff need to know about BLS[1]?	28(90.3%)	77(95.06%)	.354
Do you think BLS training should be part of your dental curriculum?	27(87.09%)	80(98.76%)	.007
Are you reluctant to perform CPR[2] to a stranger?	15(48.38%)	23(28.39%)	.046
Reasons for reluctance : Fear of causing further harm or injury to patients Fear of acquiring infection during CPR Fear of taking responsibilities Not confident	 8 (36.36%) 3 (13.6%) 5 (22.7%) 6 (27.27%)	 17 (28.8%) 9 (25.4%) 15 (25.4%) 18 (30.5%)	.934
How can you rate yourself on BLS knowledge? Poor Below average Average Good Excellent	 5 (16.1%) 7 (22.5%) 16 (51.6%) 3 (9.67%) 0	 9 (11.1%) 16 (19.75%) 39(48.1%) 14 (17.28%) 3 (3.7%)	.627
The reason for the possible lack of knowledge about BLS : Busy curriculum Lack of interest No professional training available Various combination of the above mentioned factors	 7 (22.58%) 2 (6.45%) 6 (19.35%) 16 (51.6%)	 11 (13.58%) 5 (6.17%) 37 (45.679% 28 (34.567%	.077

Table-2: comparison of knowledge in relation to gender

Question :	Male	Female	*P* value
What is the abbreviation of BLS?	29(93.5%)	70(86.4%)	.292
Have you ever done/seen BLS (CPR) on a patient?	11(35.48%)	27(33.3%)	.830
Have you ever attended a workshop on BLS?	29(93.5%)	78(96.29%)	.529
If you confirm somebody is not responding to you even after shaking and shouting at him, what will be your immediate action?	8(35.48%)	25(30.86%)	.599
Option of resuscitation if you do not want to give mouth-to mouth CPR	7(22.58%)	30(37.037)	.146
Rate of chest compression in adult and children	3(9.67%)	24(29.6%)	.027
Location for chest compression in adults	21(67.74%)	42(51.85%)	.129
Depth of compression in adults	6(19.35%)	28(34.56%)	.117
Compression to ventilation Ratio of CPR, single rescuer in adult	13(41.9%)	38(46.9%)	.636
How do you give rescue breathing in infants?	5(16.1%)	10(12.3%)	.599
In a new born, the chest compression and ventilation ratio is :	0	5(6.17%)	.157
What is the Depth of compression in Children during CPR	6(19.35%)	16(19.75%)	.962
Management of chocking adult	9(29.03%)	9(11.11%)	.021
Management of chocking infant	17(54.8%)	52(64.19%)	.362

[1] Basic Life support
[2] Cardiopulmonary resuscitation

As shown in table 3. Most of undergraduate students (89.47%) and interns (94.1%) Take a medical history including medication and allergy and obtain filled health history proforma from the patient. Also, Half of interns (52.9%) and (38.9) of undergraduate students obtain the vital signs of patients before starting treatment. About one third of undergraduate students (23.15%) and (29.4%) of interns thought that they can handle any emergency at dental office.

Emergency kits are available in the dental office of less than one third of undergraduate students (25.26%) and (11.76%) of interns. Less than half of undergraduate students (43.15%) and (35.29%) of interns can give intramuscular injection while a small percentage of undergraduate students (13.68%) and interns (17.6%) can give intravenous injection.

Almost all undergraduate students and interns had attended BLS work shop, whereas only one third of each of them had done/seen CPR on patient. Most of undergraduate students (94.7%) and interns (88.2%) thought that all dental students and staff need to know about BLS. Almost all of undergraduate students and interns thought that BLS training should be included in dental curriculum. About the question of reluctance, less than half of interns (41.17%) and one third of undergraduate students (32.6%) were reluctant to perform CPR to a stranger. Regarding the reason of reluctance , The most common reason chosen by undergraduate was "Not confident" followed by Fear of causing further harm or injury to patients, while interns chose Fear of causing further harm or injury to patients followed by "Not confident " and Fear of taking responsibilities About half of undergraduate students and interns rated themselves as "Average ".

For the reasons of lack of BLS knowledge, about (40%) of undergraduate students chose no professional training available, and (58.8%) of interns chose various combination of multiple factors. (Table3). Most of undergraduate students (87.36%) and interns (94.1%) knew the abbreviation of BLS .And about one third of undergraduate student (26.3%) and (47.05%) of interns knew the first step to manage unresponsive person. About (20%) of undergraduate students and (47.05%) of interns were able to answer the question about the rate of chest compression in adults and children with a significant difference (P =.016). Half of undergraduate students and interns were able to identify that the right location of chest compression in adults is mid chest. On the other hand, small percentage of undergraduate students and interns knew how to give rescue breathing in infants. Concerning the question about chest compression, only (5.26%) of under graduate students was able to identify the right chest compression and ventilation ratio in newborn. More than half of undergraduate students (61.05%) and interns (64.7%) knew the right way to manage choking infant, and a small percentage of undergraduate students (13.68%) and interns (29.4%) knew how to manage choking adult. (Table4) shows a comparison between the undergraduate and interns regarding their responses.

Table-3: comparison of attitude in relation to Academic level

Question :	Under graduate	Intern	*P* value
Do you enquire about Medical history including medication and allergy?	85(89.47%)	16(94.1%)	.553
Do you obtain filled health history proforma of the above from the patients?	85(89.47%)	16(94.1%)	.553
Do you obtain the vital signs (blood pressure, pulse, respiration, temperature) of patients before commencing any treatment?	37(38.9%)	9(52.9%)	.280
Do you think you can handle any emergency condition at your dental office?	22(23.15%)	5(29.4%)	.579
Are emergency kits available at your dental office?	24(25.26%)	2(11.76%)	.225
Can you give an intramuscular injection?	41(43.15%)	6(35.29%)	.545
Can you give an intravenous injection?	13(13.68%)	3(17.6%)	.667
Have you ever attended a workshop on BLS?	91(95.78%)	16(94.1%)	.759
Have you ever done/seen BLS (CPR) on a patient?	33(34.7%)	5(29.4%)	.669
Do you think that all dental students and staff need to know about BLS?	90(94.7%)	15(88.2%)	.308
Do you think BLS training should be part of your dental curriculum?	91(95.78%)	16(94.1%)	.759
Are you reluctant to perform CPR to a stranger?	31(32.6%)	7(41.17%)	.493
Reasons for reluctance : Fear of causing further harm or injury to patients Fear of acquiring infection during CPR Fear of taking responsibilities Not confident	 20(28.57%) 12(17.14%) 17(24.28%) 21 (30%)	 5 (45.45%) 0 3(27.27%) 3(27.27%)	 .420
How can you rate yourself on BLS knowledge? Poor Below average Average Good Excellent	 13(13.68%) 20(21.05%) 46 (48.4%) 14 (14.7%) 2 (2.1%)	 1(5.88%) 3(17.6%) 9(52.94%) 3(17.6%) 1(5.88%)	 .792
The reason for the possible lack of knowledge about BLS : Busy curriculum Lack of interest No professional training available Various combination of the above mentioned factors	 17(17.89%) 6 (6.3%) 38 (40%) 34 (35.78%)	 1(5.88%) 1(5.88%) 5(29.4%) 10(58.8%)	 .300

Table-4: comparison of Knowledge in relation to Academic level

Question :	Under graduate	Intern	*P* value
What is the abbreviation of BLS?	83(87.36%)	16(94.1%)	.424
If you confirm somebody is not responding to you even after shaking and shouting at him, what will be your immediate action?	25(26.3%)	8(47.05%)	.084
Option of resuscitation if you do not want to give mouth-to mouth CPR	32(33.68%)	5(29.4%)	.730
Rate of chest compression in adult and children	19(20%)	8(47.05%)	.016
Location for chest compression in adults	55(57.89%)	8(47.05%)	.407
Depth of compression in adults	30(31.57%)	4(23.5%)	.506
Compression to ventilation Ratio of CPR, single rescuer in adult	42(44.2%)	9(52.9%)	.506
How do you give rescue breathing in infants?	13(13.68%)	2(11.76%)	.831
In a new born, the chest compression and ventilation ratio is :	5(5.26%)	0	.333
What is the Depth of compression in Children during CPR	16(16.8%)	6(35.29%)	.078
Management of chocking adult	13(13.68%)	5(29.4%)	.104
Management of chocking infant	58(61.05%)	11(64.7%)	.775

DISCUSSION

The present study aimed to evaluate the knowledge and attitude of undergraduate students and interns toward BLS .In this study we found that the knowledge of BLS was unsatisfactory and need to be improved. Since thorough medical history including medication and allergy and obtaining the vital signs of the patients are keys to predict and prevent or minimize the adverse effect that can happen at dental office, one of the objectives of our study is to evaluate the compliance of dental students and interns toward this issue.

In our study, Most of respondents took the medical history including medication and allergy, obtained health history proforma from the patients and obtained the vital signs of the patients before starting treatment. These findings were quite different from those reported by Kumarswami *et al*. [9] who concluded that although almost all the dentists take the medical history, only 12% of them obtain filled history proforma from the patients and only one third of them monitor the vital signs of the patients. The authors also reported that less than one third of the participants confirmed the availability of emergency kit which is coincident with our results. This point in particular raised the importance of providing emergency kit in all dental clinics to be used when needed.

Although most of participants had attended workshop on CPR, only one third of them had done/seen BLS (CPR) on a patient. This finding highlights the importance of continuous training and education regarding BLS and CPR. Our results showed that most of participant thought that all dental students and staff should know about BLS and agreed that BLS training should be included in the dental curriculum. This was in agreement with AlOtaibi *et al*. [16] who found that most of respondents (93.6%) agreed that all dental students and staff need to know about BLS and that the BLS training should be part of dental curriculum.

We found that only one third of respondents were reluctant to perform CPR to strangers. In contrast, Roshana *et al*. [17] reported that only 17.4% of respondents were reluctant to perform CPR. On the other hand, AlOtaibi *et al*. [16] found that about two thirds of respondents were reluctant to perform CPR. In the current study, Males were more reluctant than did females which was supported by the finding of AlOtaibi *et al.* [16] Concerning the reason of reluctance, the most common reason chosen was the Fear of causing further harm or injury to patient followed by "not confident" which was similar to Alotaibi *et al.* [16] who concluded that the most common reason of reluctance was the fear of causing further harm to the patients. In contrast, Roshana *et al*. [17] found that the fear of acquiring infection was the most common cause of reluctance.

Of the respondents in this study, 39.29% indicated that the lack of knowledge on BLS was due to combination of multiple factors (busy curriculum, lack of interest and no professional training available). These results are similar to the results of AlOtaibi *et al*. [16], where half of respondents indicated that the lack of BLS knowledge is due to busy curriculum.

Most of respondents in our study knew the abbreviation of BLS, which is in accordance to AlOtaibi *et al*. [16] and Almesned *et al*. [15] On the other hand; Chandrasekaran S *et al*. [12] reported that only about two thirds of respondents knew the BLS abbreviation. It is noteworthy to mention that the knowledge of BLS was insignificantly related to the gender in this study. This was different from AlOtaibi *et al*. [16] who found that the knowledge was significantly related to gender (higher among females than males).

Finally, there are some limitations of our study. First, the self- administered questionnaire may have less accurate data than that obtained by observation. Second, the response rate was relatively low. Third, the study was conducted in a single dental college in Al Madinah, Saudi Arabia and therefore the results can't be generalized.

CONCLUSION

Although the knowledge of undergraduate students and interns about BLS and Medical emergencies is inadequate and needs to be improved, however they have a positive attitude toward them. We recommend that the BLS training should be part of the dental curricula with reassessment every year to increase the knowledge of the students. In addition, regular theoretical and practical courses about BLS and Medical emergency for the postgraduates are highly recommended.

REFERENCES

1. Dentalcare.com [internet]. Management of Medical Emergencies in the Dental Office. Continuing Education Course [updated 16-9-2016]. Available from: http://www.dentalcare.com/media/en-US/education/ce445/ce445.pdf
2. Matsuura, H. (1989). Analysis of systemic complications and deaths during dental treatment in Japan. *Anesthesia progress*, *36*(4-5), 223.
3. Alhamad, M., Alnahwi, T., Alshayeb, H., Alzayer, A., Aldawood, O., Almarzouq, A., & Nazir, M. A. (2015). Medical emergencies encountered in dental clinics: A study from the Eastern Province of Saudi Arabia. *Journal of family & community medicine*, *22*(3), 175.
4. Haas, D. A. (2006). Management of medical emergencies in the dental office: conditions in each country, the extent of treatment by the dentist. *Anesthesia progress*, *53*(1), 20-24.
5. Wilson, M. H., McArdle, N. S., Fitzpatrick, J. J., & Stassen, L. F. A. (2009). Medical emergencies in

dental practice. *Journal of the Irish Dental Association*.
6. Berg, R. A., Hemphill, R., Abella, B. S., Aufderheide, T. P., Cave, D. M., Hazinski, M. F., ... & Swor, R. A. (2010). Part 5: Adult basic life support. *Circulation*, *122*(18 suppl 3), S685-S705.
7. Handley, A. J. (1997). Basic life support. *British journal of anaesthesia*, *79*(2), 151-158.
8. Steen, P. A., & Kramer-Johansen, J. (2008). Improving cardiopulmonary resuscitation quality to ensure survival. *Current opinion in critical care*, *14*(3), 299-304.
9. Kumarswami, S., Tiwari, A., Parmar, M., Shukla, M., Bhatt, A., & Patel, M. (2015). Evaluation of preparedness for medical emergencies at dental offices: A survey. *Journal of International Society of Preventive & Community Dentistry*, *5*(1), 47.
10. Reddy, S., Doshi, D., Reddy, P., Kulkarni, S., & Reddy, S. (2013). Awareness of basic life support among staff and students in a dental school. *The journal of contemporary dental practice*, *14*(3), 511.
11. Gupta, T., Aradhya, M. R., & Nagaraj, A. (2008). Preparedness for management of medical emergencies among dentists in Udupi and Mangalore, India. *J Contemp Dent Pract*, *9*(5), 92-9.
12. Chandrasekaran, S., Kumar, S., & Bhat, S. A. (2010). Awareness of basic life support among medical, dental, nursing students and doctors. *Indian journal of Anaesthesia*, *54*(2), 121.
13. Ehigiator, O., Ehizele, A. O., & Ugbodaga, P. I. (2014). Assessment of a group of Nigerian dental students' education on medical emergencies. *Annals of medical and health sciences research*, *4*(2), 248-252.
14. Alanazi, A., Alsalmeh, M., Alsomali, O., Almurshdi, A. M., Alabdali, A., Al-Sulami, M., & Iqbal, Z. (2014). Poor basic life support awareness among medical and college of applied medical sciences students necessitates the need for improvement in standards of BLS training and assessment for future health care providers. *Middle East J Sci Res*, *21*(5), 848-854.
15. Almesned, A., Almeman, A., Alakhtar, A. M., AlAboudi, A. A., Alotaibi, A. Z., Al-Ghasham, Y. A., & Aldamegh, M. S. (2014). Basic life support knowledge of healthcare students and professionals in the Qassim University. *International journal of health sciences*, *8*(2), 141.
16. Alotaibi, O., Alamri, F., Almufleh, L., & Alsougi, W. (2016). Basic life support: Knowledge and attitude among dental students and Staff in the College of Dentistry, King Saud University. *The Saudi Journal for Dental Research*, *7*(1), 51-56.
17. Roshana, S., Batajoo, K. H., Piryani, R. M., & Sharma, M. W. (2012). Basic life support: knowledge and attitude of medical/paramedical professionals. *World journal of emergency medicine*, *3*(2), 141.