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ORIGINAL ARTICLE

Assessment of Preparedness of Dental Graduates and Postgraduates in the Management of Medical Emergencies

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ABSTRACT

Objective: This study aimed to assess the type of training concerning the management of medical emergencies, received by house officers and postgraduate trainees in different dental teaching institutes of Rawalpindi and Islamabad, Pakistan.

Materials and Methods: A questionnaire was distributed in different dental teaching hospitals in Rawalpindi and Islamabad. It contained questions regarding what type of training they received, and whether they perceived that the training was sufficient when it was needed during a medical emergency. Data was analyzed by SPSS and frequencies were recorded.

Results: All participants had received either theoretical or practical training. Less than 20% of house officers and postgraduate trainees perceived that they have handled a medical emergency 'well'.

Conclusion: This shows that our current curriculum is focused on the 'theory' and lacks practical training which leads to underprepared practitioners. To improve their skills, students should undergo drills and artificial and simulation-based training.

Keywords: Medical emergency, CPR, BLS, dental practice

INTRODUCTION

A medical emergency is categorized as an injury or illness which can result in loss of life unless immediate intervention is undertaken. The occurrence of medical emergencies in dental practice is a major concern for the dentist, and the patient owing to its life-threatening nature (1). It requires immediate management as some can lead to dire consequences, and stabilization of the patient is needed till the patient recovers or is transferred to a hospital. It should be noted that most common medical emergencies do not proceed to the life-threatening condition of the patient if handled well and in time however any delay or incompetency in such situations can progress to serious consequences and can even lead to death (2). This not only results in the loss of a life that could have been prevented but can also lead to legal consequences for the practitioner. So it is without question that the practitioner should be well prepared and equipped. The management of such an emergency depends on various factors, the most important ones being the severity of the condition and the preparedness of the dental practitioner (3). The preparedness of the dental personnel includes but is not limited to the acquired theoretical knowledge, and the core skills such as the ability to perform Cardiopulmonary resuscitation (CPR), secure intravenous (IV) access and use AMBU (artificial manual breathing unit) bag. Immediate management includes stabilization by basic life support (BLS) with the adjunct use of medications where required: whereas in severe cases it may be necessary for the hospitalization of the patient (4). In tackling a medical emergency the dentist has the prime role in the diagnosis and initiating the management. (5).

Dealing with medical emergencies in a dental practice is considered a daunting task to many practitioners who lack confidence and training in tackling such situations. Basic life support (BLS) is a skill that is considered to hold immense importance in all health care professionals yet many dentists all over the globe have confessed that they find their own BLS skills inadequate and feel they won't be able to carry out CPR properly (6). The main parameters to be addressed are preparation and education (7). Preparation should include educating the dentists and their auxiliary staff on the common medical emergencies and their handling (8). This also includes the use of basic emergency drugs which are available in the emergency kit. Places like dental teaching hospitals have students, house officers, and postgraduate trainees present in the operatory area as well, they have to deal with patients so they should also be educated and trained for handling a medical emergency to ensure that all health care personals on site have adequate knowledge and the confidence to tackle any medical emergency that may occur (9).

Given the significance of basic life support and the management of medical emergencies in dental practice, it has been incorporated into the curriculum of many dental schools in Europe and America. But it lacks a definite structure or incorporation of basic life support training and emergency management in the other parts of the world, especially Pakistan, where this study was conducted (10). Theoretical knowledge of dealing with a medical emergency is part of the undergraduate and postgraduate curriculum which is divided and spread over various years' curriculum, without any structured vertical or horizontal integration, with hands-on training not mandatory in every dental school which is often neglected, and no certification whatsoever in any of the dental schools. This study was done to assess the preparedness of practicing dental personnel in the hospitals of Rawalpindi and Islamabad (Pakistan). This was to assess if they had any former training regarding management: if they had encountered any emergency in their practice and how well they felt they could handle medical emergencies which might occur in their practice.

MATERIALS AND METHODS

This study included Post graduate trainees and house officers working in the teaching hospitals of Rawalpindi and Islamabad. A questionnaire was designed to investigate if the management of medical emergencies was taught as a part of their undergraduate (UG) and postgraduate (PG) training. And what was included in the course, were they taught theory and given hands-on training for each of the following components: Recognition of emergencies, CPR, emergency drug use, IV access, and intramuscular (IM) access. Did they acquire any additional certification courses?

Then to inquire what are the views and attitudes towards emergency management and BLS it was asked if they opined that the emergency management course should be made mandatory.

Then the questionnaire focused on any past experiences of an actual medical emergency that they might have experienced. If yes, then which one? and how competent they felt? And how well do they think they handled it?

The questionnaire was distributed in the six dental teaching hospitals of Rawalpindi and Islamabad. The questionnaire consisted of seven questions that inquired about what type of training they had received at undergraduate and postgraduate levels for handling a medical emergency. It also inquired how they think they can handle a medical emergency (well, fairly well, not

well, not at all). The data were subjected to statistical analysis using Statistical Package for Social Science (SPSS, IBM, USA) version 21. Frequencies were recorded for the most common type of medical emergency recorded. The Chi-square test was applied for group-wise comparison. the p-value of ≤0.05 was considered statistically significant.

RESULTS

A total of 316 participants took part in this survey. The division was as follows: 117 participants from Islamic International dental college: 76 from the Armed forces institute of dentistry: 44 from Rawal institute of health sciences: 40 from Margalla institute of health sciences: 19 from Islamabad medical and dental college: and 20 from Pakistan institute of medical sciences. Amongst these were 194 house officers and 122 postgraduate trainees.

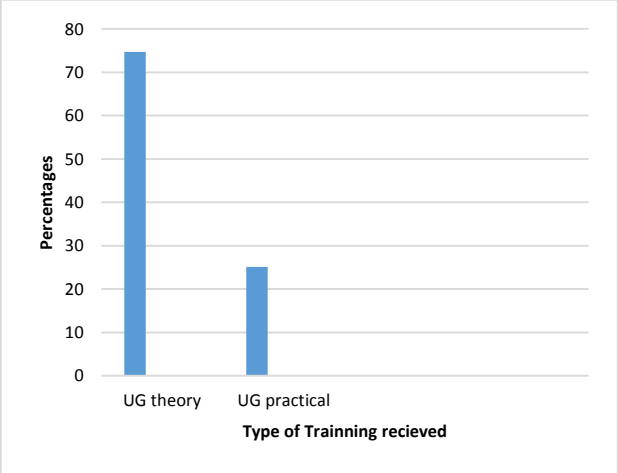

Figure 1: Graphical representation of the type of training received at the undergraduate level.

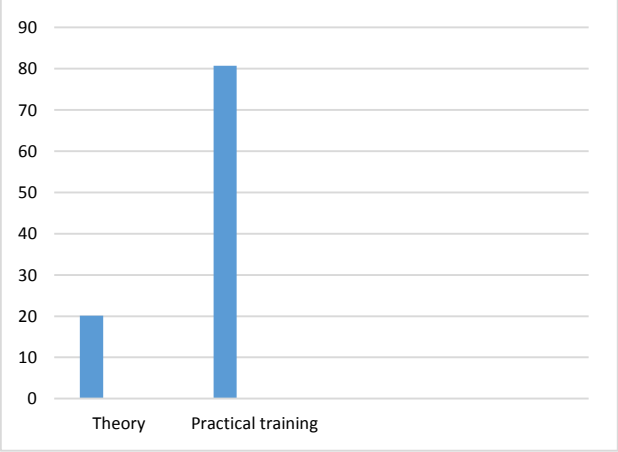

Figure 2: Graphical representation of the type of training received by postgraduate trainees

It was unanimous amongst all participants, house officers, and postgraduate trainees, that awareness and knowledge of medical emergency management should be made mandatory in all teaching hospitals.

It was found that at the undergraduate level that the focus of dental teaching schools was more on the theoretical aspect as our survey revealed that 74.4% (n=236) participants had studied medical emergencies, whereas the practical hands-on training was found to be comparatively neglected with just 24.1% (n=79) participants having any kind of training (p≤0.05) (figure 1).

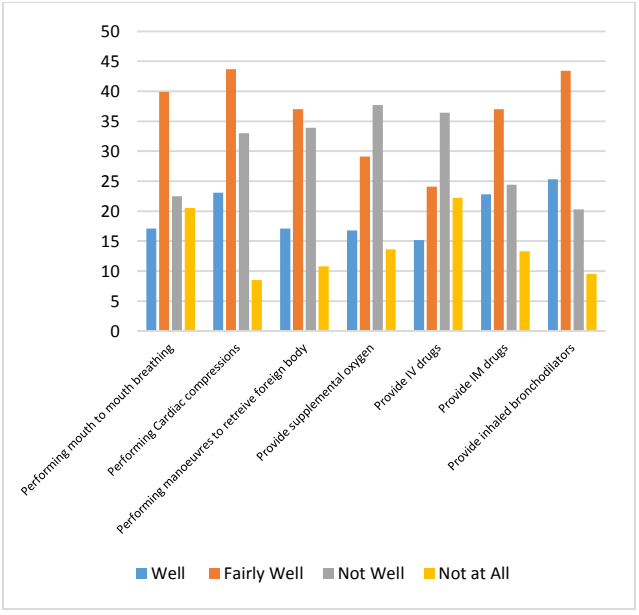

Figure 3: Graphical representation of participant's response on the ability to perform medical emergency protocols

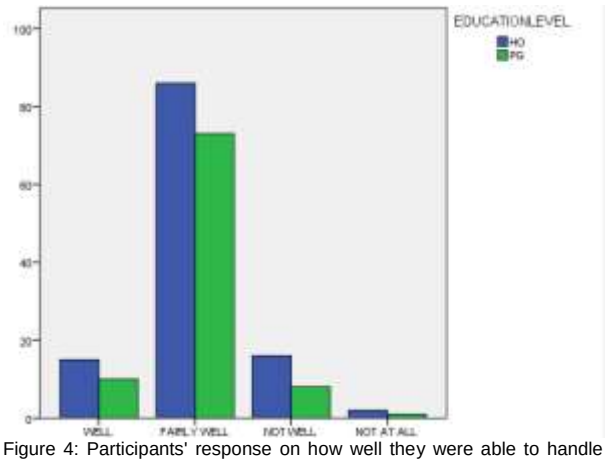

Figure 4: Participants' response on how well they were able to handle the medical emergency

Table 1: Training received by participants

	Theoretical Training	Practical Training
At Undergraduate level		
Recognition of Medical emergencies	242	99
CPR	194	149
Emergency drug use	229	84
IV access	181	73
IM access	186	80
At Postgraduate level		
Recognition of Medical emergencies	67	61
CPR	43	84
Emergency drug use	52	52
IV access	48	43
IM access	47	47

The postgraduate trainees (122) didn't show any significant difference when compared to the undergraduate training, with 80.7% (n=86) having received theoretical as well as practical training, in handling medical emergencies, whereasonly 20.1%

(n=36) have had no practical training whatsoever, which is even less than the percentage found in undergraduate training of students (figure 2).

Table 1 shows the frequency of level of training the participants received during their undergraduate and postgraduate training.

Figure 3 shows a graphical representation of various medical emergency tasks and how competent the participants felt they are in them.

In this survey, 44.1% (n=139) of the participants had taken additional training/workshops regarding medical emergency handling. Amongst the participants, 66.5% (n=210) have experienced some medical emergency in their dental practice; amongst which syncope and hypoglycemia were the most frequently encountered. Only 11.8% (n=25) perceived that they handled the emergency well, whereas 75.4% (n=159) were of the view that they handled it fairly well ($p \leq 0.05$), as shown in figure 4.

DISCUSSION

Medical emergencies are very common in dental practice and can be successfully managed with prior training of the dental practitioner and the appropriate availability of adjunctive drugs (11). During undergraduate and postgraduate training dentists come across two types of coursework regarding the management of medical emergencies: theoretical and practical. Previously it has been pointed out by various studies that although theoretical knowledge has been given practical training is often neglected to a large extent (12). Which has influenced the practitioners' level of confidence when being in such a situation, made apparent by the level of perceived ability regarding various medical emergency protocols. (Figure 3) During any medical emergency a practitioner should be confident and well adept in the relevant medical emergency protocols, and there is no space for error in such events. This survey identified a huge space for improvement on various fronts regarding the previous training especially in establishing Iv access and providing supplemental Oxygen to the patients in which the participants confessed they did not feel that they can adequately perform these tasks at all. This can be achieved by focusing on practical training and demonstrations targeting these critical areas.

In this study, only 24.1% of the participants had practical training the house officer level which should not be considered acceptable as they handle patients daily and operate independently without direct supervision. At this level, they should be highly skilled in the deliverance of BLS and the delivery of other emergency protocols like any other healthcare worker in a hospital setting. And more focus should be on simulation-based or practical training rather than relying on theory (13). Handling medical emergencies is a test of nerves and should be prepared for by numerous practical pieces of training with frequent refresher courses to keep the staff updated with the most recent protocol and to maintain the high competency of the dental practitioner. Recently there is a focus on simulation-based training(SBT) as concluded concisely by Mirium et al; SBT not only allows the enhanced ability to handle medical emergencies but also helps in the long-term retention of the required skills (14) which when coupled with spaced refresher course would enable the practitioner to maintain his level of competency.

At the house officer level, less than 50% of the participants have had practical training (table 1), which is a cause of concern regarding patient safety. However, the most positive response of practical training at house officers and the postgraduate level was found to be CPR. This goes in line with a study by Gupta et al (12) who found CPR to be the procedure that the practitioners were confident in performing. However, 8-10% of the participants were of the view that they would not be able to perform mouth-to-mouth breathing and cardiac compressions which are part of CPR (figure 3). Jacek et al pointed out a similar finding in the Polish dentist population in which more than 10% perceived that they would not be able to perform CPR adequately (15). Similar findings have been reported in the Brazilian dental population (16, 17).

The General Dental Council (GDC) has accepted 'medical emergency training', amongst the core training of dental practice. They have proposed a training course in which theoretical training is followed by practical skills and scenarios which helps further cement the previous knowledge and develops the ability to apply skills in various situations. This leads to confidence building and better management of medical emergencies (18). To improve dentists' ability to handle medical emergencies such workshops or drills should be made mandatory at both undergraduate and postgraduate levels. All participants in this study were of the view that medical emergency training should be mandatory for practicing dentists as it can occur anytime during practice (19, 20) especially since now the dental practices all over the world are showing an increased number of geriatric patients due to better overall healthcare and facilities. This leads to an increased probability of encountering medical emergencies as more medically compromised geriatric patients need dental health care. So appropriate measures should be taken to ensure that any complications occurring are handled with the utmost skills and efficiency during the dental procedures.

Amongst the participants, 139 had taken certification courses and workshops which shows that the undergraduate and postgraduate training was insufficient. This depends on the institution and the facilities available. This can be handled by the structured incorporation of medical emergency management in the undergraduate program and the post-graduate program. It should be highly encouraged that all practicing dentists take a refresher course at least every 2 years, and it should be made a pre-requisite for a practicing dentist to have skills and training to handle such a situation (13, 21).

However, another important point to be highlighted is to check how equipped these institutes are in terms of medical emergency equipment and drugs. Without the right equipment and drugs handling any medical crisis is near to impossible even if the concerned practitioner is highly skilled and appropriately trained.

Limitations: This study was based on a self-directed questionnaire, so there was no way to assess the practical skills, and relied on the individual's assessment of his/her skills and knowledge.

CONCLUSION

Knowledge, awareness, and skills in handling a medical emergency should be compulsory for all practicing dentists. In teaching institutes of Rawalpindi and Islamabad, less than 20% of the house officers and postgraduate trainees felt that they could handle a medical emergency 'well'. This shows that we still lag in practical skill training, which suggests a need for a more structured approach, focusing more on the practical aspect. Frequent refresher courses are recommended to ensure long-term retention of these core skills and knowledge.

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