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Research Article

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Knowledge, Attitude and Practice of Medical Emergency among Dental and Ayurveda Students

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Abstract

Background: A medical emergency is a sudden unexpected condition demanding urgent attention and treatment. Medical emergencies require medical attention within one hour which is also known as the “Golden Hour”. Immediate intervention in an emergency can considerably alter the outcome of a patient’s illness and death.

Aim: The aim of study is to evaluate dental and ayurvedic healthcare professional’s knowledge, attitude, and practice.

Materials and methods: The study was conducted among dental and ayurvedic students undergoing under graduation studies through a questionnaire circulated via open link. The data collected was transferred to excel and analyzed using the chi-square test.

Results: Questionnaire were distributed among 150 respondents among which 139 responses were received showing 95.5% dental respondents and 98% of ayurvedic respondents record medical history and drug allergy while only 55% of dental students and 60% ayurvedic students knows to perform BLS (basic life support).

Conclusion: There is a lack of knowledge among participants

Keywords: Cardiovascular diseases, medical emergency, diagnosis, dentists, medications, Ayurveda.

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1. Introduction

A medical emergency refers to an injury or illness that occurs suddenly and threatens a person’s life or long-term health, making it crucial to address these patients without delay. (1) Regardless patient safety is one of the main concerns of the dental practice, dental procedures are not subjected to risks or complications, which may also be life-threatening sometimes. (2) Generally, medical emergencies can be anticipated by thorough medical history taking, diagnosis, and modification in treatment plan supplemented by alternative treatment. Insufficient knowledge and inability to handle medical emergencies may result in tragic consequences. (3)

Dental practitioners must have knowledge and attitude toward medical emergencies so that they can eliminate tragic consequences. (3)

In critical situations in both preclinical and clinical environments, a symptom-focused approach is frequently necessary, particularly when the patient’s medical history is either unreliable or unavailable.

Knowledge of existing health issues, medications, allergies, and potential interactions is vital for developing an effective diagnostic and treatment plan.

(4) Multiple skills are required to make an accurate diagnosis and subsequently start the correct treatment. A dentist should possess an in-depth understanding of pharmacology, anatomy, physiology, pathology, and clinical diagnosis. Even so, according to Girdler & Smith, only 12.9% of dentists consider themselves capable to make accurate diagnosis. (5)

It is evident that dental treatment can provoke medical emergency because of ‘emotional stress and anxiety’ on the patient’s capacity to cope with dental treatment. (5)

As the global population keeps on aging, both the ratio and absolute value of older people are increasing (World Health Organization, 2015), as well as there is a continuous increment in the incidence of chronic diseases such as cardiovascular, respiratory, musculoskeletal, mental, and neurological disorders, as well as cancer, diabetes, and dementia. Vasovagal

syncope is frequently considered the most commonly occurring medical emergency in the dental profession. (3,5-7)

The fusion of a geriatric profile, long-term health complications, and the following pharmaceutical dependence results in a medically complex patient cohort. (7)

Common medical emergencies secondary to syncope are cardiac arrest, anaphylaxis, airway obstruction, stroke, as well as hypoglycaemic, asthmatic, and epileptic episodes. (1,6,8)

Atherton et al. have reported that in 40 years of clinical practice, a dentist will face between nine and eleven emergencies all over their career. (9)

There are 5.8 times more chances of medical emergencies to occurring in dental offices than in medical offices. (10)

There is no doubt allopathic medication is considered as the treatment of choice for medical emergencies as medical emergencies require prompt intervention. It has been belief that ayurveda has no treatment for emergencies but ayurveda treats disease from its root. (11, 12) Cardiovascular diseases are the primary cause of death globally, leading to extensive research and diverse treatment approaches with mixed outcomes. Ayurveda revolutionizes this by concentrating on enhancing circulation, regulating blood pressure and stress, while also boosting aerobic capacity and arterial flexibility, indicating that Ayurvedic medicine adopts a comprehensive strategy for addressing heart disease. Recent research and clinical trials have demonstrated significant benefits of Ayurveda on arterial performance and its efficacy in managing coronary heart disease. (13)

2. Material and Method

A cross-sectional study was conducted from October 2024, to December 2024, following the approval of ethical clearance from the Department of Public Health Dentistry at Maharana Pratap College of Dentistry and Research Centre in Gwalior. Participants for the study will be chosen using a convenience sampling method. A self-administered questionnaire will be utilized to assess the knowledge, attitude, and practice of medical emergencies, which will include open-ended questions as well as yes-no response options.

2.1 Inclusion criteria

The research encompasses individuals who are having clinical postings from various medical disciplines, including dental and Ayurveda.

- All participants who are interested in participating in the study.
- Dental students from the 3rd year, 4th year, and interns.
- Ayurveda students from the 3rd year, 4th year, and interns.

2.2 Exclusion criteria

- Students in non-clinical years of their chosen field

- Postgraduate students who have graduated
- College staff members
- Individuals who were not take part in the study.

Sample size and sampling procedure: All college students were included. It is contingent on the response rate (convenience sampling method).

Planning and data collection: The tailored questionnaire contains fourteen questions, which include 4 open-ended and 10 closed-ended items. It is organized into sections covering demographic information (year, profession), vital signs, medical history, medical emergencies, and their treatment. The questionnaire was designed as a Google Form and shared via an open link through Whatsapp with all participants in the study. The collected responses were documented and analyzed statistically.

Statistical Analysis: Descriptive statistics were employed to summarize and analyzed the data. The Chi-square test was utilized to identify any significant associations between the parameters, with $P < 0.05$ deemed statistically significant. The analysis was conducted using the Statistical Package for the Social Sciences version 22.0 software.

3. Result

Questionnaires were distributed to 150 participants, and responses were received from 139, resulting in a response rate of 92.6%.

Fifty-five percent (55%) of dental participants possess the knowledge needed to perform Basic Life Support (BLS), while approximately 60% of ayurvedic participants have the same knowledge. (Table 1)

While 94% of ayurvedic respondents are aware of how to use an AMBU bag, only 60.6% of dental respondents are similarly informed, showing a significant difference ($p=0.00002$).

A total of 74% of ayurvedic participants and 69.6% of dental participants feel equipped to identify medical emergencies and urgent medical situations ($p=0.588$) not show any significant difference. (Table 1)

A significant majority of dental participants (85.3%) were knowledgeable about syncope management, while only 52% of nursing participants were aware of such management ($p=0.00002$), highlighting a substantial difference between dental and ayurvedic professionals. (Table 1)

The study found that heart attack (42.6%) is the most critical medical emergency for dental students as well as for ayurvedic students while cardiac arrest is secondary most prevalent among Ayurveda students (24%) and dental students (29.2%) rest combination was not specific, showing a significant difference when compared to each other ($p=0.0163$).

Syncope is identified as the most frequent medical emergency among dental participants, with a prevalence of 48.3%, whereas heart attack is noted as the most common emergency among Ayurveda participants at

44%, indicating a significant difference ($p=0.0000$). (Table 2)

A large majority of dental (79.7%) and Ayurveda (76%) students selected a chest compression rate of 100-120, which demonstrates a no significant difference ($p=0.0495$). (Table 2)

Almost 98.8% of dental participants and 100% of Ayurvedic participants believe that obtaining vital signs is important, while 87.6% of dental professionals and 98% of Ayurvedic practitioners were actually confident in acquiring vital signs. Only 1.2% of dental respondents were unaware of the importance of measuring vital signs. Additionally, 12.4% of participants from the dental profession and 2% from the Ayurvedic profession expressed a lack of confidence in measuring vital signs, showing a significant difference between the dental and nursing fields ($p = 0.001$). (Table 1)

Approximately half of the dental participants reported feeling competent in administering I.M. injections (55%) and I.V. injections (53.9%), whereas more than half of ayurvedic participants felt confident with I.M.

injections (80%), and about 74% reported feeling capable with I.V. injections ($p=0.000$). (Table 1)

Among the respondents, 95.5% in the dental field and 98% in the Ayurveda field recorded medical histories, including medication and allergies, before starting any treatment, while 4.5% of dental professionals and 2% of Ayurvedic practitioners did not inquire about medical history, with a significant difference between the two professions ($p = 0.0369$). (Table 1)

Only 51.6% of those in the dental field participated, whereas a significantly lower proportion i.e., 46% from the ayurvedic field had attended previous workshops or training on emergency procedures, indicating a notable difference between the two professions ($p=0.001$). (Table 1)

In terms of angina management, 57.3% of dental participants and 30% of ayurvedic participants identified nitrates while 6.7% (dental) and 10% (ayurveda) oxygen administration as a treatment option rest don't know the correct treatment ($p=0.0008$), revealing significant difference between the two. (Table 3)

Table 1. Response toward knowledge based close ended question

Question		Dental		Ayurveda		P value
Knowledge based question		Yes	No	Yes	No	
1.	Do you know how to perform BLS?	55%	45%	60%	40%	P value 0.572
2.	Do you know how to use AMBU bag?	60.6%	39.4%	94%	4%	P value 0.00002
3.	Do you know how to diagnose urgency and emergency?	69.6%	30.4%	74%	26%	P value 0.588
4.	Do you know management of syncope?	85.3%	14.7%	52%	48%	P value 0.00002
Attitude based question						
5.	Are you confident in obtaining vital signs?	87.6%	12.4%	98%	2%	P value 0.0369
6.	Do you think that obtaining vital signs of patient is of importance?	98.8%	1.2%	100%	0%	P value 0.45
7.	Do you feel competent I.M injection administration?	55%	45%	80%	20%	P value 0.0001
8.	Do you feel competent I.V injection administration?	53.9%	46.1%	74%	26%	P value 0.0002
Practice based question						
9.	Do you enquire about medical history including medication and allergy?	95.5%	4.5%	98%	2%	P value 0.448
10.	Do you attend any workshop on emergency training?	51.6%	48.4%	46%	56%	P value 0.519

*P value <0.05 =significant, BLS= Basic life support, AMBU bag= Artificial manual breathing unit, I.M= Intramuscular, I.V= Intravenous

Table 2. Response toward knowledge based open ended question

Question		Dental	Ayurveda	P value
Knowledge based Question				
1.	What is most common medical emergency?	syncope	48.3%	P value 0.00001
		Heart attack	29.2%	
		Angina	1.1%	
		Others	21.3%	

2.	What is most serious medical emergency?	Heart attack	42.6%	28%	P value 0.0163
		Cardiac arrest	29.2%	24%	
		Others	28.08%	48%	
3.	How many chest compressions to be done in one minute in adult?	100-120	79.7%	94%	P value 0.495
		Others	20.3%	6%	

*P value <0.05=significant

Table 3. Response toward practice based open ended question

Question		Dental	Ayurveda	P value	
Practice based Question					
1.	Patient has angina at your working place what immediate management will you do?	Nitrates	57.3%	30%	P value 0.00001
		Aspirin	15.7%	8%	
		Oxygen	6.7%	10%	
		CPR	7.8%	30%	
		others	12.3%	22%	

*P value <0.05=significant

4. Discussion

Emergency care is provided during the initial hours following the appearance of an acute medical issue. (14)

The research aimed to evaluate the knowledge, attitudes, and practices of medical emergencies among dental and ayurvedic healthcare professionals.

The main objective of the study was to find out if healthcare professionals record key points such as vital signs, past medical history, and drug allergy history that provide clues about the chance occurrence of medical emergency. In the present study, results obtained were 87.6% of dental students while 98% were confident in obtaining vital signs. On the other hand, dental (98%) and ayurvedic (100%) participants showed a distinct awareness of regarding the importance of obtaining vital signs. of patients before initiating any treatment, which can be synonymous with study of Fernandes AL *et al* (99.05%) and Fasoyiro O *et al* (91.2%). (15, 16)

The present study showed 55% of dental responders and 80% of ayurvedic responders practice I. M. injection and I.V. injection. Other dental (53.9%) and ayurvedic (62%) do not know to administer I.M and I.V injection. Another study by Fasoyiro O *et al*. 59.6% practice I.V. and I.M. injections. (16)

The intravenous method for delivering medications during medical emergencies should be used solely by dental practitioners who possess adequate experience in obtaining IV access, as valuable time can be wasted in securing a suitable line. In an emergency, intramuscular, inhalational, sublingual, buccal, and intravenous methods are all significantly faster options for administration. (17)

Expertise in BLS will guarantee that if delivered promptly by trained professionals, the patient has a greater likelihood of survival. (18) Likewise, in present study, 51.6% of dental students and 46% ayurvedic student have attended training in medical emergencies, while Sharma P *et al* shows almost three-fourths of respondents have knowledge regarding performing basic life support only half dental (55%) and ayurvedic (60%) have knowledge regarding basic life support. (19)

A recent study shows 60.6% of dental students and 94% of ayurvedic students compatible with use artificial manual breathing unit (AMBU) bag, comparable with previous study of RAFEE LA *et al*. where 43.2% were compatible with using artificial respiration. (6)

In study of Tadesse M *et al*, only 40.3% respondents were aware of the depth and frequency of chest compression, while our study shows 79.7% dental students and 74% ayurvedic students were knowledgeable about the frequency of chest compression. (20)

In respect to management of syncope 85.3% of respondents from dental and 52% from ayurveda have good knowledge, although study by Fernandes AL *et al* (41.90%). (15)

Most of the respondents (94.05%) answered sublingual nitroglycerine as a management of patients having angina in research study of Fernandes AL *et al*. and Hashim R *et al*. (85.9%), while in our study, 57.3% participants from dental and 30% of participants from ayurveda answered sublingual nitrates. (7,15)

According to dental healthcare professionals, syncope was most commonly reported, and as far as among ayurvedic healthcare professionals are concerned, heart attack is most common medical emergency to be reported. This can align with a study of Hashim R *et al* that shows syncope to be most commonly reported. (7)

In a recent study, heart attack was the most serious medical emergency according to both healthcare professionals while according to a study of Gopinathan PA *et al*. the worldwide mortality rate linked to cardiovascular diseases is approximately 17.3 million fatalities annually. (8)

The present study reported only 69.7% of dental students although 74% of ayurvedic students are knowledgeable in the diagnosis of medical emergencies and medical urgency. This corresponds with the study of Mark *et al*. Those who had basic life support training were good at diagnosis of medical emergencies. (5)

Approximately 98 percent of Indians lack training in the essential life-saving procedure of cardiopulmonary resuscitation (CPR) for instances of sudden cardiac arrest. It is essential that doctors, nurses, and paramedical personnel are equipped with this knowledge, as they often encounter critical situations where Basic Life Support (BLS) skills are invaluable. (21)

5. Conclusion

The study concluded that there is considerable lack of knowledge and training, and while the attitude was neutral, there is a compulsory need for emergency training among healthcare professionals that can also enhance preparedness toward medical emergencies.

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Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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