Medical Emergency in Dental Clinic - An update

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ABSTRACT

In general, one of the convincing methods to tackle an emergency is to be well-organized and prepared priorly. The intention of the study is to analyze the availability of medical emergency procedures and equipment in dental clinics. Also, the aim is to determine the level of awareness, knowledge, perceptions, individual experiences and preparedness of the dental practitioners and dental students for the management of medical emergency situations in their hospitals or clinics. A cross-sectional survey based study was done from April to May, 2020 among 100 dental students in Chennai. The self-structured well-designed questionnaire containing the protocols and emergency procedures followed in their clinic. The questionnaire forms were circulated online through Google forms. The data from all the participants were collected and analyzed through SPSS software. In the present study, it was inferred that the majority of the population are aware about the medical emergencies in dental clinics (99%) and the remaining 1% of the population are not aware of it. The conclusion of this study is that the above statistical analysis about knowledge awareness on recent advances in the treatment of medical emergencies in dental clinics has provided an alarming situation about the capability of dentists to deal with such conditions for the betterment of patients in future.

INTRODUCTION

As the quality of healthcare is improving and life expectancy is increasing, dentists and dental students are required to treat a growing number of elderly and medically compromised patients. Studies have found that half of all patients treated in a dental school have at least one chronic disease or condition (Anders et al., 2010). Medical emergencies are 5.8 times more likely to occur in dental clinics than in medical hospital Stressful environments that the patient has to go through, may be considered as the cause. Since certain infections and their medicines improve the probability of a health related crisis during dental consideration, dental specialists must be set up to deal with an assortment of clinical emergencies (Sopka et al., 2012).

Medical emergencies in a dental hospital can be alarming to any clinician, but these situations become relatively less alarming with adequate precautions and necessary training (Shenoy et al., 2013). Serious medical emergencies are not common in dental practice, but a dentist must be equipped to handle such events estimated that an average dentist might expect to encounter some form of medical emergency as often as every 16
months (Alva et al., 2012). The most well-known medical emergencies that might be experienced in the dental clinical practice are vasovagal/hypoglycemic syncope, angina, epilepsy, asthmatic scene, anaphylaxis (Sharma et al., 2019). Minimum emergency drugs to be kept are glycerol trinitrate shower, salbutamol vaporized splash, adrenaline infusion, aspirin dispersible, glucagon infusion, oral glucose arrangement/tablets/gel/powder, midazolam, oxygen. Minimum equipment required in the dental office are portable oxygen chamber, oxygen veil with store and tubing, pocket cover with oxygen port, portable attractions with pull catheters and tubing, single-utilize sterile syringes and needles, spacer gadget for breathed in bronchodilators, automated blood glucose estimation gadget, automated outside defibrillator (Burket, 2008).

Dentistry is a health science profession that should focus on the whole patient instead of being limited to the oral cavity. However, a student’s minimal knowledge about medical emergencies and their etiology causes feelings of insecurity, dissatisfaction, and a limited appreciation of the dentist’s responsibility (Mukherji et al., 2019). The primary rule in dealing with the emergency situation is by executing basic life support (BLS) and by doing CPR (cardiopulmonary resuscitation). These procedures can be implemented by following the basic emergency principles such as positioning of the body, airway passage assistance, restoration of breathing, and alternate immediate therapeutic interventions (Morrison and Goodday, 1999).

Early correct intervention in a medical emergency can prevent further deterioration and possibly even death (Jevon, 2012). As a matter of fact, the unlikely occurrence of death in most medical emergency situations is due to improper management of the scenario and failure of a prompt, correct reaction to the existing situation. Many people, including partially trained professionals, tend to become more anxious and become psychologically disturbed. This basic human reaction prevents the persons to act further and ultimately leads to human fatality (Rajeshkumar et al., 2018).

A medical emergency situation may arise at any time and as a proper norm to follow it. Also, it is technically necessary to get updated with all precautionary measures from time to time (Perumalsamy et al., 2018). Many untrained people tend to mislead and follow wrong protocols which at times lead to severe irreparable damages. They should be well trained, and a good experience can shape their interventional approaches fair enough to be better (Ezhilarasan et al., 2017a). A proper standard operating procedure (SOPs) has to be prepared and followed in all dental set-up, and it has to be made aware to all people involved in it (Ezhilarasan, 2018). And they have to be trained keenly with no deviations and should be updating their norms from time to time. Periodic seminars and hands-on workshops have to be conducted to get both theoretical and practical knowledge about the management of emergency situations (Mehta et al., 2019). Thus the aim of the study was to analyze the knowledge, experience, and perceptions of the dental students regarding medical emergencies in dental clinics and the objective of this survey was to know the experience of medical emergencies in dental clinics among dentists.

MATERIALS AND METHODS

A descriptive cross-sectional study was conducted from April to May 2020 with 100 dental students to determine their knowledge of Medical emergencies in dental clinics and assess the availability of emergency drugs and equipment in dental offices in India. The questionnaire consisted mainly of objective questions, requiring a simple yes or no questions and informed consent was taken from all the study participants. Data obtained were entered into a computer and analyzed using Statistical Package for Social Science (SPSS) data analysis software. Chi-square test was used for association analysis. If the ‘p’ value is less than or equivalent to 0.05, then it is considered statistically significant. Data was represented by pie charts and bar charts.

Inclusion Criteria - The participants included in the survey were dental students, only the subjects willing to participate were included in this survey.

Exclusion Criteria - Non dental students excluded from the survey. The subjects who had not given their consent were excluded from the study.

RESULTS AND DISCUSSION

Pie chart showing the percentage of distribution of gender of the participants 58% percentage of the participants was females, and 42% percentage of the participants were males Figure 1. 58% (green) of the participants were females, and 42% (blue) of the participants were males. Pie chart showing the percentage of distribution of year of study of the participants of which 4% percentage of the participants were the first year; 24% percentage of the participants were second year; 13% percentage of the participants were third year; 14% percentage of the participants were fourth year; 45% percentage
of the participants were interns Figure 2.

Figure 1: Pie chart showing the percentage of distribution of gender of the participants.

Figure 2: Pie chart showing the percentage of distribution of year of study of the survey participants.

Figure 3: Pie chart showing the percentage of distribution of awareness about the medical emergency in dental clinics of the participants.

Figure 4: Bar chart represents the correlation between awareness of medical emergencies in dental clinics and participants’ year of study. The X-axis represents the year of study. Y-axis represents who commonly faces medical emergencies in dental clinics. Chi-square test showing p-value: 0.525 (p>0.05) and the association was found to be not statistically significant (Rajeshkumar et al., 2018).

Pie chart showing the percentage of distribution who commonly faces medical emergencies in dental clinics represents 44% percentage of the participants think that old age commonly faces a medical emergency in dental clinics, 1% percentage of the participants think that adults commonly face medical emergency dental clinics and 55% percentage of the participants think that old age and adults commonly faces medical emergency in dental clinics Figure 5. The bar chart represents the correlation between people who commonly face medical emergencies in dental clinics and the participant’s year of study. The X-axis represents the year of study. Y-axis represents who commonly faces medical emergencies in dental clinics. Chi-square test showing p-value: 0.010 (p>0.05) and the associa-
Figure 5: Pie chart showing the percentage of distribution who commonly faces medical emergencies in dental clinics.

Figure 6: Bar chart represents correlation between people commonly facing medical emergencies in dental clinics.

Figure 7: Pie chart showing the percentage of distribution of awareness about the treatment for medical emergencies in dental clinics of the participants.

Figure 8: Pie chart showing the percentage distribution of participants who obtain the vital signs like blood pressure, pulse, temperature of the patients before commencing any treatment.

Figure 9: Bar chart represents the correlation between the population who obtain the vital signs and the year of study.

Figure 10: Pie chart showing the percentage of distribution of the participants who you enquire about medical history, including medications and allergies.
Figure 11: Bar chart represents the correlation between population enquiring about medical history, including medications and allergy with year of study.

Figure 12: Pie chart showing the percentage of distribution of the participants who think that we cannot handle.

Figure 13: Bar chart represents the correlation between the population who think they can handle any emergency condition in the dental clinic and the year of study.

Figure 14: Pie chart showing the percentage of distribution of the participants who are aware about what type of medical emergency occurs in dental clinics.

Figure 15: Bar chart represents the correlation between the population who are aware about what type of medical emergency occurs in dental clinics and the year of study.

Figure 16: Pie chart showing the percentage of distribution of the participants who have faced any medical emergency in dental clinics.
Figure 17: Pie chart showing the percentage of distribution of the participants about what are the commonly faced medical emergencies in dental clinics.

Figure 18: Bar chart represents the correlation between the commonly faced medical emergencies in dental clinics and the year of study.

The bar chart represents the correlation between the population who obtain the vital signs blood pressure, pulse, temperature, of the patients before commencing any treatment and the year of study Figure 9. The X-axis represents the year of study. The Y-axis represents the population obtains the vital signs blood pressure, pulse, temperature, of the patients before commencing any treatment. Chi-square test showing p=0.260 (p>0.05) and the association was found to be not statistically significant (Ezhilarasan et al., 2018).

In the present study, 94% of the population enquired about the patient medical history as a preliminary examination protocol including medication and specific allergies Figure 10 and the remaining 6% of the population not enquired about medical history including medication and allergy (Gheena and Ezhilarasan, 2019). This study is similar to the study done by Varma et al., in which 94.02% of the total practitioners enquired about the patient’s medical and drug history in their clinical set-up. 67.11% of the dental practitioners obtained filled proforma as a medical hard copy record and proof (Varma et al., 2015).

According to Rosenberg M et al., a higher number of the participants (89.5%) recorded the medical history of their patients, including medications and allergy before dental treatment, showing a significant difference between the academic years (Rosenberg, 2010). According to the standard protocol, all dental practitioners need to record the medical case history either manually or digitally because this will help them to identify the possible and probable complications and then can modify the treatment plan or strategy as per requirement (Menon et al., 2018).

The bar chart represents the correlation between the population who enquire about medical history, including medications and allergy and the year of study Figure 11. The X-axis represents the year of study. The Y-axis represents the population who enquire about medical history, including medications and allergy. Chi-square test showing p-value: 0.450 (p>0.05) and the association was found to be not statistically significant (Ezhilarasan et al., 2017b).

In the current examination, 90% of the population of the population were sure about handling any emergency condition Figure 12, and 10% of the population was not sure about handling any emergency condition (Leelavathi et al., 2016). This study is similar to the study done by Shweta Kumarswami et al., more than half of the dentists (86%) were sure about handling any emergency condition at their dental office, and the rest of the people had the
intention and attitude to make a call for an ambulance in such conditions (Kumarswami et al., 2015).

The bar chart represents the correlation between the population who think they can handle any emergency condition in the dental clinic and the year of study Figure 13. The X-axis represents the year of study. Y-axis represents the population who think they can handle any emergency condition in the dental clinic. Chi-square test showing p=0.000 (p<0.05) and the association was found to be statistically significant (Lakshmi et al., 2015).

Pie chart showing the percentage of distribution of the participants who were aware about what type of medical emergency occur in dental clinic 92% percentage of the participants aware about what type of medical emergency occur in dental clinic and 8% percentage of the participants were not aware about what type of medical emergency occur in dental clinics Figure 14.

The bar chart represents the correlation between the population who are aware about what type of medical emergency occurs in dental clinics and the year of study. The X-axis represents the year of study. The Y-axis represents the population who are aware about what type of medical emergency occurs in dental clinics. Chi-square test showing p = 0.128 (p>0.05) and the association was found to be not statistically significant Figure 15.

In the current examination, 37% of the population faced medical emergencies in dental clinics 63% of the population not faced medical emergencies in dental clinics Figure 16. This was similar to the results of the survey done by Mostafa Alhamad et al (Nazir et al., 2015). Almost 67% of the population reported having encountered any medical emergency in their clinics, and 133 of the population reported having encountered any medical emergency in their clinics in a sample of 200 populations (Jodalli and Ankola, 2012).

According to Jodalli PS et al., 60% of the interns said that they have experienced some medical emergency during their dental practice which is similar to the study conducted by several other studies (Jodalli and Ankola, 2012). In an examination conducted by Handley et al., among the dental specialists in the district of Porto, 67% reported an emergency situation since the beginning of their practice. The emergency situations reported were more as the same emergency situation in the dental colleges could be reported more than once (Handley et al., 1997).

In the current study 22% population believe that commonly faced medical emergency is anaplasia, 7% population believe that commonly faced medical emergency is airway obstruction, 14% population believe that commonly faced medical emergency is chest pain, 57% population believe that commonly faced medical emergency was all the above Figure 17. According to Hass et al., it was found that the most common emergency reported was syncope, and the least reported was infarction, and heart arrest (Haas, 2010). The bar chart represents the correlation between the commonly faced medical emergencies in dental clinics and the year of study Figure 18. The X-axis represents the year of study. Y-axis represents the commonly faced medical emergency in dental clinics which includes Anaphylaxis, Airways obstruction and Chest pain. Chi-square test showing p-value: 0.022 (p<0.05) and the association was found to be not statistically significant.

It was found that the incidence of critical emergency situations in dental hospitals or clinics is very less or negligible, but at the same time when occurs, it was not well-managed and also unaware of techniques and procedures to be followed in an emergency condition (Kumarswami et al., 2015). The recognition of “at-risk” patients and subsequent appropriate management is paramount in reducing the probability of an adverse event. The key start points such as awareness about medical emergencies in dental clinics, medical history, vital signs of the patients, commonly occurring medical emergencies in dental clinics were analysed thoroughly (Anitha and Ashwini, 2017).

These studies suggest that it is not enough to have a medical emergency in dental clinic management have a single exposure to education and training, but rather the importance of ongoing, repeated theory and practical sessions throughout the life of a dental student and practitioner (Ashwini et al., 2017).

Limitations
Decreases in sample size and Inclusion of more criteria

Future Scope
The principal aim is to create awareness among dentists about medical emergencies in dental hospital’s condition prevention treatment measures of such emergency conditions. Identification of management of medical emergencies in dental hospitals and avoid majority complications.

CONCLUSIONS
The best way to handle a medical emergency in dental clinics is to be prepared in advance. Dentists, being members of the healthcare profession,
should be prepared to deal with medical emergencies which may arise at their workplace. But the results of our study reflect an alarming situation about the capability of dentists to deal with such medical emergency conditions in the dental clinics. Attending continuing dental education programs consisting of workshops and hands-on courses in this field should be made mandatory.

**Conflict of interest**

The authors declare that they have no conflict of interest for this study.

**Funding support**

The authors declare that they have no funding support for this study.

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