

# Assessment of a Group of Nigerian Dental Students' Education on Medical Emergencies

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## Abstract

**Background:** The training of dental students in the management of medical emergencies is of utmost importance as they may encounter some of these emergencies at some point in their career. **Aim:** The aim of this study was to evaluate the medical emergency education in a Nigerian Dental School. **Subjects and Methods:** This descriptive cross-sectional study was carried out among 124 final year dental students of the University of Benin, Benin City. Data was collected using a self-administered questionnaire. The questionnaire elicited information on demography, knowledge of inclusion of a medical emergency in the dental curriculum, knowledge of guidelines on medical emergency formulated by any dental authority, opinion on the comprehensiveness of the present training on medical emergency, type of medical emergency training received, previous encounter with a medical emergency, previous participation in emergency drills and knowledge of the content of an emergency kit. Descriptive statistics was carried out on the collected data. **Results:** Only 58.1% (72/124) respondents were aware of the inclusion of a medical emergency in the dental curriculum and fewer, 17.7% (22/124), were aware of guidelines on medical emergency formulated by any dental authority. Fifty-two out of all the respondents (41.9%) claimed not to have received any form of training on medical emergency. Only 22.6% (28/123) had previously participated in an emergency drills and just 34.7% (43/124) had ever seen an emergency kit. **Conclusions:** It can be concluded from this study that the level of training and level of knowledge on medical emergencies of the studied dental students is below desirable standard. It is therefore necessary to put proper strategies in place to strengthen their identified areas of weakness.

**Keywords:** Assessment, Dental students, Medical emergencies

## Introduction

The training of dental students in the management of medical emergencies is of utmost importance as it has been suggested that dentists may be faced with these emergencies at some point in their career.<sup>[1,2]</sup> Dental students are to learn how to plan for, manage and handle dental office medical emergencies, as part of the dental team, in the course of their training. It is expected that by the time they graduate as dentists, they should be familiar with emergency interventions.<sup>[3]</sup> However, dental students have

been reported to have a little understanding about medical emergencies and they seem not to place serious importance on this fundamental area of their professional training.<sup>[4]</sup>

The Nigerian undergraduate dental curriculum on medical emergency is very extensive and it is expected that after the training, the dental students should have a medical emergency skills that will include offering first line treatment for hyperglycemia, hypoglycemia, acute stroke, acute coronary syndrome, status epilepticus, acute pulmonary edema and acute asthma. They are also expected to be skillful in administering oxygen, performing advanced cardio-pulmonary resuscitation on adults as well as relieving choking.<sup>[5]</sup>

The findings from previous studies suggest that dental graduates across the world may not be adequately prepared in the management of medical emergencies.<sup>[4,6-9]</sup> Many of the dentists on graduation have been reported not to feel competent managing

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medical emergencies<sup>[10]</sup> and a comprehensive simulation based training program for final year dental students has been advocated.<sup>[10]</sup> There is a tendency for some dental schools to concentrate on theoretical training while not paying attention to the practical aspect. This lack of uniformity in the dental student's training on medical emergency has also been reported.<sup>[4]</sup>

There is a paucity in studies assessing the level of dental students' training in a medical emergency in our environment. It is therefore very important to estimate the dental students' level of training and level of knowledge on medical emergencies. This is necessary to know their areas of weakness and to develop strategies that will ensure they benefit maximally from the detailed curriculum. The aim of this study was to evaluate the medical emergency education in a Nigerian dental school.

### Subjects and Methods

This descriptive cross-sectional study was carried out among 124 final year dental students of the University of Benin, Benin City. The survey was anonymous and participation was voluntary with no incentives offered. The study group was educated on the purpose of the survey, assured of strict confidentiality of their responses and informed consent was obtained prior to questionnaire administration. The protocol for research was approved by the Ethics and Research Committee.

Data was collected using a pre-tested self-administered questionnaire [Appendix 1]. The questionnaire was pre-tested using 10 newly graduated dental house officers with similar characteristics with the study population. Subsequently, necessary amendments were made to the questionnaire to ensure its reliability. The study participants filled the questionnaires during their free period. The questionnaire elicited information on demography, knowledge of inclusion of a medical emergency in the dental curriculum, knowledge of guidelines on medical emergency formulated by any dental authority, opinion on the comprehensiveness of the present training on medical emergency, type of medical emergency training received, previous encounter with a medical emergency, previous participation in emergency drills and knowledge of the content of an emergency kit. Data analysis was performed using SPSS version 13.0 (Chicago IL, USA). The result was presented as frequency tables, pie and bar charts.

### Results

A total of 124 dental students participated in this study and the respondents were all within the age range of 21-40 years with the mean (standard deviation) for age of 26.6 (2.8) years. The female: male ratio was 1:1.7. Seventy six respondents (61.3%) had previously encountered medical emergency in the course of their training [Table 1].

Seventy two (58.1%) respondents were aware of the inclusion of a medical emergency in the dental curriculum. Out of the 52

respondents who claimed not to be aware, 7.7% (4/52) felt that the inclusion of a medical emergency in the dental curriculum is not necessary. Few respondents, 17.7% (22/124) were aware of guidelines on medical emergency formulated by any dental authority and 31.8% (7/22) of those aware felt the guidelines are sufficient and comprehensive.

Ten respondents (8.1%) claimed to have received only practical type of medical emergency training, 21.8% (27/124) claimed to have received only theoretical type of medical emergency training, 28.2 (35/124) claimed to have received both and 41.9% (52/124) claimed to have received none [Figure 1].

Out of the 72 students who claimed to have had any form of training at all, 72.2% (52/72) had lectures, 36.1% (26/72) had seminars and 41.7% (30/72) had role-playing and simulation. Eight (11.1%), claimed to have seen videotapes and 27.7% (20/72) saw slides and power point on medical emergency management [Table 2]. The students claimed they were taught how to perform the following procedures; venopuncture

**Table 1: Demographic characteristics of respondents**

Characteristics	n (%)
Age group (years)	
21-25	46 (37.1)
26-30	68 (54.8)
31-35	9 (7.3)
36-40	1 (0.8)
Sex	
Male	78 (62.9)
Female	46 (37.1)
Encountered medical emergency	
Yes	76 (61.3)
No	48 (38.7)
Total	124 (100.0)

**Table 2: Type of training received by the respondents who claimed to receive any form of training on medical emergency management**

Type of training	Yes n (%)	No n (%)	Total n (%)
Lecture	52 (72.2)	20 (27.8)	72 (100.0)
Role-playing and simulation	30 (41.7)	42 (58.2)	72 (100.0)
Videotapes	8 (11.1)	64 (88.9)	72 (100.0)
Slides and power point	20 (27.7)	52 (72.3)	72 (100.0)
Seminars	26 (36.1)	46 (63.9)	72 (100.0)
Venopuncture	22 (30.6)	50 (69.4)	72 (100.0)
Endotracheal intubation	34 (47.2)	38 (52.8)	72 (100.0)
Pulse oximetry	13 (18.1)	59 (81.9)	72 (100.0)
Automated external defibrillation	13 (18.1)	59 (81.9)	72 (100.0)
Cardiopulmonary resuscitation	40 (55.6)	32 (44.4)	72 (100.0)
Monitoring of vital signs	45 (62.5)	27 (37.5)	72 (100.0)



**Figure 1:** Type of training in the management of medical emergencies received by the respondents

(38/124), endotracheal intubation (59/124), Pulse oximetry (22.4/124), automated external defibrillation (22.4/124), cardiopulmonary resuscitation (69/124) and monitoring of vital signs (76/124).

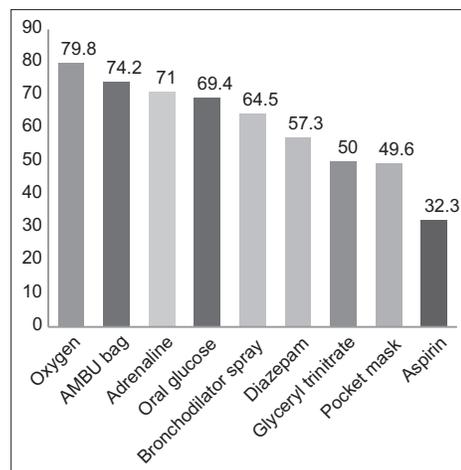
Twenty eight respondents (22.6%) claimed to have previously participated in an emergency drill while 34.7% (43/124) reported to have seen a special emergency kit before. The following were considered by the respondents to qualify as emergency requirements; oxygen 79.8% (99/124), ambu bag 74.2% (92/124), adrenaline 71.0% (88/124), oral glucose 69.4% (86/124), bronchodilator spray 64.5% (80/124), diazepam 57.3% (71/124), glyceryl trinitrate 50.0% (62/124), pocket mask 49.6% (62/124) and aspirin 32.3% (40/124) [Figure 2].

## Discussion

Medical emergencies have been reported to occur frequently in dental practice.<sup>[11-13]</sup> A study suggested that up to 44% of dentists may have a patient with a medical emergency in a year.<sup>[14]</sup> The result of this study also reflect that medical emergencies occur quite frequently because more than half of the studied dental students claimed to have previously encountered medical emergency during their training.

The result of this study suggests that a deficiency in this dental students' curriculum on medical emergencies. A curriculum refers to the overall content of what is to be taught about a subject matter.<sup>[15]</sup> With progressive points of view, curriculum can be defined as experiences in the classroom, which are planned and enacted by the teacher and also learned by the students.<sup>[16]</sup>

It is important that a student centered approach is used in the development and implementation of the curriculum for better results and this is why curriculum mapping was advocated.<sup>[17]</sup> This refers to a situation where students can identify what, when, where and how they can learn, i.e. the scope and sequence of students' learning is made transparent.<sup>[17]</sup> Barely over half of the students studied were aware of the inclusion of a medical emergency in their dental curriculum. This



**Figure 2:** Items considered by respondents as emergency requirements

result raises a few questions, especially since the students were subjected to the same condition. Could this result be because some students do not pay attention to the curriculum or because they are not adequately informed by those to implement the curriculum? Fortunately however, only very few out of the students who claimed not to be aware felt the inclusion of a medical emergency in the dental curriculum is unnecessary.

Guidelines are in place for the management of medical emergencies in a dental setting<sup>[18-26]</sup> and the purpose of these guidelines is to set out agreed philosophy and responsibilities of all dental staff in relation to resuscitation and management of medical emergencies in the dental surgery. Only 17.7% of the dental students studied were aware of such guidelines. The students' role, as part of the dental team, in the management of a medical emergency can therefore not be said to be optimal. There is also a possibility that the students are not in possession of the right guidelines as only 31.8% of them felt the guidelines are sufficient and comprehensive.

The Nigerian dental students are expected to be exposed to both the theoretical and practical aspect of medical emergencies management in the course of their training.<sup>[5,26]</sup> An earlier study done on the final year dental students toward the development and evaluation of their undergraduate training program reported that realistic simulation training in management of medical emergencies for dental students is an effective adjunct to traditional lecture style teaching.<sup>[10]</sup> Simulation training was reported to improve the ability to manage medical emergencies.<sup>[27]</sup> Another study also reported that the more advanced the simulation is the better management of medical emergencies.<sup>[28]</sup> Full-mission simulation, using physical patient simulators, appeared to be the most useful training method.<sup>[28]</sup> Only 28.2% of the studied dental students claimed to have received the desired forms of training on medical emergencies while an alarming 41.9% claimed not to have received any form of training. This feedback will be useful in the curriculum evaluation process.

Other important points revealed by this study are that only the theoretical training in medical emergencies seems to be effective. Many of the dental students were able to volunteer the information that they received lectures on the topic. The use of visual teaching aids like videotapes and PowerPoint projections however did not get so much mention. Fewer than half of the students had any form of simulation, which would have helped them to put their theoretical knowledge into practice.

This study also suggests that the dental students may not be prepared to handling medical emergencies effectively as a member of the dental team,<sup>[29]</sup> because majority claimed not to have been taught how to perform many of the potentially lifesaving procedures. This result is similar to what was reported among a group of medical students where 85.3% of them had never taken any basic life support course.<sup>[30]</sup> It also supports another studies that reported inadequacies in the area of basic life support among medical, dental, nursing students and doctors<sup>[31]</sup> as well as among medical and paramedical personnel.<sup>[32]</sup> Regular mock drills and knowledge of the essential resuscitative drugs and equipments have been recommended to ensure the preparedness of every member of the dental team.<sup>[33]</sup> The result of this study amplifies the need to ensure that this recommendation is taken very seriously.

The inadequate knowledge of management medical emergencies suggested by this study may not be limited to the study group and study area. A previous study also reported a sub-optimal level of knowledge of medical emergencies among medical students of the eleven evaluated Peruvian universities.<sup>[34]</sup>

## Conclusion

Based on the above study it can be concluded that the level of training and level of knowledge on medical emergencies of the studied dental students is below desirable standard. It is therefore necessary to put proper strategies in place, such as the development of the theoretical model, to improve the areas of weakness this study identified.

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