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Dental emergencies presenting to a general hospital emergency department in Hobart, Australia

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ABSTRACT

Background: Dental problems presenting to general hospital emergency departments (GHEDs) may create difficulties as there may not be appropriate facilities or personnel to manage them. The incidence and demographics of dental presentations to GHEDs in Tasmania are currently unexamined. This knowledge may be relevant in shaping dental service delivery.

Methods: The Emergency Department Information System (EDIS) at the Royal Hobart Hospital (RHH) was used to audit dental presentations through 2012. The presentations were analysed with respect to demographics and management. A literature review regarding dental presentations to GHEDs was also undertaken.

Results: Four hundred and fifty-four patient presentations to the RHH Emergency Department (ED) in 2012 were primarily of a dental nature, comprising 0.91% of all ED presentations. Sixty per cent of patients were male, and most were younger than 30 years. Dental abscesses and toothache accounted for 66%. Nine per cent of dental presentations (including 21% of infections) resulted in hospital admission.

Conclusions: Dental infections contribute a significant burden of ED dental presentations. Encouraging and facilitating patients to seek timely and appropriate primary care from dentists may decrease the number of presentations to ED, and the drain on time and resources. Additionally, this may spare patients from the unpleasant experience of an acute dental infection episode.

Keywords: Dental emergency, emergency, emergency department, epidemiology, incidence, Australia, Hobart, Tasmania.

Abbreviations and acronyms: ED = emergency department; EDIS = Emergency Department Information System; ESSU = Emergency Short Stay Unit; GHED = general hospital emergency department; RHH = Royal Hobart Hospital.

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INTRODUCTION

The purpose of this study was to audit and analyse the dental problems presenting to the emergency department (ED) of Royal Hobart Hospital (RHH) in the calendar year of 2012. Dental problems often present to general hospital emergency departments (GHEDs) rather than to dental practices. Patients with dental problems may attend medical centres due to factors such as availability of dentists (particularly outside of normal office hours), transport, insight/education/intelligence and access to child care.[1] Cost concerns may be a major factor in avoiding private dental care. Public dental care may be available at no fee to certain groups but the waiting times for routine treatment can be lengthy. There may be delays in being attended to in public GHEDs but these usually involve several hours of waiting time for an emergency presentation, rather than weeks or months of waiting time for routine care in public dental facilities. Anxiety about dental treatment may also deter patients from seeking preventive or timely treatment from dentists in normal working hours. The paucity of after-hours dental services also limits access for patients with dental complaints.

Dental presentations take up a considerable amount of time and resources in GHEDs. Furthermore, medical practitioners have limited training in diagnosis and management of dental emergencies, and patients may not receive timely or comprehensive management. Addressing these problems requires accurate and current data on the incidence and demographics of dental presentations to GHEDs.

A literature review was conducted regarding dental presentations to hospital emergency departments in Australia. A PubMed search was carried out using the search terms ‘Dental’, ‘Emergency’, ‘Incidence’ and ‘Australia’. Twenty-eight articles were found, with eight particularly relevant to the search criteria. Of these, three were specific to dental hospital emergency

departments,[2–4] one was restricted to presentations within the Australian Defence Force,[5] and four related to dental presentations at GHEDs. Of these four directly relevant articles, two dealt only with anterior dental trauma,[6,7] one related only to a paediatric population,[8] and the fourth was a literature review of both Australian and overseas data.[1] None of the articles looked specifically at Tasmanian data.

In the reported literature, dental presentations constituted 1% to 3.8% of all GHED presentations.[1] Reported barriers to seeing a general dentist included cost, access (both proximity and hours of operation), lack of appropriate insurance, perceived severity of the complaint and having no regular dentist.[1] Emergency dental presentations were most often due to caries and infection.[2]

Of all dental presentations to emergency departments (both dental and medical), males were 1.5 to 2.6 times more likely to present than females,[1,7] and this discrepancy was also present in paediatric populations.[8] Younger adults were the predominant age group, with one study showing 75% of patients being under 24 years old.[3] One to two per cent of non-traumatic dental presentations resulted in admission.[1]

The aim of this article was to review and analyse the demographics and outcomes of patients presenting to the Royal Hobart Hospital Emergency Department with primarily dental problems.

METHODS

All presentations to the RHH ED during 2012 were logged into Emergency Department Information System (EDIS) software. All patients were allocated a code referring to their main complaint. The recorded diagnoses were generally made by the ED medical staff, and were therefore subject to the limitations in their knowledge. There was no on-call general dental service at RHH. Patients with dental presentations at the ED were triaged in the usual manner by clerical and/or nursing staff and seen by ED doctors (medical practitioners), with qualifications and experience ranging from first year intern doctors to senior ED medical specialists. Nurse practitioners may have also provided some of the initial assessment and care. The ED doctors determined the need for patients to be seen by the Oral and Maxillofacial Unit (OMFU) of RHH, which provides a specialist oral and maxillofacial on-call emergency service (as well as outpatient clinics) and has the ability to admit patients to hospital under the OMFU bed-card for inpatient care, including surgery in the operating theatres when necessary. Generally, the OMFU is called for maxillofacial problems outside of the scope of this current review, but may also be called at the discretion of the ED doctors for 'dental' problems, particularly those of an acute traumatic nature (e.g. dentoalveolar fractures or tooth avulsion) or for dental infections thought to need acute intervention (e.g. abscess drainage) or inpatient care. Patients requiring admission, as well as some of the acute outpatient episodes, were thus seen by the OMFU and therefore the diagnoses in those cases would have been refined by specialist input and often involved additional investigations. For this study, the RHH EDIS system was searched for all dental presentations from 1 January 2012 to 31 December 2012. These included dental abscess, toothache, and dental trauma including dentoalveolar fractures, tooth avulsion or loss. Presentations beyond the scope of general dentistry were excluded. Such exclusions included fractures of the jaws and facial bones, oral and perioral soft tissue injuries, oral tumours and salivary gland pathology. The resulting data were analysed with respect to patient demographics, primary findings and whether inpatient care was instituted (Table 1).

RESULTS

Of the almost 50 000 (49 998) presentations to the RHH ED in 2012, 454 (0.91%) were dental related. EDIS allowed convenient access to ED demographic data. Diagnosis codes as entered on EDIS do have some limitations in terms of their accuracy, as discussed above.

Demographics

Of all patients with dental presentations to the RHH ED, 60.2% were male and 39.8% were female. By comparison, the gender breakdown of the total number of patients presenting to ED during 2012 was 25 783 male (52%) and 24 215 female (48%). The gender disparity in dental patients was consistent when looking at specific dental presentations. For example, of the dental abscess presentations to the RHH during 2012, 62.7% were male and 37.3% female.

Of the 454 patients, 29 were repeat presentations, with 26 patients (5.7%) presenting twice within the

Table 1. Dental presentations to Royal Hobart Hospital Emergency Department in 2012

Presentation	Number	% Total
Abscess, dental	169	37.2
Toothache	143	31.5
Dental caries	40	8.8
Tooth fracture	33	7.3
Tooth avulsion or loss	31	6.8
Gingivostomatitis	21	4.6
Aphthous ulcer	14	3.1
Temporomandibular joint Disorder	3	0.7
Total	454	100

given 12 months and three patients presenting three times.

The age of the patients with dental presentations ranged from 0 to 86 years of age, with an average age of 32 years. The peak age group was the 26–30 years group, at 17% (Fig. 1). The average age of patients presenting with a dental abscess was 36.59 years. This matched the average age of all patients seen by the ED in 2012 (37 years).

With regard to timing of presentation, 37.5% of dental patients presented on weekends, 30.5% presented after-hours on weekdays, and 32% presented in-hours (8 am to 5 pm) on weekdays. This means a total of 68% of patients presented out of usual business hours, when dentists may have been unavailable.

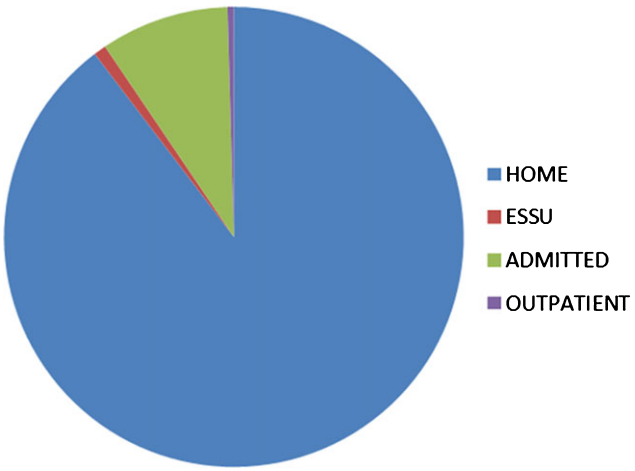

Fig. 2 Outcomes of dental presentations to emergency department.

Dental presentations

The presentations included are listed in Table 1. The most common presentation was dental abscess, at 35.8% of all dental presentations. This was followed by toothache, at 30.3%. Other common presentations were caries related, tooth avulsion and tooth fracture.

Outcomes

The time spent in ED ranged from five minutes to 21.5 hours, with an average time of two hours and 56 minutes. On average, 39 dental patients were seen per month, with peak presentations in June, and the least in November. The reason for this seasonal disparity could not be ascertained from the data examined.

Nine per cent of all dental presentations required hospital admission for care as an inpatient. The need for hospital admission was commonly due to spreading odontogenic infection, or the presence of a purulent collection requiring incision and drainage under general anaesthetic. Ninety per cent of dental patients seen in the ED were discharged home, presumably to be followed up by their local dentist (Fig. 2). The other non-admitted 1% were either managed in the Emergency Short Stay Unit (ESSU) or referred to the Oral and Maxillofacial Outpatient Department. Of all patients presenting with dental abscesses, 75.7% were discharged home for dental follow up, 21.3% were admitted for further management, and 2.4% were sent to ESSU. The fact that about 10% of patients with dental presentations were admitted to hospital is significant, as inpatient treatment in public hospitals in Australia costs approximately A$4500 per day.[9]

DISCUSSION

The incidence of dental presentations to the RHH ED (0.94%) was similar to that reported as presenting at other GHEDs (1–3.8%). The Tasmanian gender distribution was also very similar to figures for the rest of Australia. This gender disparity in dental presentations is also reflected in overseas data. The current figures are very similar to data from South Korea, where 62.7% of dental presentations to ED were male,[10] and data from Ohio, USA, where 59% of dental presentations were male.[11]

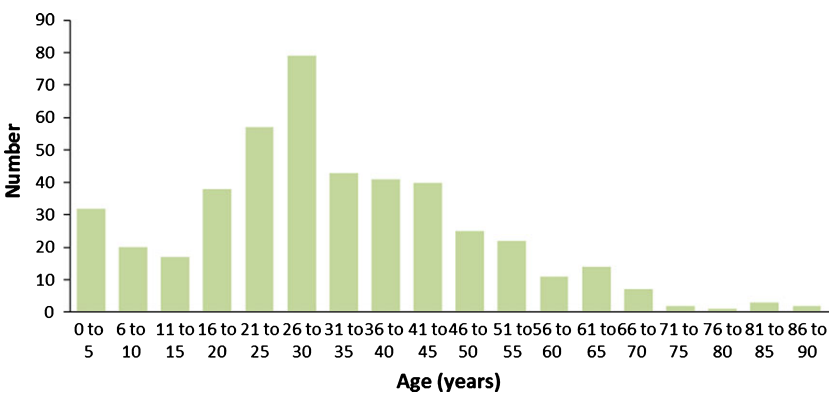

Fig. 1 Age of patient presenting to emergency department with dental complaint.

Data in this audit and in the broader literature show that children and young adults are overrepresented in the GHED with regards to dental presentations. Although the age range of patients seen at the RHH ED was very large (0–88 years), the majority of patients were under 30 years of age. The majority of patients (68%) presented out of usual business hours, when general dentists may have been unavailable. This may indicate the need for an after-hours dental service in Hobart, but it is considered by the authors to be of greater importance that most of these patients should be encouraged to seek timely general dental care to avoid the deterioration that leads to an acute presentation with toothache or abscess.

One-third of patients presented during normal working hours (8 am to 5 pm on weekdays). The reasons these patients did not attend at a dental care centre needs to be explored further.

There is no specific dental hospital in Hobart. Currently at the RHH there is a Special Dental Unit which is reserved for the in-hours general dental care of referred patients with specific medical comorbidities. There is no after-hours public dental service available to patients as an alternative to presenting to the RHH ED. The Tasmanian public dental service website directs after-hours emergency patients to seek the services of their general medical practitioner or their nearest GHED (which is the RHH ED in Hobart).

Private dentists in Hobart currently do not operate a comprehensive or organized after-hours emergency service. Some individual private dental practices provide some after-hours availability for dental emergencies, but in most cases this is offered only to regular patients of the practices. Reasons for a reluctance to open a private dental practice after hours may range from simple inconvenience to understandable concerns about security and adequate staffing for quality care.

Medical practitioners within GHEDs have limited training in dental problems. Furthermore, they do not have the capacity to perform definitive dental treatment procedures (e.g. extract teeth, drain dental infections or extirpate pulps), meaning their management of caries and dental infections is largely through medications[12] such as analgesics and antibiotics, which may not be effective and at best only offer short-term relief and do not eliminate the need for the patient to be seen by a dentist for definitive management. Of the patients in this study, 5.7% presented to the RHH ED multiple times within the 12 months, suggesting they were not accessing the required comprehensive dental care. The large number of dental patients presenting to GHEDs also causes problems with patient flow in these centres. The RHH recently reported there has been a 6% increase in all patients attending the RHH ED. Patients are waiting up to 24 hours to be admitted into hospital.[13] Streaming dental patients away from GHEDs will help to improve patient flow in general hospitals, and help to provide timely care to patients with major medical illness.

Nine per cent of all dental presentations at the RHH were admitted. This is significantly higher than other published data. A study in the US showed only 2% of their dental presentations to GHEDs resulted in admission.[14] A recent article in the *Australian Dental Journal*[15] found 92% of patients admitted with odontogenic infections were secondary to dental neglect. Again, this highlights the need for improving access to dental services for these patients, and encouraging timely dental treatment before severe odontogenic infections develop. In the above mentioned article, 40% of the patients admitted with odontogenic infections required care in high dependency or intensive care units. Reasons for admission of patients with dental abscesses include deterioration on outpatient oral antibiotic treatment; the need for a general anaesthetic to treat the cause and/or drain a collection of pus; significant/poorly controlled pain; fever and malaise (which may include septicaemia); spread of infection into fascial spaces; real or threatened airway compromise; and medical comorbidities. Obviously, these issues cannot and should not be managed on an outpatient basis.

Across all Australian centres including Tasmania, caries and dental infections were the most common causes of seeking care in a GHED. One in 10 patients were admitted, potentially generating a significant cost for the public health system.

CONCLUSIONS

Males are more likely than females to attend GHEDs with dental presentations. The majority of these presentations are due to toothache and periapical abscess. These problems could have been managed by general dentists, if the patients had arranged a dental attendance rather than presenting to the GHED. The fact patients often present with dental problems to medical centres is not new. There are likely to be several factors contributing to this: patient education, anxiety, cost and timely availability of dentists. This in part reflects a failure by the dental profession. A consistent after-hours dental emergency service may help reduce this problem at the level of the GHEDs, but cost to the patients and concerns about security for the dentists are significant confounding factors. We consider preventive and timely general dental care should be the main aims of improved dental services, so there is less need to deal with what are often preventable dental problems presenting too late for routine dental care, and in unsatisfactory emergency after-hours settings. Current public dental services in Hobart often have significant waiting times for routine care and do

not include an after-hours service. Online and onsite patient information directs patients to their medical GP or to the GHED.[16] However, there is also a group of patients who are not financially eligible for public dental care but who find the cost of private general dental care prohibitive.

Dental presentations can consume a significant amount of ED time and resources. Encouraging patients to seek timely and appropriate dental care may decrease the number of dental presentations to ED. This may require increased funding and resources for public dental services, or assistance in attending private services.

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