

# General medical practitioners' knowledge and management of oral and dental problems

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## RESEARCH

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## ABSTRACT

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### Background

Many patients with oral and dental problems seek help from medical practitioners rather than from dentists. Little is known about why this occurs in Australia and how medical practitioners manage these problems.

### Aims

The aims were to: 1) provide insight into why patients seek treatment for oral and dental problems from medical practitioners, 2) assess how these patients were managed by medical practitioners, and 3) assess medical practitioners' perception of their knowledge of oral and dental problems.

### Methods

An electronically distributed survey was completed by general medical practitioners who were members of the Australian Medical Association in Western Australia. The survey had 19 questions with a combination of both quantitative and qualitative responses. All responses were

anonymous.

### Results

From 130 responses, the most common reasons for patients to present with dental-related issues to general medical practitioners included: cost of dental consults, perceived need for antibiotics, ease of access and immediate relief of pain. Respondents reported that 68 per cent of presentations were during typical business hours. Antibiotic (83 per cent) and analgesic (91 per cent) prescriptions followed by referral to dentists (76 per cent) were the most frequently reported managements. About half the respondents felt their knowledge of oral and dental problems was adequate while 35 per cent felt it was inadequate and 16 per cent felt it was deficient in some areas.

### Conclusion

Patients present to medical practitioners mainly for pain relief or antibiotic prescription. Most practitioners manage these cases with antibiotic and analgesic prescriptions. Practitioners' knowledge of dental-related problems varies with about half feeling it could be improved.

### Key Words

Dental problems, analgesics, antibiotics

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### What this study adds:

#### 1. What is known about this subject?

Little is known about why and when many patients with oral and dental problems present to medical practitioners rather than to dentists in Australia.

#### 2. What new information is offered in this study?

Typically patients present during office hours for antibiotics, ease of access and immediate relief of pain. Most practitioners prescribe antibiotics and analgesics for these patients.

### 3. What are the implications for research, policy, or practice?

Many medical practitioners feel their knowledge is deficient yet they still prescribe antibiotics which are usually not required. Education and better referral processes are needed.

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#### Background

Lack of education regarding oral and dental diseases amongst medical practitioners during their formal education has frequently been cited in the literature.<sup>1-3</sup> Despite this, general medical practitioners are often the first point of call for patients with oral and dental problems.<sup>2,4,5</sup> The number of toothaches presenting at emergency medical clinics has become increasingly common, especially in minority groups and low socioeconomic individuals.<sup>6</sup> These findings strengthen the need for medical practitioners to be well educated in appropriate triage and management of dental problems.

Providing timely and effective treatment greatly increases patient comfort and the overall prognosis. Despite this, medical practitioners' management of dental problems is usually limited to pain relief and/or antibiotic prescription without referral.<sup>7,8</sup> The literature indicates that patients who present to medical practitioners are less likely to receive appropriate surgical (i.e., dental) intervention and are more likely to be prescribed antibiotics.<sup>9</sup> According to Anderson et al., 68 per cent of patients seen by medical practitioners with dental-related issues received antibiotics compared to 28 per cent of those seen by dentists.<sup>10</sup> Cope et al. found that many medical practitioners considered antibiotics to be the first-line treatment for acute dental-related issues.<sup>9</sup> However, the use of antibiotics usually does not address the cause of the presenting complaint.<sup>6</sup> Moreover, with increasing antimicrobial resistance being reported globally, prescribing antibiotics for conditions which do not necessitate them is of major concern<sup>9,11</sup> and all practitioners should take responsibility to avoid using antibiotics whenever possible.

The frequency with which patients present with dental-related problems to general medical practices is scarcely reported. Estimates range from approximately once a week to once every few months. Variances in these frequencies have been attributed to disruption of local dental services, more rigorous triaging, lack of after-hours availability of dentists, improved dental access, costs, lack of insurance, no regular dentist, dental anxiety and better education.<sup>2,4,7,9,12</sup> However, these reports are primarily of European and American origin, highlighting the gap in

comparable baseline trends in Australian general medical practices. The National Health and Hospitals Reform Commission published a report in 2009 for the Australian Government which showed that approximately 650,000 Australians are on public dental waiting lists with only 45 per cent of Australians having private health insurance.<sup>13</sup> Coupled with a lack of general dental cover under the Medicare Benefits Scheme and strict inclusion criteria for the various Commonwealth-supported dental subsidy schemes, the cost of dental treatment may be a driving factor for patients who seek dental-related treatment at Australian medical practices.<sup>8,10</sup>

Overall, the incidence and management of dental-related problems at general medical practices within Australia are unknown. Investigation of this would provide noteworthy insight as to why patients seek medical rather than dental assistance.

The aims of this study were to provide insight into the motives contributing to patients seeking dental-related treatment through general medical practitioners and to assess how these patients were routinely managed by the practitioners. A further aim was to assess the perception of medical practitioners regarding their knowledge of oral and dental problems.

#### Method

This study consisted of a survey which was approved by the University of Western Australia's Human Research Ethics Committee. The survey was conducted at the UWA Dental School at The University of Western Australia with assistance from the Australian Medical Association (AMA) between June 2016 and June 2017. All general medical practitioners who were members of the AMA at that time were invited to participate. The survey was distributed by all State and Territory Branches of the AMA to their members via email and/or through their newsletters. This sampling technique was employed in order to maximise the numbers and demographic spectrum of participants. Potential participants received an invitation to participate and an information page which detailed the aims and requirements of the survey.

In order to obtain information from a broad array of general medical practitioners nationally, collection of data was conducted through a standardised, electronically distributed survey. It comprised nineteen questions, both qualitative and quantitative in nature, which were designed using Qualtrics Survey software (Qualtrics, Provo, UT). The survey was voluntary and consent was provided through following

the hyperlink to the designated webpage. Information collected via the survey encompassed basic demographic parameters (e.g., remoteness, state where practising) and sample specifics (e.g., medical education, specialisation, years in practice). Questions were also asked about the frequency, timing and management of patients presenting with dental-related problems to general medical practices. Participants had six months to complete the survey with reminders sent after one and three months. The questionnaire was anonymous and no identifiable information was requested.

Data was extracted from survey software and used to generate baseline frequencies and graphs. Correlation analysis was completed via SPSS Statistics software.

## Results

Although the survey was distributed to members of the Australian Medical Association nationally, 92.9 per cent of the respondents were from Western Australia (WA). Due to the poor response rate from the other States, all non-Western Australian responses were excluded from the analysis. Of the 130 respondents from WA, 67 (52 per cent) were males and 63 (48 per cent) were females. The number of years practicing as a general medical practitioner ranged from 1 to 54 years with a mean of 24.6 years. The majority of respondents (52.3 per cent) practiced in major cities (RA1), followed by 21.5 per cent in inner regional areas (RA2), and 11.5 per cent in very remote (RA5) areas. Two-thirds (67 per cent) worked in private practice, 14.3 per cent in the public sector and 18.6 per cent worked in both private and public sectors.

Forty percent of respondents reported that the majority of their knowledge of dental-related conditions came from their original medical degree followed by private study (22.3 per cent), interaction with dental colleagues (16.9 per cent), CPD (7 per cent), specialty training (7 per cent), from their own personal dental experiences (5 per cent) and formal professional training (1.5 per cent). Only 49.2 per cent felt that their understanding of dental-related conditions was at least adequate while 34.6 per cent felt their knowledge was poor and 16.2 per cent felt it was deficient in certain areas (Table 1). Table 2 summarises the particular topics where respondents felt they could improve their knowledge.

Respondents reported that the majority (67.7 per cent) of patients presenting with dental-related issues attended during typical business hours with only 10 per cent presenting after normal hours on weekdays and 5.7 per

cent on weekends after midday on Saturday. Almost all (99.2 per cent) of the patients were adults.

According to the respondents, there were many reasons why patients presented to general medical practitioners with dental-related issues (Table 3). The most common included cost of dental treatment (80.8 per cent), ease of access to medical practitioners compared to dentists (68.5 per cent), perceived need for antibiotics (60 per cent) and seeking immediate pain relief (50 per cent). Participants reported that the most expected patient outcomes of the appointment were the prescription of antibiotics (83.1 per cent) and pain relief medications (78.5 per cent) with 20 per cent expecting a medical certificate only and 5.4 per cent expecting referral to a dentist.

Antibiotic and analgesic prescriptions followed by referral to a dentist were the most frequently reported managements by the medical practitioners for dental-related issues and especially to manage pain (Table 4). Eighty percent of participants routinely prescribed antibiotics for dental-related pain management. The types of analgesics and antibiotics prescribed by the practitioners are presented in Tables 5 and 6. Dental abscesses (94.6 per cent), facial swellings (83.1 per cent) and severe toothaches (48.5 per cent) were the most commonly reported indications for antibiotic prescription. Most (76.1 per cent) participants would routinely refer to the patient to a dentist for treatment.

## Discussion

This study is the first to assess the motives contributing to patients seeking treatment by medical practitioners for dental-related problems and to assess how these patients were routinely managed by these practitioners in WA specifically.

The survey was distributed via the various state AMA branches to a potential 7,356 members of the AMA.<sup>14</sup> Hence, there was a low response rate but the reasons for this are unknown. Although 140 responses were received, only ten (7 per cent) were from states other than WA. Since the number of responses from WA comprised a significant portion of the total data (93 per cent), non-Western Australian responses were excluded from the analysis. Consequently, the final sample comprised 130 of a possible 3,534 registered WA general medical practitioners, according to the Department of Health General Practice Statistics 2015-2016.<sup>15</sup> This sample set was reflective of the WA general medical practitioner population with a slight minority of respondents (48.1 per cent) being females - but

this is similar to the current number of female (43.8 per cent) general practitioners in WA. The respondents were also representative of all Remoteness Areas within WA with the ratio of responses being similar to the statistics published by the Australian Department of Health in 2006.<sup>16</sup>

It was hypothesised that the time of dental patient presentation to general medical practices would typically be outside standard dental clinic opening hours due to lack of access to dentists. This was based on a qualitative study of 17 general medical practitioners which reported that the frequency of dental consultations varied from approximately once a week to once every few months.<sup>9</sup> Increases in these figures were attributed to disruption of local dental services whilst decreases were attributed to improved dental access and better education of patients concerning where to seek appropriate dental care. However, no Australian studies were found to support this hypothesis. Furthermore, the responses of this survey suggest the contrary with the majority (67.7 per cent) of patients presenting during typical business hours which were defined as Monday-Friday 8.00am-5.00pm and Saturday 8.00am-12.00noon. Some respondents (16.9 per cent) reported no difference regarding the time of day and only 9.2 per cent and 6.2 per cent reported that patients presented outside typical business hours and on weekends, respectively.

Previous studies have reported the main reasons for patients attending medical practices with dental issues included the lack of after-hours availability, geographic location, cost, lack of insurance, no regular dentist and dental anxiety/fear.<sup>1-4,7</sup> Results of this survey are consistent with these studies, with the cost of dental treatment (14.1 per cent) and ease of access (12 per cent) being the most common reasons reported by respondents when asked about their perceptions of dental-related attendances at their clinics.

Patients' perceived need for antibiotics (10.5 per cent) was a frequently recorded reason for attendance of patients with dental problems at medical clinics although this has not been previously reported in the literature. Interestingly, antibiotic prescription was the most popular management employed (43 per cent) by the practitioners in this survey. This suggests a perception by medical practitioners that patients expect an antibiotic prescription upon presentation at their clinic and consequently, antibiotics are a common management strategy for the majority of the dental-related presentations.

It is well documented that there is increasing concern regarding antimicrobial resistance to antibiotics, especially when prescribed for circumstances that do not require them. The respondents identified the most common conditions requiring systemic antibiotic prescription to be a dental abscess (34.1 per cent) followed by facial swelling (29.9 per cent), severe toothache (17.4 per cent) and pain following tooth extraction (8.6 per cent). However dental infections are always best managed by surgical (i.e., dental) intervention by a dentist rather than antibiotic prescription.<sup>17</sup> In addition, many oral and dental pain conditions do not require antibiotics at all, and particularly if the appropriate dental treatment has been provided. This was reflected in a study by Anderson et al. who found that patients presenting to medical practitioners are less likely to receive surgical (i.e., dental) intervention and they are more likely to be prescribed antibiotics.<sup>18</sup> Cope et al. also found many general medical practitioners considered antibiotics to be the first-line treatment for acute dental-related issues.<sup>9</sup>

The trends from medical practitioners in this study show that broad spectrum antibiotics were preferred for treating dental-related problems. Amoxicillin with clavulanic acid (37.1 per cent) was the most prescribed antibiotic followed by amoxicillin (28.6 per cent) and metronidazole (20.5 per cent). Contradictory to this study's findings, the literature shows medical practitioners in emergency settings often prefer to treat dental pain with narrow spectrum antibiotics such as phenoxymethylpenicillin (37.5 per cent) and phenoxymethylpenicillin plus metronidazole (18.8 per cent).<sup>19</sup> In accordance with this, Anderson et al. found that medical practitioners were more likely to prescribe broad-spectrum antibiotics (61 per cent) compared to dental practitioners (49 per cent).<sup>18</sup>

Despite general practitioners often being the first "point of call" for patients with dental concerns, many medical practitioners graduate from university with limited knowledge about the management of dental issues.<sup>1-3</sup> Comments made by medical practitioners in this study acknowledged the lack of dental training in their medical degrees. Despite this, many participants (40 per cent) stated that they gained most of their dental-related knowledge during their original medical degree. The literature contradicts this with the general consensus suggesting that medical practitioners receive little to no dental education during their medical training. A survey in the UK<sup>1</sup> found 11 of 21 medical schools incorporated only some oral pathology into their teaching and a study by Abu-Dawoud et al.<sup>3</sup> reported that a substantial 96.6 per cent of medical

practitioners had received no dental education during their training. Interestingly, only 49.2 per cent of the participants in this study felt that their dental knowledge was at least adequate. This may be a significant factor when assessing the appropriateness of treatment provided by medical practitioners for dental-related issues. Limited formal training may cause treatment options to be limited. Consequently, pain relief and antibiotic prescription without referral to a dentist was frequently cited as the management strategy.<sup>12,18</sup>

Similar to antibiotic prescriptions, prescription of pain relief medications was both a frequently expected (by the patient) and the prescribed treatment option both in the literature<sup>9</sup> and in this study. A significant portion of practitioners in this study (89.2 per cent) reported routinely prescribing pain-relief medication as part of their dental pain management. Paracetamol with codeine, paracetamol alone, and ibuprofen were the most commonly prescribed. According to Therapeutic Guidelines Oral and Dental, these medications are appropriate for relief of most dental pain<sup>20</sup> with non-steroidal anti-inflammatory drugs considered to be the most effective choice for blocking dental pain due to their peripheral action in reducing inflammation as well as reducing pain.<sup>21</sup> Codeine is advised to be reserved for severe or post-operative pain.<sup>20</sup> However, Therapeutic Guidelines also emphasise that pain relief medications should be used in conjunction with appropriate dental treatment rather than just being used alone. Interestingly, several participants reported that they administered a “dental block” (that is, an inferior alveolar nerve block injection of a local anaesthetic solution) as a method of pain relief.

Limitations of this study include the method of distribution of the survey and the low response rate. As the survey was distributed via email databases, the sample was limited to those who were members of the AMA and who actively used their email address. Due to the poor number of responses from most Australian States, the survey was limited to responses from WA. This resulted in a smaller sample size than expected when considering the number of medical practitioners in Australia, as well as when restricted to WA. Comparable and current literature in this area is scarce; therefore this research should be considered as a pilot study to assess Australian trends. Further research is required to analyse and quantify medical practitioners’ knowledge, diagnostic accuracy and management of dental and oral problems.

## Conclusion

Patients present to medical practitioners mainly for pain relief or prescription of antibiotics. Most practitioners manage these cases with antibiotics and analgesics which are often inappropriate in the absence of appropriate dental treatment. Medical practitioners’ knowledge of oral and dental-related problems varies with about half of the respondents stating that their knowledge could be improved.

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**PEER REVIEW**

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**CONFLICTS OF INTEREST**

The authors declare that they have no competing interests.

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**ETHICS COMMITTEE APPROVAL**

The University of Western Australia’s Human Research Ethics Committee - Approval No. RA/4/1/8504

**Table 1: General medical practitioners’ perception of their adequacy of dental-related knowledge**

Level of Knowledge	Percentage (%)
Excellent	3.9
Adequate	45.4
Poor	34.6
Deficient in certain areas	16.2

**Table 2: Topics where respondents believe their knowledge could improve**

Topic	Percentage (%)
Dental and orofacial trauma	15.46%
Acute oral and dental infections	12.45%
Chronic oral and dental infections	18.07%
Paediatric dentistry and oral conditions	15.66%
Oral malignant and premalignant lesions	15.66%
Dental prosthetic related conditions	13.45%
Identifying when a patient requires referral to a dentist	9.24%

**Table 3: General medical practitioners’ perceptions of the reasons why patients attend their practices with dental-related problems**

Reason for attendance	Percentage (%)
Cost of consult	14.13%
Cost of medication	2.56%
Perceived need for antibiotics	10.50%
Demographics/location/greater accessibility	5.25%
Shortage of dental services	5.52%
Ease of access to a medical practitioner compared to a dentist	11.98%

After hours/time of day	4.31%
Dental anxiety	4.44%
Dissatisfaction with past dental care	0.81%
Immediate relief of pain	8.75%
Drug/medication prescription	5.92%
Lack of private health insurance	7.67%
Lack of understanding of the presenting complaint	6.33%
Referred or poorly differentiated complaint	3.90%
Patient unaware of available dental services	2.42%
Presenting concurrently with a medical problem	5.52%

**Table 4: Dental-related conditions where general practitioners perceive a need for an antibiotic prescription**

Condition	Percentage (%)
Dull toothache	4.16%
Severe toothache	17.45%
Sensitivity to hot/cold foods/drinks	2.77%
Facial Swelling	29.92%
Abscess	34.07%
Pain following recent tooth extraction	8.59%
Tooth avulsion ("knocked-out tooth")	0.83%
Patient asks for a prescription	2.22%

**Table 5: Choice of analgesic medications prescribed by respondents for relief of dental pain**

Drug	Percentage (%)
Paracetamol	23.6
Paracetamol + Codeine	29.6
Ibuprofen	27.7
Ibuprofen + Codeine	6.3
Other NSAIDs	7.4
Opioid-based analgesics	2.5
Other	3.2

**Table 6: Choice of antibiotics prescribed by respondents for dental-related problems**

Drug	Percentage (%)
Penicillin V	6.2
Amoxicillin	28.6
Amoxicillin + Clavulanic Acid	37.1
Metronidazole	20.5
Tetracycline	1
Erythromycin	3.3
Other	3.3