

FIRST AID FROM DENTAL STUDENTS' PERSPECTIVE: INTERDISCIPLINARY LEARNING FOR PATIENT SAFETY

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ABSTRACT

Aim of the study In the field of dentistry, emergencies can occur unexpectedly, requiring immediate attention and prompt action. The study aims to shed light on the experiences and knowledge of dental students in handling emergency situations and their understanding of the role of first aid in dental practice. Material and methods A cross-sectional study was conducted at the Faculty of Dental Medicine, Iasi. The questionnaire was updated on the Google Forms platform, and the link was distributed to dental students in their 3rd, 4th, and 5th years of study. Out of Approximately 420 students, 205 of them agreed to respond to the questionnaire. Statistical analysis was performed using SPSS 27.0. Initially, the group was characterized using descriptive statistics, and subsequently, the comparative responses of the students based on their years of study were analyzed using the Chi-square test. The collected data was then analyzed for frequency distributions. Results The findings indicate that dental students possess awareness regarding the risks associated with routine dental practice. While they exhibit a satisfactory level of theoretical knowledge, they lack the necessary confidence to administer first aid, thereby highlighting a disparity between their theoretical understanding and practical skills. Conclusions The findings underscore the need for comprehensive education and training in dental emergency management to equip dental students with the necessary skills and knowledge to handle emergency situations effectively. By incorporating these insights into dental curricula, educators can contribute to the development of competent dental professionals who prioritize patient safety.

Key words: dental students, Basic Life Support , first aid

INTRODUCTION

During dental procedures, various emergencies can arise, significantly impacting the patients' vital or functional prognosis. These incidents may be triggered by factors such as the administration of anesthetic substances, underlying comorbidities, malfunctioning dental

equipment, or the inherent stress associated with dental treatment.

The most commonly encountered medical emergencies in dental offices include syncope (vasovagal being the most prevalent type), hyperventilation/panic attacks, acute asthma attacks, angina/myocardial infarction, epileptic seizures, diabetic emergencies,

allergies/hypersensitivity reactions, hyper/hypotension, stroke, and syncope (1). Dentists should possess the ability to promptly recognize these emergencies and provide initial intervention until guidance and further management can be obtained from emergency physicians. Insufficient training and an inability to manage medical emergencies can lead to catastrophic outcomes and even legal repercussions.

Studies have revealed that medical emergencies are not uncommon in dental practice, with approximately two-thirds of dentists encountering at least one incident within a 12-month period (2). In the context of medical emergencies, proficiency in basic life support (BLS) maneuvers has a positive impact on survival rates. Therefore, it is recommended that all medical students and healthcare professionals receive BLS training (3).

Risk management plays a crucial role in mitigating medical emergencies associated with dental practice. It is advised that all primary care dental facilities establish protocols for medical risk assessment of their patients (4,5). Prior to obtaining full licensure, dental students must possess comprehensive knowledge of potential complications and appropriate treatments for various medical conditions. A basic understanding of emergency conditions and their management should be fundamental requirement in dental education and training (6). Our university supports and promotes the learning of resuscitation techniques and the ability to anticipate medical emergencies in consented to participate and anonymous answer the questions.

Statistical analysis was performed using SPSS 27.0. Descriptive statistics were used for the general characterization of the student group. Comparative analysis of the students' responses based on their year of study was

the dental office through the curriculum. First aid techniques are taught in the second year and clinically reviewed in the sixth year of dental school. This approach ensures that students are exposed to this information early in their training, as repetition is necessary to reinforce retention.

The primary objective of this study is to assess the level of Basic Life Support (BLS) knowledge among students enrolled in the 3rd, 4th, and 5th years of the Faculty of Dental Medicine. The study aims to determine whether the information acquired during the second year of college has been effectively retained by the students.

MATERIAL AND METHODS

A cross-sectional study was conducted in April 2022 at the Faculty of Dental Medicine, Iasi, involving dental students. To evaluate the students' knowledge and attitudes towards Basic Life Support (BLS) and medical emergencies in dental offices, an original 22 items questionnaire was developed. The questionnaire underwent a pre-testing phase to ensure its validity. It consists of two parts: the first part collects general information, including demographic data such as age, gender, and year of study. The second part focuses on assessing the students' knowledge and approach to basic life support and medical emergencies in dental offices.

The questionnaire was administered using the Google Forms platform, and the link to the questionnaire was distributed to approximately 420 students. Out of these, 209 students accessed the link, and 205 students conducted using the Chi-square test, with a significance level set at $p \leq 0.05$. The data were analyzed in terms of frequency distributions.

RESULTS AND DISCUSSIONS

Out of the 209 questionnaires distributed

among dental students, 205 were received. However, 4 of them were eliminated due to refusal to participate. Among the remaining respondents, there were 67 from the 3rd year, 100 from the 4th year, and 38 from the 5th year.

In terms of gender distribution, 72.7% of the respondents were females, while 27.3% were males.

The age of the participants ranged from 21 to 23, with two exceptions: one participant was 45 years old and another was 36 years old.

Regarding the need for appropriate training in Basic Life Support (BLS) resuscitation maneuvers, 92.2% of the total respondents expressed a firm belief in the necessity of first aid training. The highest percentage (97.4%) was observed among 5th-year students (Figure 1).

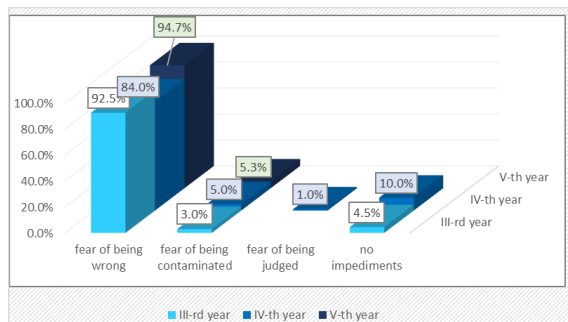


Figure 1. The biggest impediments to providing first aid

In terms of confidence in their own ability to respond to medical emergencies, 39% of the students stated that they did not feel adequately prepared to provide first aid. Additionally, 25.4% were unsure about their level of preparedness, while 31.1% felt sufficiently prepared. No statistically significant differences were found among the responses.

When asked about the main obstacles in providing first aid, 88.8% of the respondents indicated that they were concerned about being held responsible for the medical act. On the other hand, 6.2% stated that they faced no

difficulties, while 9% expressed fear of potential contamination.

In relation to the BLS protocol, for chest compressions, 36.6% of the respondents answered correctly. The 3rd-year group demonstrated the highest percentage of correct answers (49.3%), while the 4th-year group had only 34% correct answers, and the 5th-year group had 21.1%. These differences were found to be statistically significant.

Regarding the area of chest compressions, 50% of respondents correctly identified the midpoint of the sternum. The highest percentage of correct answers was found in the 5th year group (52.6%), while the lowest percentage was observed in the 3rd year (46.3%). However, there were no statistically significant differences between the different years.

In terms of indications for resuscitation maneuvers, only 68.3% of students correctly identified the individuals who require resuscitation. This finding may be attributed to the fact that 92.3% of the students had never been exposed to such situations. This lack of exposure could be attributed to their young age and limited interaction with individuals having significant comorbidities, including the two years of pandemic and lockdown periods.

Regarding the recommended position for an unconscious patient, 59% of respondents provided the correct answer. There were statistically significant differences between the three years of study ($p = 0.003^*$).

When asked about medication for an anaphylactic reaction, 79.5% of participants answered correctly, identifying the classes of medications needed in such a medical emergency.

In terms of the approach to be taken in the case of an epileptic seizure, 58% of respondents answered correctly. The highest percentage of correct answers was found in the 5th year (63.2%), while the lowest

percentage was observed in the 4th year (55%). However, no statistically significant differences were noticed.

Pallor is considered the initial sign of pre-syncope, which may or may not be accompanied by sweating. The interviewed students demonstrated medical knowledge, with 70.7% providing correct answers in identifying pre-syncope.

In response to the question regarding the reasons for the lack of knowledge of first aid measures, the majority (57%) stated that there are no regular courses available. However, opinions varied, ranging from the heavy curriculum to a lack of personal interest in this topic, as illustrated in Figure 2.

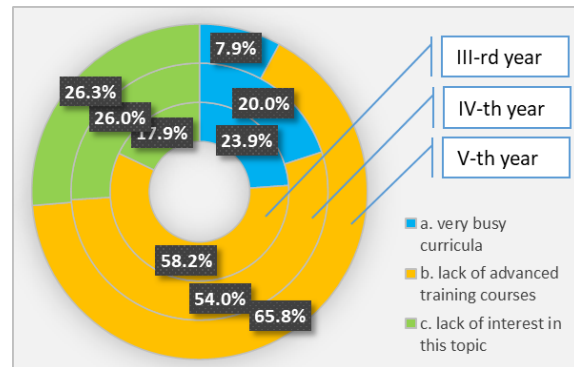


Figure 2. What could be the cause of insufficient knowledge of first aid maneuvers

In addition to the information received during college training and courses about BLS, students want to improve and regularly practice their first aid knowledge (Table 1).

Table 1. Students' suggestions about BLS training

ITEM:	Year of study						Total	
	3		4		5		N	%
	N	%	N	%	N	%	N	%
a. I want to review the practical maneuvers	64	95,5%	99	99,0%	36	94,7%	199	97,1%
b. I do not think other workshops are needed	0	0,0%	1	1,0%	0	0,0%	1	0,5%
c. I think I am doing well with the information I have	3	4,5%	0	0,0%	1	2,6%	4	2,0%
d. I am not interested in the subject	0	0,0%	0	0,0%	1	2,6%	1	0,5%
Total	67	100,0%	100	100,0%	38	100,0%	205	100,0%

DISCUSSION

Basic Life Support (BLS) is a crucial skill for saving lives. Cardiorespiratory resuscitation, as demonstrated by recent studies (7), highlights the importance of early chest compressions and the use of external

automatic defibrillators, which significantly increase survival rates. (8).

Unfortunately, in Romania, there is currently a lack of compulsory education programs dedicated to BLS, leaving medical

students and pharmacists without a foundation in first aid techniques. Recognizing this gap, our university has taken the initiative to provide comprehensive information and practical skills through the curriculum, irrespective of specialization.

Regarding appropriate training in resuscitation maneuvers, the majority of students recognize the need for additional information. Notably, the highest percentage (97.4%) expressing this opinion were fifth-year students, who are likely more aware of the risks involved in daily dental practice and the necessity of first aid training. Fifth-year students are often more psychologically mature and intuitive in managing complex or high-risk medical situations. Consequently, they feel the need to stay updated on first aid procedures and validate their practical skills, despite having received prior BLS training.

A significant percentage (39%) of students reported feeling unprepared to perform first aid maneuvers, possibly due to a lack of practical experience or official recognition from a training body. Additionally, 25.4% of respondents expressed uncertainty about their level of preparedness, emphasizing the need for certification and professional guidance. The remaining respondents felt adequately prepared, demonstrating courage, initiative, and a sense of independence that does not necessarily require official validation. However, it is important to note that students who lack knowledge of safety rules prior to performing BLS maneuvers put themselves and the patient at risk (9-12). This highlights the rationale behind assessing BLS knowledge.

Similar studies have shown that first aid knowledge diminishes over time without regular training courses (13-16). Research has consistently demonstrated a significant decrease in BLS knowledge and practical skills two years after initial training. Therefore, it is essential to periodically

update and implement more effective educational methods to maintain BLS proficiency, both among students and dental practitioners (17-21,38).

The COVID-19 pandemic has introduced an additional fear of contracting SARS-CoV-2 during BLS maneuvers, given the virus's high airborne transmissibility. All performed maneuvers, such as airway release, mouth opening, breathing assessment through the look-listen-feel method, chest compressions, and mouth-to-mouth ventilation, release aerosols that put the rescuer at a high risk of contamination. In response, the European Resuscitation Council has recommended a modified resuscitation guide for individuals without access to high-performance protective equipment, such as hospital-grade gear. There is also a modified version of the Pandemic Resuscitation Guide (22,23).

Our results, consistent with other studies, demonstrate poor knowledge among dental students regarding BLS and underscore the urgent need for continuous review and refreshment of this critical topic. It is necessary to prioritize general knowledge and highlight life-saving skills, such as thoracic compressions, rather than focusing extensively on advanced theoretical knowledge (24-31).

These findings align with previous observations, suggesting that such weaknesses can have negative implications for providing high-quality first aid (32-37).

Basic Life Support (BLS) training should be made compulsory and integrated into the curricula of both undergraduate and postgraduate training schools (39,40). This is supported by evidence showing that BLS training improves the survival rates of cardiac arrest patients (41,42). Studies have also indicated a decline in CPR knowledge and skills within six months after training, highlighting the need for healthcare workers to regularly retake the course to maintain

performance (43).

Regular workshops on BLS, incorporating real-life scenarios, should be attended at least once every two years. They propose the introduction of interactive methods and simulation-based training to enhance learning and prepare individuals for emergency situations (45). Research has shown that simulation-based training is effective in improving students' knowledge compared to traditional lecture-based teaching (46). For instance, the use of 3-dimensional virtual technology in assessing CPR skill retention demonstrated positive results in increasing and retaining CPR skills (47). Additionally, the utilization of interactive and intuitive mobile applications, such as the iResus

application, significantly enhanced physicians' capabilities in advanced life support (48).

CONCLUSION

Dental students recognize the importance of receiving training in first aid to enhance their resuscitation skills and demonstrate a willingness to acquire new medical techniques for the betterment of patient care. Incorporating feedback from students serves as a valuable means to enhance medical education. Therefore, we believe it is beneficial to undergo regular training in resuscitation protocols, considering the ongoing advancements and updates in this field.

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Informed Consent Statement: Informed consent was obtained from all subjects involved in the study. The study received the approval of the Ethics Committee (process code: 171/30.03.2022).

Conflicts of Interest: The authors declare no conflict of interest.

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