Brazilian Dental Students’ Perceptions About Medical Emergencies: A Qualitative Exploratory Study


Abstract: Dental students have little understanding about medical emergencies, and there is very little in-depth data about the importance they place on this important area that is fundamental to their professional training. This study aimed to identify the perceptions of a group of undergraduate dental students about the dentistry-medical emergency interface. Twenty undergraduate dental students at the Federal University of Goias, Brazil, took part in this study. The data were collected through in-depth interviews with these students and were interpreted using qualitative content analysis. Two themes emerged from this data analysis: dentistry as a comprehensive health science, and students’ knowledge, feelings, and attitudes about medical emergencies in the dental office. Based on the students’ perceptions, an interface between dentistry and medical emergencies in the dental office was proposed that is comprised of the following intertwined concepts: 1) dentistry is a health science profession that should focus on the whole patient instead of being limited to the oral cavity; 2) medical emergencies do occur in the dental office, but students’ minimal knowledge about these incidents and their etiology causes feelings of insecurity, dissatisfaction, and a limited appreciation of the dentists’ responsibility; and 3) the inability to perform proper basic life support (BLS) technique in the dental office is the ultimate consequence. Undergraduate health courses need to develop strategies to teach professionals and students appropriate behavior and attitudes when facing life-threatening emergencies.

Med. emergencies can occur frequently in the dental setting; about 70.2 percent of general dental practitioners in the United Kingdom have managed such events.¹ In general, these emergencies are not life-threatening (syncope and hypertension crisis, for example), but there were twenty deaths resulting from medical emergencies reported in a survey over a ten-year period.¹ Cardiopulmonary resuscitation (CPR) was performed in the management of 1.1 to 1.4 percent of events in the dental office.² Other studies have demonstrated that about one in seven Australian practitioners had resuscitated a patient;³ 5 percent of 244 Ohio dentists had performed CPR on a patient;⁴ and 3 percent of Brazilian professionals mentioned the occurrence of cardiopulmonary arrest in their dental offices.⁵ These studies also noted that the frequency of these medical emergencies appears to be increasing because dental practices are seeing an increasing number of elderly and medically compromised patients and are performing more sedation procedures.

Effective management of an emergency situation in the dental office is ultimately the dentist’s responsibility.⁶ The lack of training and inability to cope with medical emergencies can lead to tragic consequences and sometimes legal action.⁷ For this reason, all health professionals including dentists must be well prepared to attend to medical emergencies.³,⁵,⁸ Providing basic life support (BLS) is the dentist’s most important contribution until definitive treatment for a medical emergency can be given. The purpose of BLS is to prevent inadequate circulation or respiration through prompt recognition of the problem and intervention and/or early entry into the emergency medical service system, as well as to support a victim’s circulation and respiration through CPR.⁹ However, a number of studies have found that about half the dentists from all over the world are not
able to perform CPR properly.\textsuperscript{3,5,9-11} For this reason, medical emergency management training is gaining more importance for dental students.

BLS is a core skill in which all health care professionals should be proficient, but there is a great deal of variation in the training provided at the undergraduate level.\textsuperscript{12} Although medical emergency education has been taught in most European\textsuperscript{10,13,14} and American\textsuperscript{15} dental schools in recent times, little has been published about the self-perceived competence and confidence of dentists and dental undergraduates in regard to managing a medical emergency with BLS or CPR in the dental practice. Only 30 percent of general dental practitioners in Great Britain consider themselves well prepared to manage emergencies at graduation,\textsuperscript{10} and more than half of New Zealand’s dentists were dissatisfied with the training they had received for medical emergencies as undergraduate students.\textsuperscript{16} In fact, Kieser and Herbison reported that one of the greatest anxieties of dental students in general clinical situations was “dealing with medical emergencies.”\textsuperscript{17} Another study, however, hypothesized that dental students’ poor overall results in CPR skills could be associated with a low level of interest in that topic.\textsuperscript{13}

Bearing in mind that dental students have little understanding of medical emergency management and that there is very little in-depth data about the importance dental students place on acquiring competence in this area of patient care, the purpose of this study was to explore the perceptions of a group of undergraduate dental students about the dentistry-medical emergency interface.

**Methods**

A qualitative approach was chosen to probe dental students’ perceptions of medical emergency in the dental office. Based on our experience with this type of research, student and practitioner self-assessments and perceptions about patient management cannot be addressed deeply by quantitative methods.

This research was conducted at the Federal University of Goias (UFG), Brazil, during the 2005 academic year. The UFG is a federal institution of higher education, teaching, and research, which offers sixty-seven undergraduate programs, including a five-year program in dentistry that leads to the Doctor of Dental Surgery degree. Each class consists of about sixty students. Clinical training starts in the second year, and the topic of “medical emergency” is taught in three fourth- and fifth-year courses (stomatology, dental emergency, and pediatric dentistry), but certification in BLS is not a requirement for graduation.

Five male and fifteen female dental students, four from each year of the dental program and ranging in age from eighteen to twenty-three, participated in in-depth interviews. The interviews yielded exploratory data, with each student participating in a single one-on-one session. Respondents were encouraged to express their own perceptions about medical emergencies in dentistry through an interview guide containing a predetermined set of questions that served as a checklist during the interview and ensured that basically the same information was obtained from all the students.

Data collection procedures followed the standards of the UFG Research Ethics Board and the 1975 Helsinki Declaration as revised in 2000. The dental students volunteered in response to an invitation issued in the classroom. An information sheet explaining the purpose of the study was provided, and the students were told that the study was completely confidential. They were given the opportunity to ask questions if they were unsure about anything. All students signed a consent form.

The purpose of this study was to assess the dental students’ views, values, and attitudes regarding medical emergencies and their perceptions of the importance of managing BLS in the dental practice. The interview guide contained the following questions: If I were your patient and I suddenly became unconscious during dental treatment, what would you do? Have you ever heard of BLS? Have you ever faced a life-threatening situation with anyone? How do you consider dentistry within the health sciences? and Do you think that dentists should be able to perform BLS? The interview guide was reevaluated after seven interviews, but no change was needed. All interviews were performed individually by a single researcher (RMC), lasted from twenty to forty minutes, and were audiotaped. The interviewer was a graduate student, unknown to the dental students.

Qualitative data analysis is an iterative process of data collection along with data analysis; these two processes proceed almost simultaneously.\textsuperscript{18} In the data preparation phase, the entire data session was transcribed verbatim by the interviewer; attempts were made to transcribe all verbal data including pauses and emotions. The transcription was not a passive act; it allowed the researcher to connect with the
research material in a grounded manner that provided the possibility of enhancing the trustworthiness and validity of the data gathering.\textsuperscript{18}

Data were handled through content analysis, a method that aims to report the key element of respondents’ accounts. The researcher looks through the interview transcripts to categorize respondents’ accounts in ways that could be summarized.\textsuperscript{19} Data were explored through an exhaustive independent reading of the interview transcripts by each of the authors; themes that emerged in notes and coded ideas were used to establish the categories. Then, the authors met to discuss and validate the data, and an interobservational agreement on the meaning of the themes ensured the analysis was trustworthy.\textsuperscript{20} Qualitative analysis software was not used due to the small sample. In this way, two categories or responses emerged: dentistry as a comprehensive health science, and students’ knowledge, feelings, and attitudes about medical emergencies in the dental office.

## Results

### Dentistry as a Comprehensive Health Science

Students agreed that dentistry is a health science and, as such, must deal with the whole human being. They related several ideas to the theme “dentistry as a profession”: “overall health,” “the health field,” “dentistry has changed,” and “promoting health.” As one first-year student said, “I think that dentistry is a health science, so we can’t just keep looking at the mouth and teeth only. We deal with people.” A fifth-year student said, “Dentistry is changing. . . . Nowadays we don’t look at the mouth solely; we try to find systemic causation of the oral status.”

The students also believed that all health professionals must be well prepared to implement an efficient emergency management plan in the office setting to guarantee their patients’ safety. For this reason, their training must include the interdisciplinary study of medical emergency and BLS. “Everybody should know what to do in these cases, not only dentists, but all health professionals,” commented a fourth-year student. “I think that BLS should be taught as a specific subject, as radiology, operative dentistry, and other topics are,” said one fifth-year student. “I think it is basic knowledge and we must know it.”

### Medical Emergencies in the Dental Office

The dental students indicated a superficial knowledge of medical emergencies that was derived from limited exposure in undergraduate classes, conferences, and the short preparatory course for acquiring a national drivers’ license. One first-year student said, “I took a first-aid course to get a national driver’s license. But it was only a theoretical course and was too short.” A fifth-year student agreed: “Yes, I got a basic notion here in this dental school and also at a conference, but with no practice.”

The students also considered continuing training in BLS to be necessary over their entire professional lives in order to control a medical emergency situation. “I think that we need to learn more and more about this topic,” said a fifth-year student. “In this way, it will be possible to memorize what we need to do, so that when the time comes we can be sure to do the right thing.”

The students’ answers demonstrated feelings of insecurity and responsibility, since they would be the first on the scene of the emergency. Indeed, they were unanimous in their dissatisfaction with their level of knowledge since they did not feel able to carry out BLS techniques. “I was scared; I was not able to do anything,” commented a fifth-year student who had already experienced a medical emergency. “It’s my responsibility while that patient is still in my dental office,” a first-year student said.

It was important to note that most of the students in all years of the dental course affirmed that they had the expectation and the desire to learn more about BLS at the undergraduate or postgraduate level. “Some of these problems could happen to me when I finish my undergraduate training,” said a first-year student. “If they do, I should know how to proceed to help my patient.”

Four of the respondents had already experienced a medical emergency during dental practice. A large number of students stated that they did not know how to proceed in those situations, while one student stated that he had witnessed a real emergency in the course of his daily activities but that he had been unable to do anything. Said a fourth-year student, “This was a completely unexpected situation. . . . I think that I would call a doctor.” “I just stood there, without doing anything. I did not know what to do,” commented a second-year student. “I just stayed close to her.”
The more senior students described more proactive skills in dental office medical emergencies. In general, the ones who had already experienced an emergency situation demonstrated more positive attitudes about learning how to manage medical emergencies and about their confidence in handling these situations.

In general, the dental students considered a knowledge of medical emergency in the dental office to be essential for safe dentistry and believed that it must be more effectively taught in the undergraduate course. In an attempt to consolidate this study’s findings, we propose a spiral that depicts the intertwined relationship of dental practice and medical emergencies (Figure 1).

Discussion and Conclusions

The results of this study confirm that undergraduate dental students perceive a need for more intensive education in medical emergencies and they strongly desire to obtain this knowledge, in contrast to what was speculated in another study.13

We have proposed a spiral schema to clarify undergraduate dental students’ perceptions about the interface between dentistry and medical emergencies in order to draw a parallel with the conceptual model underlying spiral learning, which consists of two fundamental tenets: 1) the purpose of a spiral curriculum is to provide a structure for iterative

Figure 1. The spiral of the interface between dentistry and medical emergencies according to dental students’ perceptions

Note: Dentistry is a health science profession that should focus on the whole patient, instead of being limited to the oral cavity. Since medical emergencies do occur in the dental office, students’ shallow knowledge about them causes feelings of insecurity, dissatisfaction, and responsibility. An inability to perform the proper BLS technique in the dental office is the ultimate consequence.
revisiting of subjects, usually at increasing levels of complexity, throughout a course and is associated with thematically integrated curricula, problem-based learning, and outcome-based education; and 2) contemporary educational theories advocate the establishment of learning environments in which individuals have a sense of belonging, security, and freedom to make choices. Concepts from these spiral models were rarely observed in the students’ answers, but should serve as educational guidelines to change their unfavorable perceptions of medical emergencies in the dental office.

As advocated in modern dental curricula, the students interviewed in this study were prepared to be lifelong learners about the topic at hand, although their suggestion of creating a specific medical emergency course in their undergraduate program seems contrary to the concepts of horizontal and vertical curriculum integration. Their suggestion reflects the traditional dental curriculum with which they are acquainted. We, on the other hand, suggest that the medical emergencies theme (including BLS) presents an opportunity to explore basic and clinical content in different courses and should be taught to the five classes of students on a regular basis. This proposal has its origin in research findings reported in the literature: dental students’ ability to manage the medical emergencies of elderly patients changed between post-didactic training and post-clinical training in geriatrics; and medical students’ mastery of CPR theory and skills can improve with a refresher course at least once a year. Even though dentists may have received training in the management of medical emergencies at some time, they usually express the need for further training, which coincides with the need for continuing education courses described by dental students in our study.

We observed that students from all classes recognized the comprehensive scope of dentistry and the importance of being competent in medical emergency management, agreeing that “dentistry provides ‘must have’ health care services, not simply ‘nice to have’ cosmetic services.” As one would expect, senior dental students’ answers denoted more proactive behaviors regarding BLS skills; in fact, they had studied this subject in three nonintegrated courses. On the other hand, the literature advocates that the BLS training process should comprise standardized courses to facilitate acquisition of the desired skills. Despite the fact that the accurate knowledge of guidelines does not guarantee good overall performance of CPR/BLS by health professionals, we agree that resuscitation training should be compulsory, practical, and repeated in the dental curriculum.

Like the New Zealand dentists, the Brazilian undergraduate dental students in our study were dissatisfied with their knowledge about medical emergencies in the dental office. The spiral model of learning suggests that learning begins with the experience and knowledge of participants. Some of the interviewed students had already witnessed life-threatening emergency situations, and others had a shallow knowledge of medical emergencies in the dental office; thus, sharing those experiences could be an initial step in a problem-based learning case involving the topic. But what could be done for developing a “sense of belonging and security” concerning the management of medical emergency in the dental office, taking into account the insecurity observed in this and a study previously reported by Wanigasooriya? If we assume that students would be more confident in managing problems that they encountered most frequently, we could implement additional hours of BLS training during the whole dental course. The literature has proposed several BLS/CPR training strategies. One motivating “learning-by-teaching CPR” method recommended that medical students teach CPR to cardiac arrest survivors in order to improve trainers’ and trainees’ knowledge of life support skills. The value of simulation for medical students is controversial: extensive emergency simulation practice did not result in feelings of confidence in an actual emergency since it did not simulate the frightening reality; but simulation did allow for the application of theoretical knowledge in a safe and realistic setting, developing teamwork skills and a systematic approach to a problem. Blended learning, a “combination of multiple approaches,” would seem to be a reasonable way to teach dental students about medical emergencies, but this approach should be developed and investigated.

Furthermore, we could think about broadening the scenario for practice during undergraduate courses beyond dental schools. Dental students could routinely visit hospitals and emergency services to become familiarized with the stress involved in a life-threatening situation. A four-week hospital-based program for dental students had successful results in the evaluation and management of medical emergencies.

This study also supports the finding that Brazilian dentists usually have a theoretical knowledge of issues related to medical emergency management, but lack practical CPR training. Undoubtedly this
fact is worrisome, since inadequate basic training can result in professionals who are incapable of steering an emergency to a successful outcome. Interestingly, only one student was worried about the legal risks of a dentist’s involvement in cases in which the dentist does not know how to proceed in an appropriate way during an untoward event, though all of the interviewed students felt themselves responsible for an emergency situation in the dental office. This means that dental students were sensitive to their professional moral obligations, but they were not aware of their legal responsibility for any harm occurring to a patient in the dental office, even if it is not related to the dental procedure itself.

Based on our review of the literature, this appears to be the first study adopting a qualitative approach to clarify aspects of a topic that has been investigated only in quantitative studies. The qualitative methodology can make a significant contribution to dental health knowledge and practice because it allows researchers to answer important questions of relevance to procedure and policy that are difficult to answer satisfactorily using quantitative methods alone. The voluntary nature of participants and the uncertainty about how this group matches the remainder of the class and potential bias that might result are other limitations of this study. Although the results of qualitative researches do not necessarily permit generalizations, our results are generally consistent with previous findings, and can be understood as part of a needs analysis for informing curriculum development to support learning in this area. Furthermore, these data need to be supported by other data from the same context, e.g., tutor/staff perceptions of students’ knowledge, skills, and attitudes and/or documentation of student performance when faced with simulated or real emergencies.

All in all, dental students were sensitive about their superficial knowledge of medical emergencies in the dental office, and they expect this topic to be an integral part of their education. Institutions offering undergraduate health courses should find the educational formats needed to build the confidence necessary for dental students and professionals to be active in stressful situations that threaten the patient’s life.

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REFERENCES