

The public perception of orthodontic treatment performed by general dentists and specialist orthodontists

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Background: In Australia, orthodontic treatment may be performed by either a general dental practitioner (GDP) or a specialist orthodontist. However, the titles 'specialist' and 'orthodontist' are restricted to dentists who have undertaken an additional three years of full-time training in an accredited institution. Considering the increase in popularity of GDP orthodontic courses, an assessment was worthwhile of the public's understanding of the difference between a specialist orthodontist and a GDP who provides orthodontic treatment.

Methods: Two thousand and six Australian adults registered with a survey organisation and completed an online questionnaire. Participants were chosen to reflect age and state demographic data provided by the 2016 Australian Census. The survey questions examined the respondents' understanding regarding the difference between a GDP and a specialist orthodontist related to training and qualifications. Furthermore, factors influencing respondents' preferences for choosing an orthodontic practitioner as well as demographic data were collected.

Results: Sixty-six percent of respondents felt that a dentist who provided orthodontic treatment must also be a specialist orthodontist whilst 27% were unsure. Seventy-four percent of respondents felt that a specialist orthodontist was the most qualified person to provide orthodontic treatment. The most popular factor in deciding which type of practitioner to see for orthodontic treatment was whether they were a specialist, followed closely by cost. A GDP was more likely to be chosen as an orthodontic practitioner by respondents who were male, less educated, had a lower income or had seen a GDP for orthodontic treatment in the past.

Conclusion: Although the respondents generally appeared to appreciate the value of seeing a specialist for orthodontic treatment, a significant proportion did not appear to understand the difference between a specialist orthodontist and a GDP. The present findings support further education of the public.

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Introduction

In Australia, the practice of orthodontics falls within the scope and qualifications of a general dental practitioner (GDP); however, the titles 'specialist' and 'orthodontist' cannot be used unless an additional three years of full-time postgraduate orthodontic training have been completed at an institution accredited by the Dental Board of Australia. Reports from jurisdictions with similar regulations to Australia in this respect have found that patients may mistakenly believe that

a GDP who provides orthodontic treatment holds specialist qualifications.^{1,2}

Empirically, the popularity of orthodontic treatments conducted by GDPs is increasing³ and evidence suggests that some types of orthodontic treatment, such as Invisalign®, may end up being predominantly provided by GDPs in the future.⁴ Although Australian data are lacking, in North America it is estimated that between 20 and 50% of all orthodontic treatment is performed by GDPs.⁵

The blurring of professional boundaries between specialists and non-specialists has also been an issue in medicine. In some countries, medical practitioners have identified themselves as ‘cosmetic surgeons’ in order to perform treatments that are traditionally within the domain of the recognised specialty of ‘plastic surgery’.⁶ A recent survey of 5000 members of the public in the United States by Shah et al. assessed the public’s understanding of the difference between a cosmetic and plastic surgeon. Those authors found that respondents were generally confused about which type of surgeon was more qualified to perform plastic surgery procedures.⁷

Despite the orthodontic profession’s interest in this topic, there does not appear to be any research that has investigated the public’s understanding of the difference between a GDP who performs orthodontic treatments and a specialist orthodontist. It was therefore planned to investigate the issue by conducting a survey of the Australian public.

Materials and methods

A survey (Figure 1) containing 13 questions was derived from a questionnaire used by Shah et al.⁷ A power calculation was made based on Question 4 of the survey, with a difference in response rate of 25% in any of the (first three) options being deemed ‘important’. A sample size calculation based on a multinomial distribution produced a required sample size of $N = 200$ (for a level of significance of $p \leq 0.05$ and a power of 0.95).

An independent research organisation, Survey Sampling International (SSI), was commissioned to conduct the survey on 2000 adults between 18 and 70 years of age residing in Australia. The survey respondents were individuals who had pre-registered with SSI to complete online surveys in return for credits towards gift vouchers. Demographic quotas for the respondents were developed from the 2016 Australian Census⁸ based on age and state of residence. Invitations containing a link to complete the online survey were emailed on 13th July 2018. The sample size was chosen to ensure that there were adequate representations within respondent subgroups to undertake statistical analyses; e.g., age, gender and previous orthodontic treatment.

All responses were anonymous and stored on a secure data server that could only be accessed by SSI consultants. During the survey, respondents were

able to review and edit their answers; however, their response was only saved once all questions had been correctly answered; i.e., no incomplete data were collected. No data were collected about response rate. Statistical analysis was performed using the SPSS software package (IBM SPSS version 23.0), and a chi-square test was used to analyse categorical responses with a value of $p < 0.05$ representing significance. Ethics approval for the project was obtained from the Sydney Local Health District Research and Ethics Governance Office (Protocol No X18-0048).

Results

The response quota was reached on the 18th July 2018, five days after invitations were sent. A total of 2006 responses were collected. The demographics of the respondents are provided in Figures 2–5. Frequency histograms showing the responses to Questions 1–6 are displayed in Figures 6–11.

Over half (58%) of the respondents had received orthodontic treatment or had a family member who had done so (Question 12). Half (51%) of those who said ‘yes’ to this question identified treatment having been done more than five years ago, while 23% had treatment within the past 12 months. A GDP had performed treatment in 11% of cases.

For Question 4, the respondents were asked to rank from 1–6 the factors that were most important in choosing a practitioner to provide orthodontic treatment. In terms of frequency, the most popular factor was whether the practitioner was a specialist orthodontist, followed by cost, recommendation from a referring dentist, location, recommendation from a friend and testimonials (Figure 8).

Cross-tabulation analysis of demographic data and participant responses to Question 4 showed that a GDP was more likely ($p < 0.05$) to be chosen to provide orthodontic treatment over a specialist orthodontist when the participant was male, younger, had lower educational or income levels, had not received orthodontic treatment in the past 12 months or had seen a GDP for orthodontic treatment previously. There was no relationship between the state of residence and the type of preferred practitioner. Figure 12 shows the response frequency to Question 4 for individuals who had received previous orthodontic treatment stratified by the type of practitioner who provided the service.

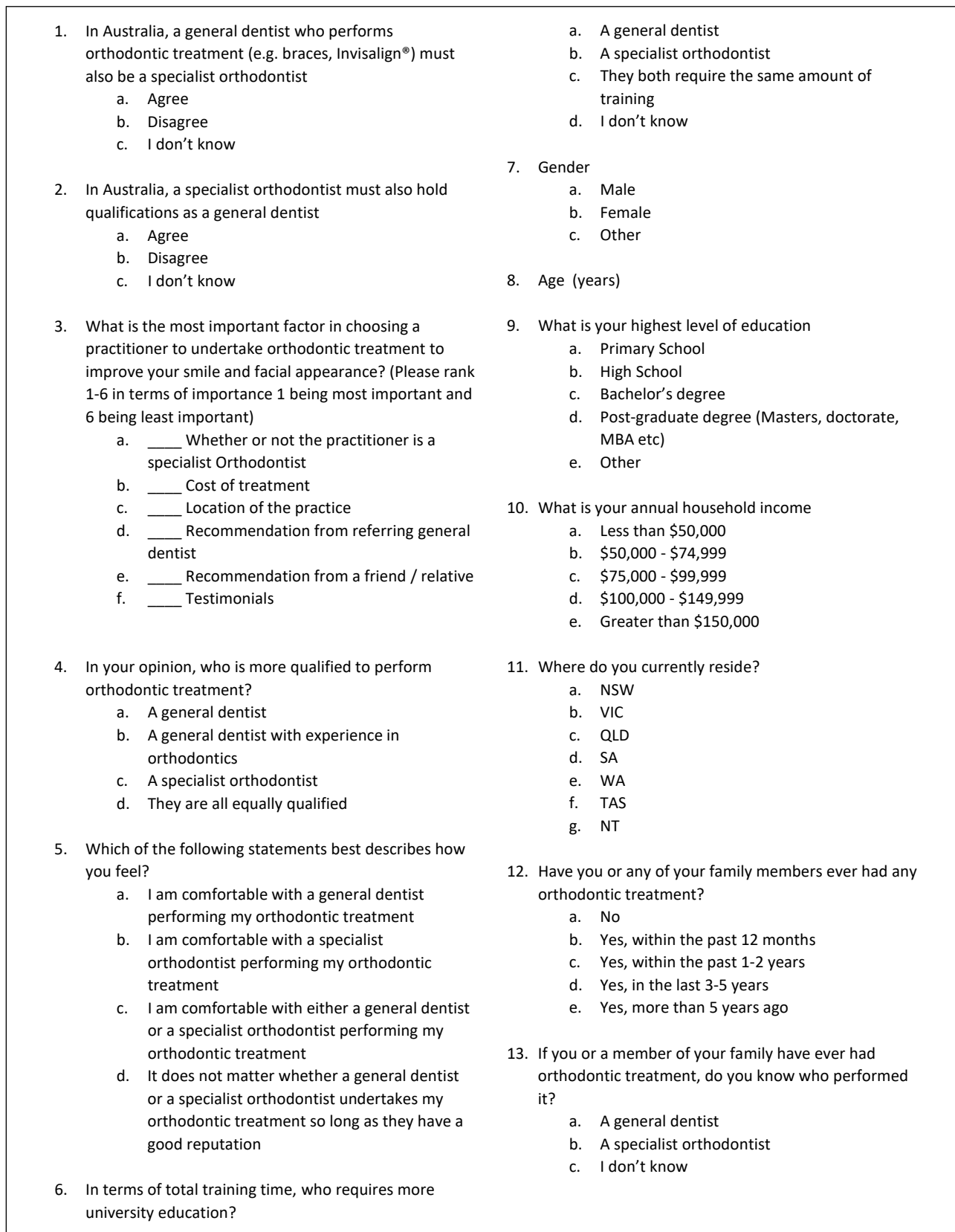


Figure 1. Survey used in the present study.

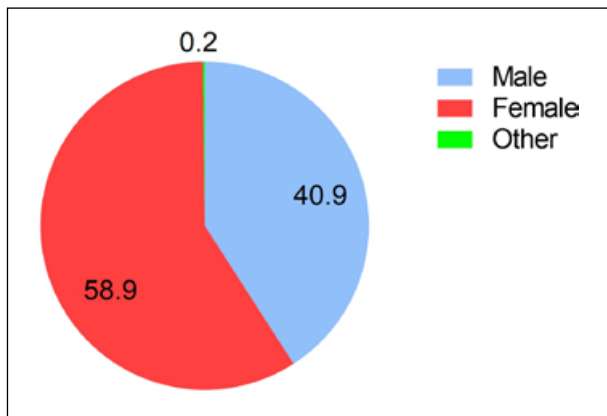


Figure 2. Gender distribution of respondents (percent).

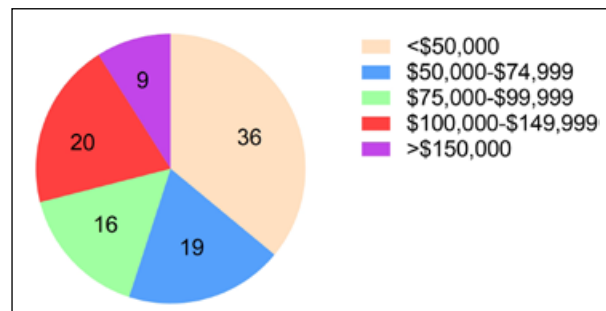


Figure 4. Income distribution of respondents (percent).

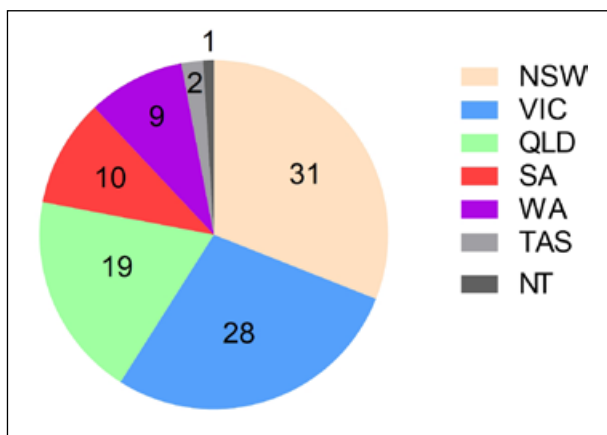


Figure 3. State distribution of respondents (percent).

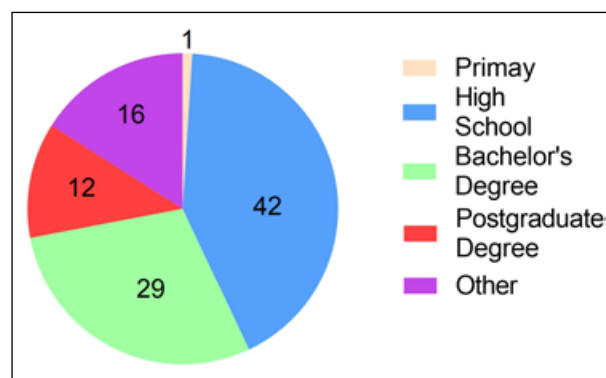


Figure 5. Education qualification distribution of respondents (percent).

Discussion

In the early 20th century, orthodontic treatment emerged as a distinct discipline within dentistry and eventually became the first specialty of the dental profession. Since that time, the place of orthodontic treatment within general dental practice has been debated⁹ and remains a contentious issue today.^{10,11}

Elucidating the factors responsible for the increasing popularity of orthodontics with GDPs remains largely speculative. Possible explanations include financial pressures from an over-supply of dentists in the workforce,¹² an increase in public demand for cosmetic procedures in general,¹³ as well as a perception by GDPs that orthodontic treatment is lucrative¹⁴ and has become greatly simplified through technological advancements.¹⁵

The increasing popularity of orthodontic courses for GDPs¹⁶ has fuelled growth in the number of 'weekend courses' for dentists to learn orthodontic treatments. Dentists who undertake such courses tend to increase

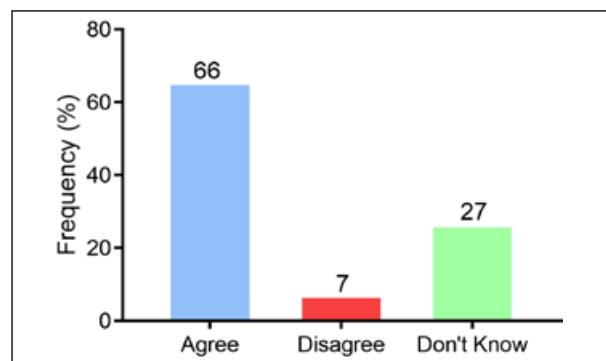


Figure 6. Frequency histogram for response to Question 1: 'In Australia, a general dentist who performs orthodontic treatment (e.g. braces, Invisalign®) must also be a specialist orthodontist'.

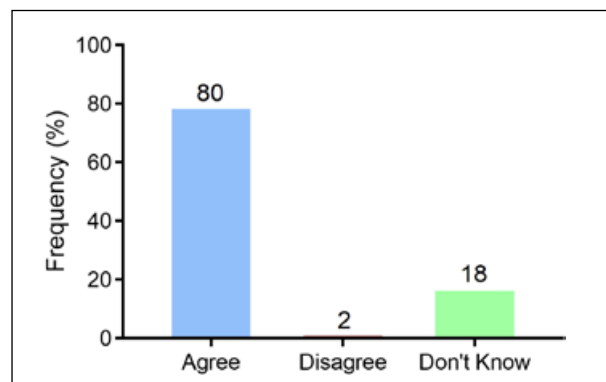


Figure 7. Frequency histogram for response to Question 2: 'In Australia, a specialist orthodontist must also hold qualifications as a general dentist'.

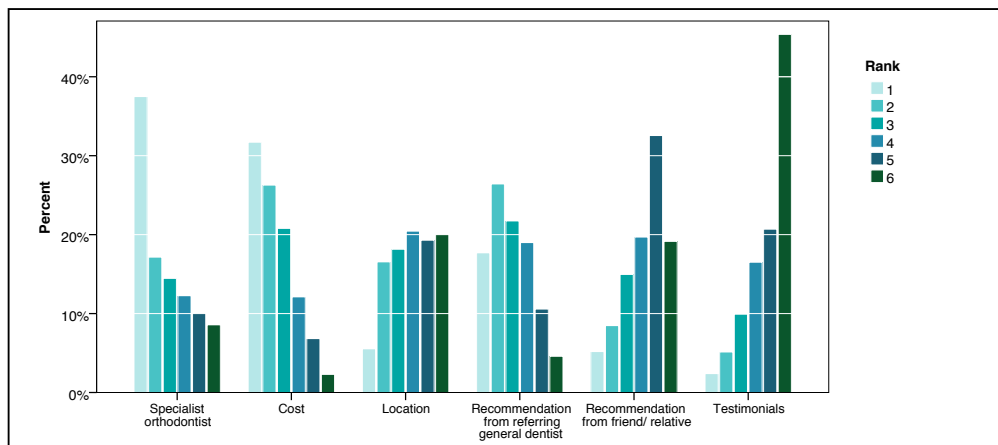


Figure 8. Frequency histogram for responses to Question 3: 'What is the most important factor in choosing a practitioner to undertake orthodontic treatment to improve your smile and facial appearance?'

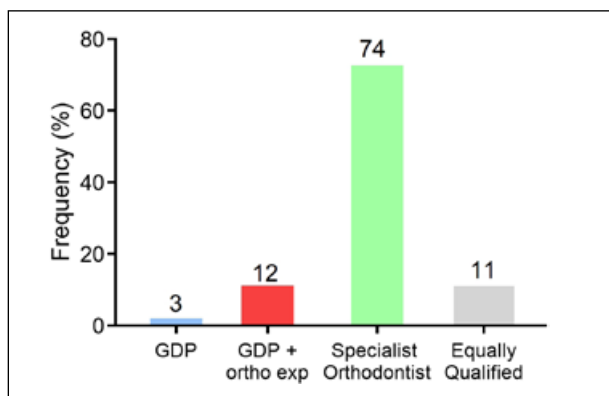


Figure 9. Frequency histogram for response to Question 4: 'In your opinion, who is more qualified to perform orthodontic treatment?'

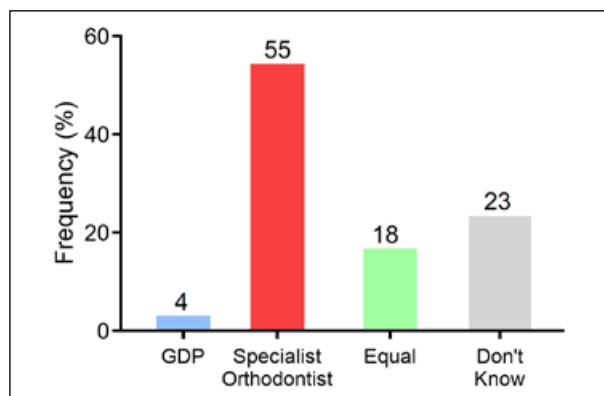


Figure 11. Frequency histogram for response to Question 6: 'In terms of total training time, who requires more university education?'

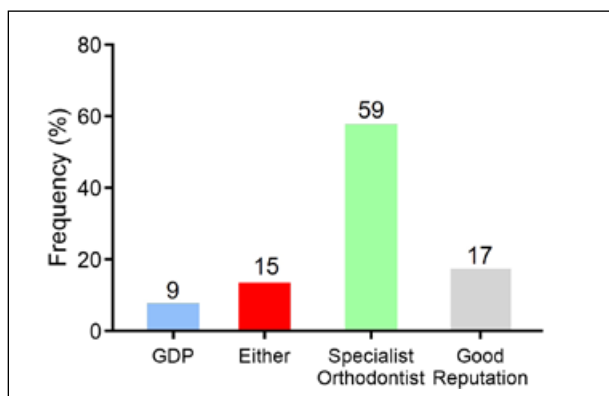


Figure 10. Frequency histogram for response to Question 5 assessing which practitioner the respondent felt most comfortable providing them with orthodontic treatment.

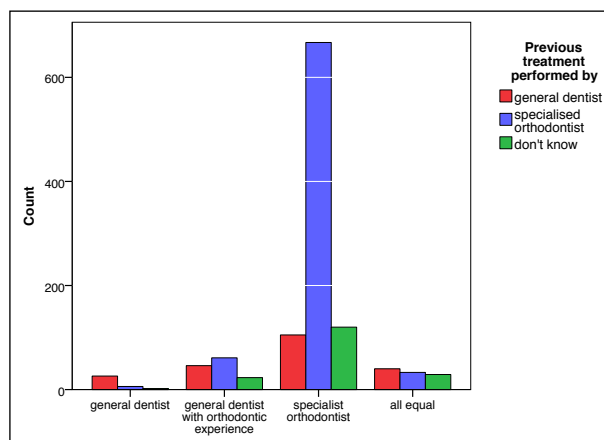


Figure 12. Responses to Question 4 stratified by the type of practitioner that had previously provided orthodontic treatment to either the respondent or their family member.

both the volume of orthodontic patients treated in their practice as well as the complexity of the cases that are treated.¹⁷ However, as one recent investigation has found, such training courses may result in GDPs underestimating the treatment complexity of orthodontic cases compared with assessments made by orthodontic specialists or postgraduates.¹⁸

Where the quality of orthodontic treatment has been investigated, it has been shown that patients typically receive a poorer quality finish when their treatment is completed by a non-specialist.^{5,19} It is important to note that these comparisons were undertaken through

blinded investigation. Another study found that GDPs take about 25% longer to complete cases than specialist orthodontists.⁵ This finding is important since the risk of permanent tooth damage during orthodontic treatment (e.g., through root resorption or enamel decalcification) typically accrues with treatment time.²⁰ Prolonged treatment time may also lead to patient burnout and dissatisfaction and may result in complaints to regulatory bodies.

The present survey was undertaken to assess differences between the public's perception of a specialist orthodontist and a GDP who provides orthodontic treatment. The results suggest that, although many individuals value the notion of seeing a practitioner with specialist qualifications, there is a substantial degree of confusion in the general public's mind regarding the difference in qualification between a specialist orthodontist and a GDP. Although 80% of respondents understood that general dental qualifications were a prerequisite of holding speciality qualifications (Figure 7), 66% felt that if a GDP provided orthodontic services then they must also be a specialist orthodontist (Figure 6). Furthermore, a surprisingly high percentage of respondents were unsure about the answer to Questions 1 and 2 (27% and 18% respectively). Just under half of the respondents were confused about the difference in education level between a GDP and a specialist orthodontist, with 18% feeling that their separate qualifications were equal and 23% reporting that they were not sure about the difference (Figure 11). Perhaps of greatest concern was the finding that approximately one quarter of respondents felt that a specialist orthodontist was not the most qualified person to perform orthodontic treatment (Figure 9).

The results also suggest that cost is a significant factor for respondents in choosing between orthodontic providers since it was ranked as the second most important factor in choosing a treatment provider after seeing a specialist. Interestingly, the location of the practitioner, testimonials and recommendations from friends and families seem to be less influential in choosing a practitioner.

The data also appeared to reflect a high degree of trust placed by patients in their GDPs. This is seen by the level of influence that GDPs have in recommending a specialist orthodontist (Figure 8). Furthermore, although only 11% of respondents identified as having received orthodontic treatment from a GDP, the

responses to Question 5 (Figure 10) indicate that 41% felt comfortable seeing someone other than a specialist for orthodontic treatment. The present analysis of the data also indicates that individuals who had seen a GDP in the past for orthodontic treatment were more likely to choose them for future treatment (Figure 12). Conversely, almost half (48%) of the respondents who had seen a GDP in the past for orthodontic treatment still identified that a specialist orthodontist was the most qualified person to provide orthodontic care. This contrasts with 87% who had visited a specialist orthodontist and identified the specialist as the more qualified person. The proportion of respondents favouring a specialist orthodontist in Question 4 was close to 75%. Demographic correlations were observed for respondents who favoured a GDP to provide treatment. These individuals tended to be male, younger, less educated or have a lower income.

The present study should be interpreted with several limitations in mind. Despite an effort to obtain a participant cross-section representative of the Australian population, the respondents were limited to those with email access who were registered with SSI. Comparing the demographics of the respondents with the 2016 Census data, 55% of the sample were below the median household income of \$74,776. However, 41% of respondents held a bachelor's degree or higher, which is almost double the national average.⁸ Another limitation is the possibility that the language of the survey confused some respondents. The questionnaire was refined through feedback from colleagues, family and friends prior to beginning the study. However, it is still possible that respondents found some of the questions ambiguous and some did not actually know what an 'orthodontist' was.

Conclusions

Within the limitations of this study, the results suggest that many of the respondents valued the notion of seeing a specialist orthodontist, although a significant proportion did not appear to understand the difference between a specialist orthodontist and a GDP. Further education of the public is required in this regard to ensure that people are better informed about how to choose the most qualified practitioner to provide their orthodontic treatment.

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