Patients' views on dentists' ability to manage medical crises – results of focus group research

Abstract:

Background:
Australia faces an ageing population which is more medically complicated than in years past, and it is important that we meet public expectations of management of medical emergencies in the dental clinic. No research before has examined in depth the public perception of dentists' medical emergency management.
Aim:
To qualitatively assess the publics' perception of medical emergencies in dentistry and their expectations of medical emergency management by dentists.
Methods:
12 members of the public associated with a university clinic participated in two focus groups of six persons, where semi-structured discussions were carried out, audio recorded and transcribed, and subsequently underwent comprehensive thematic analysis.
Results:
Key findings included a high expectation of dentists' general medical knowledge, as well as potential concern regarding a lack of routine medical assessment prior to undertaking dental treatment.
Conclusions:
Participants expected dentists to be highly proficient at managing medical crises and support the concept of medical emergency management certification for dentists.

Key Words: Dentist, Emergencies, Focus Groups, Medical Management, Public Opinion

Introduction

Medical emergencies remain an occurrence in dental practice (1, 2), with recent studies suggesting that the incidence of emergencies may be increasing (3, 4). Trends in international data from multiple countries indicate that the rise in medical emergencies is not limited to an ageing population (2, 3), but includes increases in comorbidities (5-7), the use of drugs in dentistry (8), and an increase in dental visitation (9). In Australia, limited evidence from the 1990s estimated the prevalence of medical emergencies to be as infrequent as once every forty practice-years (10). However, much more recent evidence from Germany suggests that up to 57% of dentists may be required to respond to three medical emergencies over a twelve-month period (11), whilst a little over one-third of dentists may face up to 10 medical emergencies in the same period. Notably, this is significantly higher than rates found in studies of similar design and population from the late 1990s which reported emergencies occurring closer to one event every 3.6-4.5 years (12), and appears consistent with rising trends. No evidence exists within Australia from the past 22 years (13).

As dentists are typically the most senior medical staff in their practice, the responsibility falls upon them to provide initial stabilisation of a patient's medical condition, yet all staff should be trained proportionally to their level of clinical responsibility and up-to-date with the latest relevant guidelines. A recent Australian scoping review highlighted that dentists may not be fully prepared for such events (13), which is consistent with previous research suggesting that many dentists may lack appropriate knowledge or clinical aptitude (10, 14). All Australian dental schools currently require their students to undertake first aid or basic life support certification prior to undertaking clinical placement. Contrasting to other developed countries, Australian dentists are not required as part of their registration to hold or maintain any form of medical emergency training certification (15, 16), and are instead only required to comply with Safe Work Australia guidelines (17). These guidelines allow some levels of subjectivity in the context of a dental surgery however, and may result in practitioners not staying up-to-date with their medical emergency management. Industry

commentary further suggests that the Australian public would likely hold a much higher expectation of their dental professionals than we hold ourselves (18).

At the time of manuscript submission, the only published research examining the public's perception of dentists' ability to manage a medical emergency was of a superficial quantitative nature, not investigating in great detail individuals' opinions, feelings, or thoughts (19). Given the current paucity of research on the prevalence and frequencies of medical emergencies in dental practice in Australia there is a need for future research to identify Australian patients' needs. This exploratory pilot study aimed to examine the public perception of a dentist's requirement for, and proficiency towards, medical emergency management.

Methodology

Community based focus groups were employed to explore participants' confidence, considerations, and expectations of a dentist's ability to manage a medical emergency in a dental setting.

Participants

Participants were recruited from a dental school attached to a university's dentistry course. This clinic provides free treatment for public health patients, as well as reduced-fee treatment for private patients who do not qualify for public health concessions. Adult individuals attending the clinic were invited to participate in the study. Restrictions placed on participation were being under the age of 18 years, an inability to speak English, and any kind of formal professional medical training; which enabled a broad cross-section of community inclusion.

Flyers in the clinic waiting room were used to advertise the study and receptionists provided patients with information sheets. Individuals who were interested in the study supplied their contact details on a signed consent form. The primary author contacted prospective participants by telephone and invited them to take part in one of the scheduled focus groups.

Overall, 80 individuals indicated their interest in the study, of which 24 were able to participate on the designated time and date.

Focus group questions

Semi-structured questions are used as a control, to gain a measure of comparability between focus grops. These questions were designed to explore experiences of dental consultations and expectations of dental care with a specific focus on possible emergency care management (see Table 1.). The interview guide was piloted by two members of the public prior to the focus groups and changes were made to the wording of some questions to make them easier to understand.

Data collection

Two focus groups were conducted in a meeting room at the University. A voice recorder was placed in the middle of a circular table, around which the participants sat equidistant from each other. Participants were provided with an introduction to the topic and were requested not to disclose any information shared in the focus group to others outside of the process. Our inability to guarantee confidentiality due to the presence of other participants was reiterated, and participants' consent was confirmed. Questions from the interview guide were presented to the group as part of organic discussion, enabling the natural flow of conversation.

Audio recordings of the focus groups were transcribed, and transcripts were subsequently reviewed and compared with the original recording twice to ensure these were a true and accurate record. In situations where the audio was difficult to understand, as in the case of poor enunciation, a second reviewer assisted in the interpretation of the audio, until a consensus was reached between both reviewers. If audio was unable to be interpreted, it was excluded from the transcription and the gap noted.

Thematic Analysis

Data elicited from these focus groups underwent a comprehensive thematic analysis as per the guidelines offered by Braun and Clarke (20), which is a method for actively identifying, analysing, and reporting any patterns in the data. Thematic analysis provides the qualitative researcher flexibility in data and interpretation, an ability to efficiently summarise key features within a dataset, and allows the generation of unanticipated insights through both social and psychological interpretation of the data. In the context of small focus groups investing public perceptions, it provides easy to analyse and interpret results for readers who may not be extensively familiar with qualitative research.

Analysis is carried out via the generation of 'codes' from the raw data (audio transcription), which are small packets of data relating to a particular topic, which can then be analysed and discerned to belong to an overlying theme. These themes and their specifics are reviewed, defined, and named, and the overall story which the data tells is presented in an interrelated whole as it pertains to the research question.

Data was de-identified before uploading to NVivo 11® qualitative data management software, purpose designed qualitative research software which facilitates the organisation and labelling of coded packets. The first author identified emerging topics through analysis of the transcripts, and executed preliminary coding of these inferences. These codes where then stratified into potential sub-themes so as to try and amalgamate discussion points on similar topics. Sub-themes were then organised into themes to encapsulate participant's core ideas. The fourth co-author reviewed the transcripts independently and performed individual coding. Following this, coding results from both authors were compared, in conjunction with transcript analysis, and highly similar themes were identified. If disagreement was found, concepts were discussed until a consensus was achieved

Ethics approval

Ethical approval to conduct the study was granted by the University's Human Research Ethics Committee, approval ID: withheld for purpose of blind review.

Results

Of the 24 participants who were able to participate in a focus group on the designated time and date, only 12 participants physically attended, forming two groups of six participants. Each focus group took between one and one and a half hours. Participants varied widely in age and backgrounds, with the youngest participant being 20 years of age, and the oldest being 64. There was an approximate balance between male and female participants. Several participants disclosed suffering from chronic medical conditions, whilst many others reported being fit and healthy with no medical conditions.

In response to questions relating to their understanding of what a medical emergency may entail, participants identified a comprehensive list of events which are recognised by the Australian Therapeutic Guidelines Oral and Dental as possibly occurring in dental practice (21), excepting lesser known conditions such as an Addisonian crisis.

Data analysis revealed four main themes at the forefront of patients' minds when considering dentists and medical emergencies (see *Figure 1*).

Figure 1. Thematic Network Summary of Themes Identified

First Aid Is Enough…Or Is It?

First Aid is Enough…or Is It? reflects participants' belief that the level of emergency management training expected of dentists as a primary responder should be greater than what is attainable by the public at large. However, participants consistently expressed conflicting ideas about the required knowledge and skills depending on the stage of the conversation at the time.

Most participants felt a simple first aid qualification was adequate for a dentist, whose primary role in the event of a medical emergency would simply be the stabilisation of a patient's medical condition whilst emergency services responded.

"It's only just more or less that they know CPR, you know, so they can call an ambulance, and then you get transported, and that's all you can do"

"Yeah, just a first aid certificate, and if they have a CPR certificate as well…"

In response to further probing, both the same individuals and others believed that dentists' medical emergency management training should be more comprehensive than what is available to their public counterparts, given their status as health professionals. This included recognition of the niche dental environment, the level of education a dentist holds, and the ability of dentists to administer medications to which the public does not have access.

"Yeah, I think it [medical emergency training] should be more relevant to dentistry than your usual little first aid certificate we go to. I think it should be more inclusive."

"…with medical emergencies stuff it's about preserving life to get them through that very first crisis, which might be a blood issue, or a neurological issue…so if you can administer those life saving interventional type drugs, you know, if you're licensed to do it, that's probably a plus there."

Some people went on to comment that they expected dentists to be educated on a broad spectrum of simple skills in medical management within the foundation year of their undergraduate degree. Those skills were discussed as being comparable to what the layperson may learn in community-based emergency management training, and negate the need for dentists to undergo first aid training.

"I did a first aid years ago, [it] was basic, it's basically just to keep someone alive, it could be as simple as a bandage, so a first year dentist is going to learn basic stuff."

What I Expect My Dentist To Know

Participants often expressed conflicting opinions about dentist's knowledge. They expected that foundational knowledge is similar to general medicine, but failed to associate the implications and integration of such knowledge.

There was agreement among participants that based on a dentist's formal title of doctor, they should have a significant knowledge grounded in general medicine that would extend beyond their day-to-day role as a dental practitioner. Participants expected this knowledge to be based in shared university courses across both professions, despite recognising that a dentist's medical knowledge should not be comparable to the comprehensive scope of a medical practitioner.

"You know, like, they've got the title of dentist or doctor, you expect them to have a certain level of…[knowledge]"

"They're doctors you know, they should have some sort of all over medical knowledge, not to cure or prevent everything."

"Well there'd be quite a few units [university courses] that'd be the same as doctors that you'd do, wouldn't it?"

Given participants' expectations about dentists' medical knowledge, it was interesting to note that when individuals visit a dentist for assessment or treatment, general medicine was not part of the expected discussion. Individuals readily volunteered that their approach to a visit to the dentist was almost entirely focused around a narrow scope of problems, and it was only this scope that they expected to be addressed.

"When people go to the dentist they're more focused on their problems with oral health, they're not thinking of their overall health. They kind of thing I'm going to the dentist for 'this problem.'"

"We just don't think of those things when we come to the dentist and sit in the dentist's chair, we're just thinking we've got to get our teeth done"

The majority of individuals indicated that training in general medicine for all dental practitioners was an absolute requirement. However, any training should extend only to a level of relevance which affects the clinician's regular practice of dental medicine. Participants expectations varied from a general agreement towards dentists' having an understanding of common medications or conditions, to new graduates from dental school having sufficient generalist medical training in order to obtain a basic qualification additional to their dentistry degree, such as a first aid certificate.

"He's a dentist, he's not a doctor really, but he should just know a little, the basics about…certain tablets, like cholesterol, or gout."

"So there's no way a doctor can know everything, whether a dentist, or a GP, or a rheumatologist knows rheumatology, he doesn't know dermatology, or ophthalmology."

"And it's probably better for the students or whatever if he has some sort of qualification, that he's done a course, and when he does move on to the outside world, he can say I'm a dentist and I'm this as well, I'm qualified to a certain degree of doctoring, not fully"

All patients expressed a general appreciation for the medical assessment performed by students at the University clinic prior to initiating dental treatment. Whilst such a medical assessment does not routinely require the taking of a patient's vital signs, vital signs are assessed prior to undertaking certain procedures and comprehensive medical history records are necessitated by protocol. An assessment of existing medical conditions and comorbidities is highly recommended in the prevention of medical emergencies (22), and was well received by all participants.

"Well I think it was good [when] the other day…they gave me a full check before they started, before they looked inside my mouth"

"I wouldn't mind if a fella [dentist] just came up to me and checked me out for cancer, you know, took me blood pressure and all that"

It's the Dentist's Responsibility

Participants discussed the extent to which dentists are responsible for the medical and dental management of their patients while they are receiving dental care. The ultimate burden of the management for the patient falls upon the practitioner, including any possible medical conditions.

The narrow scope in which individuals' view dental treatment may be resultant from poor practices previously experienced in dental consultations. Most participants in both groups agreed that they do not consider medical conditions when attending the dentist, nor the potential impact that their medical conditions may have on dental treatment or outcomes. Whilst a member of the public could be forgiven for not realising such associations, many participants reported that dentists have simply never broached the topic across their lifetime of dental treatment.

"I've never had to discuss anything to do with my medical situation with my dentist."

"I must admit this is the only time I've been asked if I've been on medication…whilst at the dentist. The other dentists haven't asked what drugs I've been taking. It just doesn't come up."

Despite often varying levels of health and in some cases advancing age, some participants expressed a general rejection of the concept that they may one day face a medical emergency. This attitude was recognised by the same individuals as a lack of exposure to any adverse events and a general lack of appreciation for the significance of potential outcomes.

"Those statistics are always someone else"

"As long as it happens to somebody else and not me, I'm cool."

"It's like babies being born on the side of the road, it hasn't happened to me."

In response to a question about medical risk in dental treatment, the necessity for dental treatment outweighed any misgivings participants might have had about their health or other concerns they may have expressed. Often the driving factor behind a patient seeking treatment was the expectation of pain resolution and an acceptance that this is accompanied by forfeiting their control to another individual.

"If I was dealing with a tooth ache, I think I wouldn't care less."

"…you've got to go there for a purpose, it's either you put up with the pain, or get a fella like you to fix it, that's why we feel that way, because it's necessary."

However, most individuals expressed similar opinions in their desire for pursuing treatment with a clinician whom they felt best addressed their varied needs. These outlined needs ranged from proficient management of chronic medical conditions and comorbidities, to care given to young children in the clinical environment.

"That's why I come here, because if something does go wrong, I feel it can be handled."

"That extra time makes me feel more comfortable because my son is being made more comfortable too…It's really good to make my kids comfortable."

Discussion

The findings from this study suggest that the public have limited expectations of dentists' ability to manage medical crises. Debate over the expected levels of training as expressed in the theme *First Aid is Enough…Or Is It?*, encapsulate the general notion that the dentist's role is defined by the limits of dental care. This finding may in part be attributed to patients not considering medical emergencies in the dental context and thus separating their medical needs from their dental needs. Only one participant was concerned about her medical needs while obtaining dental care.

Throughout this study, all participants expressed a consistent tension between the expectation and requirement for a dentist to be proficient in medical emergency management. Some participants suggested the low prevalence of medical emergencies within a dental setting reduces the requirement for comprehensive knowledge of emergency management. Others attributed a higher risk of emergencies, due to the surgical nature of dental treatment and possible drug interactions, as support for further medical training. All participants strongly believed that as dentists are given the privileged title of doctor, they ought to be qualified with a significantly higher level of medical knowledge and skills than a first-aid certified layperson. The universality and strength of this conviction supports the minimum expectation that dental degrees provide first aid teaching or qualifications to their students, and practitioners be required to maintain up-to-date first aid qualifications such as those provided by the Australian Resuscitation Council. Furthermore, this may indicate the need to consider the requirement for dentists to maintain knowledge and skills more befitting of their education and title.

Data from this study suggested that dentists' education should entail a foundation in general medicine limited only to the practice of general dentistry. This limitation was recognised as a pragmatic requirement due to already intensive schooling, and provides evidence of public support for the continued teaching of some general medicine to undergraduate dental students. However, participants' strong conviction that they see dentists as a type of doctor points to a need for both education and some clinical exposure in general medicine. Literature has previously reinforced the necessity to consider oral health in conjunction with general health, as the risk factors influencing an individuals' oral health also have considerable impact on their general health (23). This common risk factor approach dictates the integrated prevention and management of both oral diseases, and chronic non-communicable diseases. Commentary on the current state of dental education highlights that many undergraduate courses are reducing the amount of medical and biological sciences being taught to students (24), which may result in decreased efficacy of integrated disease management, as dental practitioners find themselves unable to adequately comprehend disease states in a population with far more complex comorbidities than previous generations. As a professional body with significant autonomy and self-oversight, the dental profession in Australia has a requirement to meet public expectations, and failure to do so may result in government legislation forcing the profession's hand. Further research and professional debate around this topic may be warranted.

Interestingly, despite expressing the idea that dentists should have background education and some comprehension of general medicine, few participants connected the relevance their own medical conditions or general health to dental consultations or treatment. This highlights the potential need for dentists to proactively pursue a patient's medical history and not solely rely on patient disclosure or generic medical history forms. Studies have shown a dramatically reduced risk of medical emergencies occurring when a comprehensive medical history is taken (22), which is relevant given that dentists too often fail to do so (1, 25). Because of the previously suggested increase in medical emergency incidence, a need for more thorough, routine, pre-treatment medical assessments of patients may be indicated. Participants who reported being questioned about their medical conditions and having vital signs taken before undergoing dental treatment reported feeling reassured by this consideration and management. Likewise, participants did not express any reservation towards the concept of a dental practitioner asking about medical

conditions, suggesting it would be well received. These findings support the importance of making dental students aware of patients' comorbidities, and also the value in providing students with the necessary skillset to elicit relevant medical information from their patients. A capability for providing a basic risk assessment of select procedures in patients with certain medical conditions is further desirable if the risk of medical emergencies is to be lowered. Required treatment can then be altered for patients at an increased risk, or if signs and symptoms of a potential emergency are recognised. Disproportionate benefits may also be realised by reinforcing dentists' adjunctive role to physicians in the promotion of general health (23).

Given medical emergencies are an infrequent event with a potential outcome of morbidity or mortality, it is all too common for an individual to disregard the likelihood for such an event to happen to themselves (26). This attitude was evident in our study, as participants dissociated themselves from critical events. Many participants had never discussed medical conditions nor medications with dentists they had consulted in the past, be they private or public practitioners. Data from this study suggests that whilst some individuals do not recognise this component as missing from their dental care, at least one participant reported feeling quite uncomfortable by the lack of a more comprehensive assessment. When patients do not recognise or share medical conditions with their dental practitioner, a risk of adverse outcomes such as medical complications or litigation may arise. The ability to recognise and navigate around such events may hold significant value in future dental education, as the profession transitions to further understanding and implementing patient-centred care. Moreover, the practice of patient-centred care must incorporate an explicit recognition of high risk patients, whose medical status may suggest potential outcomes of a graver nature than an increased disease state.

Despite the small numbers in this study, the results highlight the need for the profession to consider the issues of medical emergencies within clinical practice. An aging population with increasing comorbidities, increasing frequencies of medical emergencies, and a seemingly high public expectation of proficiency (19) emphasises the need to examine these issues further. Directing further research towards this topic may shed more light on the incidence and outcomes of medical emergencies in dental practice in Australia. This study further reinforces the value in continuing to support a dental curriculum with components of general medicine and medical emergency management.

Limitations

This study was potentially impacted by a high rate of participant unavailability or drop out. Additionally, individuals were invited to participate based upon their attendance at a student clinic which treats a majority of patients qualifying for free public healthcare due to low socioeconomic status, thereby possibly introducing a degree of sampling bias.

Conclusion

Our study has revealed three key areas requiring consideration for a dentist's ability to manage a medical emergency in a dental setting. Firstly, patients expect dentists to have a good understanding of general medicine which can be used to proficiently assess potential medical complications. Secondly, patients generally will not assess their own medical risk prior to seeking dental treatment. Lastly, patients expect dentists to be competent at medical emergency management to a level typically greater than is attainable by the public. Further research is needed to consolidate these findings and their implications for medical emergency management by practicing dentists in Australia.

1. Marks LA, Van Parys C, Coppens M, Herregods L. Awareness of dental practitioners to cope with a medical emergency: a survey in Belgium. Int Dent J. 2013;63(6):312-316.
2. Anders PL, Comeau RL, Hatton M, Neiders ME. The nature and frequency of medical emergencies among patients in a dental school setting. J Dent Educ. 2010;74(4):392-396.
3. Pieren JA, Gadbury-Amyot CC, Kandray DP, Van Ness CJ, Mitchell TV. The attitudes of Ohio dentists and dental hygienists regarding the use of automated external defibrillators in the dental setting--a follow-up study. J Dent Hyg. 2013;87(3):158-168.
4. Greenwood M. Medical emergencies in dental practice. Prim Dent J. 2014;3(1):4-5.
5. Kishimoto N, Mukai N, Honda Y, Hirata Y, Tanaka M, Momota Y. Simulation training for medical emergencies in the dental setting using an inexpensive software application. Eur J Dent Educ. 2017;09:09.
6. Carvalho RM, Costa LR, Marcelo VC. Brazilian dental students' perceptions about medical emergencies: a qualitative exploratory study. J Dent Educ. 2008;72(11):1343-1349.
7. Clark A. Preparing for emergencies: resuscitation guidelines for general dental practice. Prim Dent J. 2014;3(1):58-63.
8. Stafuzza TC, Carrara CF, Oliveira FV, Santos CF, Oliveira TM. Evaluation of the dentists' knowledge on medical urgency and emergency. Pesqui Odontol Bras. 2014;28.
9. Wald DA, Wang A, Carroll G, Trager J, Cripe J, Curtis M. An office-based emergencies course for third-year dental students. J Dent Educ. 2013;77(8):1033-1041.
10. Chapman PJ. Medical emergencies in dental practice and choice of emergency drugs and equipment: a survey of Australian dentists. Aust Dent J. 1997;42(2):103-108.
11. Muller MP, Hansel M, Stehr SN, Weber S, Koch T. A state-wide survey of medical emergency management in dental practices: incidence of emergencies and training experience. Emerg Med J. 2008;25(5):296-300.
12. Atherton GJ, McCaul JA, Williams SA. Medical emergencies in general dental practice in Great Britain. Part 1: Their prevalence over a 10-year period. Br Dent J. 1999;186(2):72-79.
13. Vaughan M, Park A, Sholapurkar A, Esterman A. Medical emergencies in dental practice - management requirements and international practitioner proficiency. A scoping review. Aust Dent J. 2018;63(4):455-466.
14. Arsati F, Montalli VA, Florio FM, Ramacciato JC, da Cunha FL, Cecanho R, et al. Brazilian dentists' attitudes about medical emergencies during dental treatment. J Dent Educ. 2010;74(6):661-666.
15. UK General Dental Council. Standards for the Dental Team. 2018.
16. New Zealand Dental Council. Medical Emergencies in Dental Practice - Practice Standard 2016.
17. Safe Work Australia. Model Code of Practice: First aid in the workplace 2018 [Available from: https://www.safeworkaustralia.gov.au/doc/model-code-practice-first-aid-workplace.
18. Newby JP, Keast J, Adam WR. Simulation of medical emergencies in dental practice: development and evaluation of an undergraduate training programme. Aust Dent J. 2010;55(4):399-404.
19. Vaughan M, Mahoney G, Sholapurkar A, Esterman A. Public Perception of Dentists' Ability to Manage a Medical Emergency. J Mil Veterans Health. 2019;27(3).
20. Braun V, Clarke V. Using thematic analysis in psychology. Qual Res Psychol. 2006;3(2):77-101.
21. Oral and Dental Expert Group. Therapeutic guidelines: oral and dental. Version 2. Melbourne: Therapeutic Guidelines Limited; 2012.
22. Abraham-Inpijn L, Russell G, Abraham DA, Bäckman N, Baum E, Bullón-Fernández P, et al. A patient-administered Medical Risk Related History questionnaire (EMRRH) for use in 10 European countries (multicenter trial). Oral Surg Oral Med Oral Path Oral Radiol Endod. 2008;105(5):597-605.
23. Tubert-Jeannin S, Jourdan D. Renovating dental education: A public health issue. Eur J Dent Educ. 2018;22(3):e644-e7.
24. Baum BJ. Inadequate training in the biological sciences and medicine for dental students - An impending crisis for denistry. J Am Dent Assoc. 2007;138(1):16-.

25. Cukovic-Bagic I, Hrvatin S, Jelicic J, Negovetic Vranic D, Kujundzic Tiljak M, Pezo H, et al. General dentists' awareness of how to cope with medical emergencies in paediatric dental patients. Int Dent J. 2017;67(4):238-243.
26. Howat A, Veitch C, Cairns W. A descriptive study comparing health attitudes of urban and rural oncology patients. Rural Remote Health. 2006;6(4):563.