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The Competenceof Dental Staff and Students to Deal with Medical Emergencies at UQUDENT

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Abstract: ***Medical emergencies are among the most common events that occur during dental practice.The present study was conducted to investigate the competence of dental staff and dental students to deal with medical emergencies at Umm Al-Qura University Dental Teaching Hospital. Self-administered questionnaires were distributed to collect data from dental staff and students characterized according to gender and occupation. All collected data were coded, entered and analyzed by means of SPSS based on the Chi-square test.In total, 162 persons participated, 61 males and 101 females. Of these, 74% had received training to prepare them to deal with medical emergencies, and 63% of them had taken the Basic Life Support (BLS) course. Of all participants, 73.1% believed that they are very tofairly well-prepared to manage medical emergencies, and nearly 87% believed that hands-on courses could improve their preparedness in managing medical emergencies. Further, hands-on investigative studies [in a real or simulated medical emergency] are recommended to measure the actual competence of these individuals to deal with medical emergencies.***

Keywords: Medical emergencies, dental practice, dental students, dental staff, competence.

1. Introduction

A medical emergency is "the sudden onset of a medical condition manifesting itself by acute symptoms of sufficient severity (including severe pain) such that the absence of immediate medical attention could reasonably be expected to result in: placing the patient's health in serious jeopardy, serious impairment to bodily functions, or serious dysfunction of any bodily organ or part" [1].

Medical emergencies are among the common events that occur during dental practice, but most of them are not lethal [2]. Although the prevalence of emergencies that could happen in the dental clinics is unknown, several retrospective surveys have reportedthat "vasovagal syncope or fainting was the most common medical emergency occurring in dental practice"[3-5]. Other potentially serious but less prevalent emergencies include: angina, seizures, hypoglycemia, asthma, etc. Rarely, life-threatening cases of cardiac arrest have been reported to occur in the dental office [3, 4, 6].

Generally, medical emergencies in dental practice are rare [7]. However, several recent studies have reported that such emergencies do occur in dental practice on a regular basis [3, 8].

If an emergency situation is encountered in a dental office, it is the responsibility of the dentist and the work-team to recognize it and initiate the primary necessary emergency management steps and procedures, because any delay in treatment may result in life-threatening conditions that should be avoidable [9].

Some contributing factors related to patients and practitioners may affect the incidence of emergencies in dental practice now and in the future [4]. First, the population is aging, and as life expectancy increases, dentists are facing increasing numbers of geriatric and medically compromised patients who usually have greater intake of medications and therefore an increased risk of drug interactions and adverse effects [3, 4, 10]. Second is that the possibility of increased medical emergency situations can result from the dental treatment itself,which can cause emotional stress (during the use of local anesthesia, sedation or surgical treatments)[2, 10-12]. This could affectthe patient's ability to cope with dental treatment procedures, which are likely to be more invasive and possibly painful [2, 10-12].

Members of the dental staff, as part of the healthcare provider's team, must be competent in dealing with the medical emergencies that could happen in the dental clinic [13].

Prevention of medical emergencies during dental treatment is crucial [2] and can be aided if staff follows some fundamental principles. Regular updating of each patient's medical history is mandatory,since patients at risk can be identified through medical history, which will allow for necessary modifications of dental treatment [14]. A complete knowledge of the patient's medical history is important to reduce or eliminate potential risks [2]. The ability of the dentist to initiate primary management in an emergency and ensure that basic emergency equipment and medications are in place is the key to minimizing morbidity and mortality [7, 9].

Several international studies have reported that about half of the dentists around the world are unable to perform basic life support [BLS] or cardiopulmonary resuscitation [CPR] properly [7, 15-17],even though, for example, the dental boards in the Kingdom of Saudi Arabia [KSA] require specific training in the management of medical emergencies and current BLS or CPR certification as a prerequisite for licensure [18].

Several studies have investigated the competence of dental students to deal with emergencies in the dental clinic and reported that this issue is among their greatest anxieties, and

they fear that they are not completely capable of managing medical emergencies [5, 15, 19]. However, when dental students undertook practical skills training, their knowledge of and attitude toward emergency medical care were improved [5, 12, 15, 19]. The authors of the current study were not aware of any study conducted at any academic hospital in KSA to measure the competence of dental staff or dental students to deal with medical emergencies. To the best of their knowledge, this is the first survey that has attempted to do that.

The aim of this study was to investigate the competence of dental staff and dental students to deal with medical emergencies and to measure the knowledge of dental staff and dental students in the Dental Teaching Hospital at Umm Al-Qura University Faculty of Dentistry (UQUDENT) about BLS or CPR.

2. Methodology

This was a cross-sectional study conducted in the form of a self-administered questionnaire at UQUDENTto all dental staff, along with 4th-, 5th- and 6th-year dental students working at the Dental Teaching Hospital.
The participants were selected according to the following inclusion criteria:

A. All dental staff and dental students working at the UQUDENT Dental Teaching Hospital.
B. Both genders.
C. All nationalities.

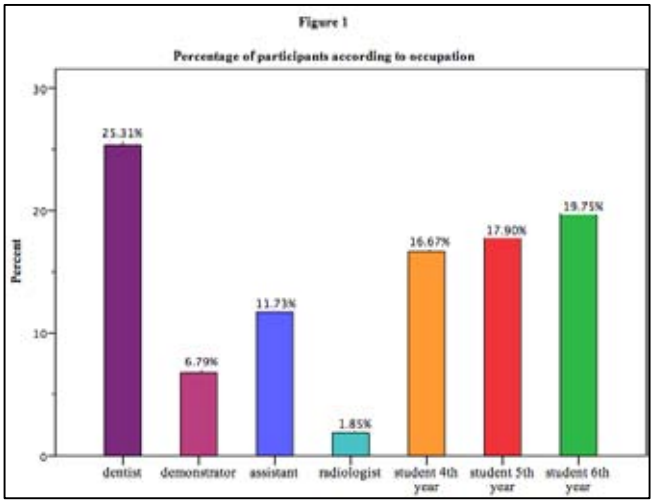
The sample size was 162. No sampling technique was used, since the study was a census (complete enumeration survey). Approval was obtained from the Institutional Review Board at Umm Al-Qura University, Faculty of Dentistry (UQUDENT-IRB) before questionnaires were distributedto dental staff and students, and responses were confidential.The questionnaire was constructed with closed questions and either yes-no or multiple-choice responses. The sample was characterized by gender, occupation and questions about medical emergencies along with their management.

All collected data were verified by hand and corrected when necessary, then coded before being enteredinto a personal computer.

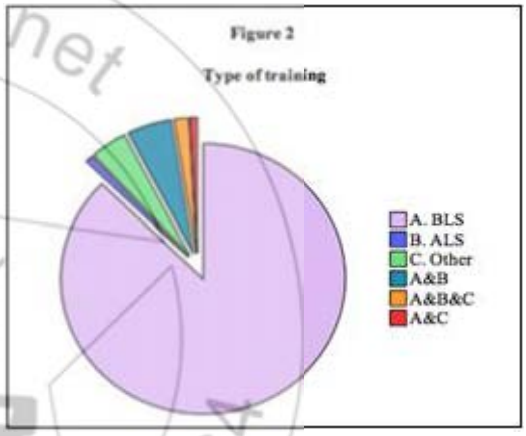
The Statistical Package of the Social Sciences (SPSS) program, version 22,was used for data entry and analysis. Chi-square was utilized to test the association between and among categorical variables. P-value of less than 0.05 was considered significant.

3. Results

From 205 questionnaires distributed, only 162 questionnaires (79%) were returned with responses. Of all respondents, 61 were males (37.7%) and 101 were females (62.3%)(Figure 1).



Seventy-four percent of respondents had received training to prepare them to deal with medical emergencies, and 63% of them had taken the BLS course (Figure 2).



Only 25.2% believed that they were well-prepared to manage medical emergencies, with the same percentagestating that they were not well-prepared, 47.9% believing that they were fairly well-prepared and only 1.7% stating that they were completely unprepared to manage medical emergencies (Figure3). When genders were compared, there was no significant difference between males and females (P=0.185). However, when occupations were compared, there was a significant difference between the numbers of participating students and the dentists, radiologists and assistants (P=0.000).

Of all participants, 86.7% believed thathands-on courses could improve their preparedness, 10.1% chose lectures, while 3.2% stated that there was no need for them to improve their preparedness.

Sixty-one percent of participants were not aware that medical emergency equipment is available at the Dental Teaching Hospital.

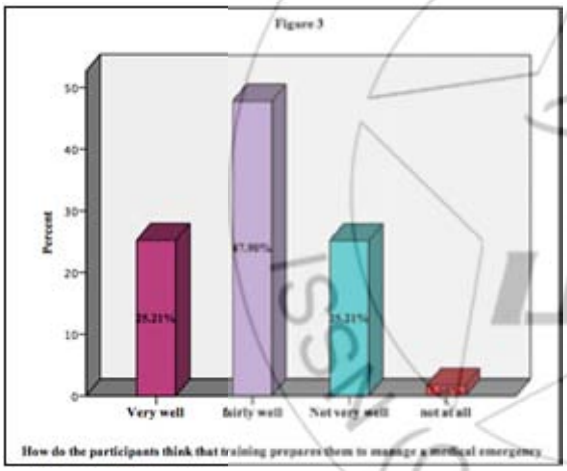
When asked about the first step to takein a medical emergency situation (that is, call for help or activate the emergency response system), 46.3% would perform the correct action, 40.7% would assess the patient's airway, and 11.7% would check the patient's vital signs, while 1.2% would leave the patient and seek assistance.

Of all participants, 75.9% knew some of the contents of the Medical Emergency Kit, 14.2% knew them all, while 9.9% knew none of them. Seventy-nine percent knew how to use some of the contents of the Medical Emergency Kit and 6.8% knew how to use all of them,but 13.6% did not know how to use them at all.

When the participants were asked if they hadever faced an emergency situation, 36.4% replied in the affirmative, and 91.5% of these situations were managed properly.

Fifty percent of all participants strongly agreed that periodic training sessions in the management of medical emergencies and the use of medical-emergency equipment and drugs would improve their self-confidence in dealing with such situations, while 35.8% agreed, 12.3% were neutral and 1.9% disagreed.

Of all participants, 40.7% strongly agreed that integrating a course on managing medical emergencies in dental clinics into undergraduate curriculawould be more beneficial in improving the students' self-confidence in dealing with emergency situations than just postgraduate courses.Nearly 35 percent (34.6%) agreed, 22.8% were neutral and 1.9% disagreed.



4. Discussion

Theoretically, more than half of the participants considered themselves totally or sufficiently capable of managing medical emergencies (Müller etal. (2008: 298), [3]buttheir self-evaluation of competence is likely to be superior to their actual skills. Therefore, further hands-on investigative study (in a real or simulated medical emergency situation) should be conducted to narrow this gap.

In questionnaire studies, there are always limitations and bias, due to either under- or over-reporting. To minimize this effect, the questionnaire in this study was constructed with simple closed (yes-no and multiple-choice) questions.

There was a statistically significant difference between the students and other participants according to occupation (except with demonstrators),which could be due to the clinical regulations requiring a BLS certification for students beforethey are permitted to work at the clinics.

Nearly 22% of the dental students who participated in the current study found themselves not well-prepared to manage medical emergencies. This is in accordance with the findings ofCarvalho etal. (2008: 1346),[15]who reported that undergraduate dental students feltinsecure and had insufficient information and practice in managing medical emergencies.

More than half of the dentists considered themselves very to fairly well prepared in managing medical emergencies (23.6%), in accordance with Müller etal. (2008: 298), [3] who reported that nearly half of their respondents felt competent. This could be due to work place regulations (whichdiffer in academic, private and governmentalsettings) before dentists receivean occupation license.

Less than half the participants knew the first step to takein a medical emergency situation, indicating that all participants needed hands-on courses to enhance their capacity to recognize and manage medical emergency situations correctly.

Nearly 86% percent of the participants in this study agreed or strongly agreed with the fact that practical skills training enhances their awareness of and self-confidence in managing medical emergencies. Spoka etal.(2012:182), [12]found that 71% of their participants agreed with that assessment.

Most of the participants in the current study agreed or strongly agreed that integrating a course about medical emergency management at dental clinics into undergraduate curriculawould be beneficial in improving the students' self-confidence in dealing with emergency situations. This result is in accordance with the results of Carvalho etal. (2008: 1346), [15]who reported general agreement from all participants with that concept.

When the participants were asked if they routinely carried any emergency equipment, drugs or therapeutic tools in their dental practice, more than half reported in the negative.

Not all the participants were aware that equipment for dealing with medical emergencies is available at the UQUDENT Dental Teaching Hospital, which supports the proposal that a simulated medical emergency response at the university hospital should be undertaken.

5. Conclusions

Overall, more than half the participants from all occupations considered themselves totally or sufficiently capable of managing medical emergencies.

Eighty-six percent of the participants agreed or strongly agreed that periodic practical skillstraining enhance awareness and self-confidence in medical emergency management.

Further, hands-on investigative studies (in a real or simulated medical emergency situation) are recommended to measure actual staff competence in dealing with such situations.

6. Recommendations

- Periodic practical training sessions or hands-on coursesin "how to manage medical emergencies" along with "how to use medicalemergency equipment and drugs" should be undertaken at UQUDENT Dental Teaching Hospital.
- Integrating a course about medical emergencies' management at dental clinics for undergraduate students and dental staff is beneficial to improve their self-confidence in dealing with emergency situations.
- A simulated medical emergency response should be attempted and a medical emergency crash cart should be available at UQUDENT Dental Teaching Hospital clinics.
- Further, hands-on investigative studies are recommended to measure actual staff competence in dealing with medical emergencies.

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