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The Perception of Special Needs Dentistry amongst General Dentists within Western Australia, Australia

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Abstract

Special Needs Dentistry has recently been recognised as a dental specialty in Australia. In states other than Victoria, New South Wales and South Australia, this patient cohort would predominately be managed by the general dentist, making a study into aspects of their perception with this patient group pertinent in other States of Australia. This is further reinforced by the fact that there are no registered Special Needs specialists in Western Australia. This study aims to investigate the perception of Special Needs Dentistry amongst general dental practitioners in Western Australia.

Materials and methods: A postal questionnaire was distributed to 1000 dentists practicing in Western Australia. The questionnaire recorded sociodemographic characteristics, perceptions of Special Needs Dentistry (awareness and definition), perception of Special Needs Patients (clinical exposure according to the categories of aged care, physically disabled, intellectually disabled, medically compromised, infectious diseases, and psychiatric problems), criteria for referral of Special Needs Dentistry patients, and perception of Special Needs Dentistry education. Quantitative data was analysed using *Chi-squared* statistical analysis ($p \leq 0.01$).

Results: Approximately a third of dentists received undergraduate training in Special Needs Dentistry. The majority demonstrated adequate knowledge in defining Special Needs Dentistry and reported providing treatment to such patients. Inadequate experience and difficulty in managing behavioural problems were quoted as the main reasons for not treating patients with SN, although a high percentage of dentists felt positive in providing treatment to most groups except those with psychiatric issues. While most dentists expressed interest in undergoing continual professional development courses in Special Needs Dentistry, most were not keen on pursuing postgraduate education in this field.

Conclusion: Dentists in WA were variable in their approach to those with special needs. University curricula and continual professional development in Special Needs Dentistry may improve dentists' knowledge, attitudes and skills in managing these patients. However, in order to further direct the growth of Special Needs Dentistry, more research is needed into factors that may influence dentists' willingness to treat this patient cohort.

Keywords: Dental education; Oral health; Special care dentistry; Special health care needs; Special needs dentistry

Abbreviations

SND: Special Needs Dentistry; SNPs: Special Needs Patients; WA: Western Australia; UWA: University of Western Australia; ADA WA: Australian Dental Association Western Australian; RACDS: Royal Australasian College of Dental Surgeons

Introduction

The increasing global population of people with Special Health Care Needs indicates a greater requirement for improved healthcare services. It is estimated that 1 billion individuals, equating to approximately 15% of the population, are living with special needs, which is estimated to rise with the increased chronicity of disease [1]. In Australia, just under one in five Australians (4.2 million people) reported having a disability in 2012 and of these, 1.4 million people required help with basic daily activities of self-care, mobility and communication [2]. In 2003, in Western Australia (WA), according to the Australian Bureau of Statistics, there were 405,500 people with a disability representing 21% of the state population which was similar to the national rate of 20% [3]. Between 1998 and 2003 the number of people with a disability in that state increased by 50,000 (14%) [3]. Furthermore, 28% of those reporting a disability had a profound or severe core-activity limitation. It was estimated that the main health conditions of 81% (329,800) of this group were of a physical nature and almost one in five (75,700) reported mental or behavioural disorders as their main health condition [3]. Of these, one-quarter (27%) had an intellectual or behavioural disorder whilst one-third (34%) had a psychosis or mood affective disorder such as schizophrenia, dementia and depression as their main health condition [3].

Disabilities encompass a very broad spectrum with the majority of individuals being categorised with either minor or moderate conditions [4]. Many individuals with disabilities live at home and are functionally independent, whilst others are dependent on regular support but still live independently or with their families [4]. In WA, the number of people receiving support has increased from 22,207 in

2012 to 24,017 in 2014 [5]. Of these, most had reported either intellectual (34.6%) or physical (27.0%) disabilities. Support is also provided to those with Autism, neurological disease, sensory disabilities, acquired Brain Injury, and psychiatric disorders [5].

Life expectancy is also linked to overall health outcomes. There are concerns about the capacity to provide adequate dental services for the elderly people as their numbers are increasing as are the numbers of those retaining teeth [6]. It has been reported that since 1994, the life expectancy of individual in Western Australians was slightly above the national average [3]. There have also been gender differences related to life expectancy with females living longer (84.8 years for females versus 80.1 for males) [7]. In 2003, there were 299,000 people aged 60 years or over in Western Australia and 38% of them required assistance with everyday activities including (transport, mobility, housework and self-care related issues) related to disability or age-related factors [3].

Special needs patients have also demonstrated a higher prevalence of oral disease and greater unmet dental needs compared to the general population [8-16]. A number of oral health issues are related to both their disability and complex health needs that can in many instances prevent them from receiving appropriate dental care [8,9,17,18]. Many factors contribute to the problem including aspects of cooperation, cognitive capacity and communication [19-22]. There are also professional and financial barriers identified by general dental practitioners making them reluctant to provide care for patients with special needs such as perceived limited formal educational preparation in special needs dentistry. Other concerns include limited financial incentives, the perception of added intrusions into practice dynamics and the increased complexities of care for individuals with intellectual/developmental or other disabilities [4,23,24].

Western Australia poses further challenges in that it is geographically the largest state in Australia with a sparsely distributed population [25]. It should be noted that over 85% live in a handful of urban centres with the majority (1.6 million) living in the state capital, Perth [25]. Distance and remoteness are thus significant factors influencing health and potential inequities in service provision. Furthermore, due to factors associated with sparse habitat, matching dentist numbers to these individuals similar to what is seen in metropolitan regions, barriers related to distance would still exist thereby disadvantaging these communities [26].

Financial barriers are also a significant issue for older Australians aiming to access dental care [27]. It has been demonstrated that for the aged care sector in Western Australian, geographical location was also a major factor in the frequency of use of dental services [28].

In Australia, Special Needs Dentistry became a registered dental specialty in November 2003 with post-graduate academic programs in Eastern states (Victoria, South Australia and New South Wales) [29]. Therefore, it can be inferred that in other Australians states and territories, this patient cohort would predominately be managed by the general dentist, making a study into aspects of their perception with this patient group pertinent. This is further reinforced by the fact that, in terms of specialist workforce, there are no registered SND specialists outside these states with the exception of Queensland, hence obtaining information regarding general dental practitioners' perceptions in states such as Western Australia would provide valuable information about both service provision and workforce concerns.

The aim of this study was therefore to provide an insight into the perception of special needs dentistry amongst general dentists in Western Australia to help guide and better prepare dental graduates and clinicians in managing special needs patients across Australia.

Materials and Methods

The present study employed a previously validated survey format [30]. The required sample size for validity was 708 general dentists from a total of 1473 registered with the Australian Dental Association Western Australian (ADA WA) branch in 2015 [31], Taking into account a 40% non-response rate, the sample size chosen was 1000 general dentists to capture a true sample size of 708.

Systematic sampling was performed by selecting dentists at pre-specified sampling intervals from a complete list of registered general dentists (e.g. numbers ending with 1,3,5,7,9.10) [32]. Participants were not excluded on the basis of length of time in clinical practice, gender, full-time or part-time status or initial country of qualification.

Questionnaires were distributed with a single follow-up reminders sent after six weeks. The questionnaire consisted of closed and open-ended questions and Likert scales to determine dental practitioners' perception of aspects around special needs dentistry (SND). The questionnaire contained aspects around demographics (age, gender, current university, and previous tertiary experience), perceptions of SND (awareness and definition), perception of special needs patients (clinical exposure according to the categories of aged care, physically disabled, intellectually disabled, medically compromised, infectious diseases, and psychiatric problems), awareness of Government programs related to SND, criteria for referral, teaching and training in SND and consideration of postgraduate training in SND. Ethical approval was granted by the University of Melbourne Human Research Ethics Committee.

Statistical analysis of quantitative data was performed using the SPSS software program 22.0 (SPSS Inc., Chicago, IL, USA) and consisted of *Chi-squared* statistical analysis and Fischer's exact test with significance taken as $P \leq 0.01$. Qualitative data was grouped according to themes and keywords and coded for statistical analysis similar to the quantitative data. The ability of dentists to define SND was categorised according to the definition set by the Royal Australasian College of Dental Surgeons (RACDS) [33]. Four categories of SND were identified including intellectual disabilities, complex medical conditions, physical disabilities, and psychiatric issues. Dentists who were able to identify two or more categories were classified as having 'adequate' knowledge, whereas those who identified one or less were classified as having 'poor' knowledge in defining SND.

Results

A total of 286 responses were received corresponding to a response rate of 28.6%. Of these, 53 were marked as "not known at this address", four dentists were retired, one dentist was no longer in clinical practice and 24 declined to participate despite returning the questionnaire. The final response rate was therefore 20.4% (n=204). Some questionnaires were incomplete and this is reflected in the final analysis.

Demographic characteristics

A total of 61.8% male and 36.8% female dental practitioners participated in the study. The majority of respondents were aged between 25-34 years (27.9%) with the largest group graduated on or after the year 2000 (36.8%). The majority graduated predominately from The University of Western Australia (72.6%) with 21.9% of

respondents practicing in WA graduating from overseas universities compared to only 5.5% from other Australian interstate universities.

Perception of special needs dentistry

SND Component in undergraduate dental training: Approximately one-third (33.3%) of Western Australian dentists reported they had had SND as a component of their undergraduate dental curricula. There was no significant association between the university at which undergraduate training was obtained with regards to the SND training (χ^2=7.78, P=0.02), however, dentists who graduated from the class of 2000 and above were more likely to have received dental training with an SND component in their undergraduate program (χ^2=76.38, P<0.01).

More than half of those who had SND in their undergraduate training (52.2%) had perceived themselves to be somewhat competent to provide treatment to special needs patients and around one-third (33.3%) felt incompetent in managing such patients. There was no significant association between the university at which undergraduate training was obtained (χ^2=4.112, P=0.128) and the undergraduate graduation group (χ^2=14.540, P=0.069) with regards to the level of competency in SND. 29 out of 58 dentists (50%) who graduated from UWA and had SND training and 7 out of 11 (63.6%) who had graduated from New Zealand or overseas universities felt somewhat competent in treating this patient cohort. All dentists who graduated from an Australian university other than UWA (n=11) reported not having an SND component in their undergraduate dental training.

Ability to define SND: Of those who responded to this question, 65% claimed that they were able to define SND regardless of which university they graduated from (χ^2=2.146, P=0.342) or the year in which they graduated (χ^2=1.268, P=0.867). Dentists were asked to specifically define SND which was subsequently categorised according to the RACDS SND definition [33]. The four main categories identified included physical disabilities (67.2%), intellectual disabilities (64.1%), complex medical conditions (36.7%) and psychiatric issues (30.5%). Dentists also identified other groups of SND patients that were not included in the RACDS definition including elderly people (13.7%), and disability in general (9.9%). 69.5% of dentists were able to identify two or more SND categories and were thus classified as having 'adequate' knowledge in the field. There were no differences in those who were able to identify all four categories of SND patients with respect to year of graduation (χ^2=4.716, P=0.318) or the university they graduated from (χ^2=0.728, P=0.695).

Treating individuals with Special Needs: The majority of the participants (60.7%) provided treatment to SNPs. There was a significant association between having treated SNPs and undergraduate SND training (χ^2=6.81, P=0.006) with 71.6% having received training whilst at the dental school. The majority of those who treated SNPs and worked in the private sector (97.2%) provided between 1 and 5 hours a week of clinical time devoted to the management and care of these patients. A large proportion of respondents who worked in the public sector (89.7%) also provided between 1-5 hours a week of clinical care. There were no differences in those who treated SNP according to gender (χ^2=2.446, P=0.29), the university from which they graduated (χ^2=3.52, P=0.172) or year of graduation (χ^2=2.311, P=0.67).

Approximately 40% of respondents did not treat any SND patients mainly due to lack of experience in treating SNPs (55.7%), difficulty in managing behavioural problems associated with this cohort (46.8%) and inadequate surgical facilities (46.8%). In addition, inadequate staff to cater for the needs of such patients was reported by 41.8% of respondents with 29.1% reporting a lack of interest. Others barriers to providing care in descending order included; more time consuming (26.6%), more staff time required (24.1%), high incidence of cancellation or broken appointments (16.7%) and accessibility of the dental surgery (e.g. 1st floor practice location) (4.4%) (Table 1).

Dentists' perception within each categories	Percentage (%) N=79
Lack of experience in treating SND patients	55.7
Too difficult to manage behavioural problems associated with SND patients	46.8
Inadequate staff to cater for SN of such patients	41.8
Inadequate surgical facilities (e.g. number of surgery or type of facilities)	46.8
Treating SND patients is more time consuming	26.6
More staff time is needed	24.1
No interest in treating SND patients	29.1
High incidence of cancellation or broken appointments	16.7
Accessibility of the dental surgery (e.g. 1st floor practice)	4.4

Table 1: The perception of general dentists who were not treating SND patients.

For those who perceived a lack of experience in treating SNPs, 58.3% felt incompetent in providing such treatment, however a quarter felt somewhat competent. There was no statistically significant association related to gender (χ^2=1.79, P=0.408), graduating university (χ^2=2.44, P=0.65) or year of graduation (χ^2=6.28, P=0.39).

Terminology-Special Needs versus Special Care Dentistry: The preference for the terminology was similar across all dentists regardless of graduating university (χ^2=3.96, P=0.41) or year of graduation (χ^2=11.22, P=0.189). 61.7% (n=124) of those surveyed chose "Special Needs Dentistry" as the preferred term, with only 29.9% (n=60) preferring "Special Care Dentistry". The remaining 8.5% (n=17) were uncertain as to which term they preferred.

Dentist' perception towards providing treatment to different categories SNPs

Dentists were asked to rate their level of feeling in treating different categories of patients with special needs (Table 2). In terms of those who treated physically disabled patients most rated their experience as either positive (n=199, 53, 8%) or very positive (n=199, 20.1%). There was a significant correlation between overall feeling and the university they graduated from (χ^2=29.61, P<0.01); however, there was no correlation between this and SND undergraduate clinical exposure (χ^2=3.88, P=0.56).

There was no significant difference between the dentist's experience treating intellectually disabled patients and the university from which they graduated (χ^2=14.359, P=0.157) or their SND undergraduate component (χ^2=12.72, P=0.02) with the majority rating their experience as "positive" (n=199, 53.3%). In addition, just under half of the dentists surveyed (n=199, 46.7%) rated their experience in treating

medically compromised patients as "positive" with no significant correlation as to which university they graduated from (χ^2=9.524, P=0.48) or SND undergraduate training received (χ^2=4.55, P=0.47). In terms of treating patients with infectious diseases, a similar pattern was observed with 46.2% rating their experience as positive which was not significantly correlated with graduating university (χ^2=9.09, P=0.52) or level of undergraduate SND training (χ^2=3.78, P=0.58).

Category (n)	Extremely Negative %	Very Negative %	Negative %	Positive%	Very Positive %	Extremely Positive %
Aged Care (197)	3.6	1.5	12.2	43.7	26.9	12.2
Physically Disabled (199)	1.5	0.5	14.6	53.8	20.1	9.5
Intellectual disabled (199)	3.5	3	21.1	53.3	12.6	6.5
Complex medical (199)	2.5	3.5	29.6	46.7	11.1	6.5
Infectious disease (199)	5.0	4.0	24.6	46.2	12.1	8
Psychological or behavioural problem (199)	6	8	37.7	35.7	9	3.5

Table 2: The perception of "feel" when providing treatment for different categories of SND patients.

When asked about their feeling in treating aged care patients, there was no significant difference across graduating university (χ^2=10.90, P=0.36) or SND undergraduate training (χ^2=4.67, P=0.45), with majority of participants rating their experience as "positive" (n=197, 43.7%), or "very positive" (n=197, 26.9%). In contrast, treating patients with psychiatric or behavioural issues resulted in respondents rating their experience as either "negative" (n=199, 37.7%) or "positive" (n=196, 35.7%) with no significant association related to the graduating university (χ^2=8.502, P=0.58) or whether they had had SND training (χ^2=3.78, P=0.58).

Comfort in managing SND patients: Most dentists were comfortable treating patients with a physical disability (n=198, 52%) with no significant correlation according to graduating university (χ^2=4.43, P=0.92) or SND undergraduate training (χ^2=6.62, P=0.25) (Table 3). Most dentists were also comfortable treating intellectually disabled patients (49.2%, n=199); however, this differed across graduating university (χ^2=26.14, P<0.01) regardless the level of SND training (χ^2=11.26. P=0.04).

In addition, dentists felt comfortable treating patients with a complex medical history with the majority rating their level as "comfortable" (n=199, 47.2%) or "uncomfortable" (n=199, 28.6%) with no significant differences associated with graduating university (χ^2=6.45, P=0.77) or undergraduate SND component (χ^2=0.74, P=2.71).

Category (n)	Extremely UC %	Very UC %	U %	C%	Very C %	Extremely C %
Aged Care (198)	2	2.5	11.6	44.9	26.3	12.6
Physically Disabled (198)	1	2.5	14.6	52	20.2	9.6
Intellectual disabled (199)	3.5	2.5	26.6	49.2	11.6	6.5
Complex medical (199)	1	7	28.6	47.2	9	7
Infectious disease (199)	5	7	27.6	41.7	10.1	8.5
UN=Uncomfortable; C=Comfortable						

Table 3: The perception of "comfortable" in treating different categories of SND patients

There was no significant difference between dentists' with respect to the comfort levels treating aged care patients in terms of the university they graduated from (χ^2=7.77, P=0.65) or the SND clinical undergraduate exposure (χ^2=0.627, P=0.98), with the majority feeling "comfortable" (n=198, 44.9%) or "very comfortable" (n=198, 26.3%). Despite 41% of respondents feeling "comfortable" managing patients with infectious disease, 27.6% (n= 199) felt "uncomfortable", regardless of graduating university (χ^2=13.90, P=0.17) or undergraduate SND component (χ^2=1.66, P=0.89).

Furthermore, the majority of dentists rated their comfort level in treating a patient with psychiatric or behavioural problems as "uncomfortable" (n=199, 40.7%) with only (n=199, 31.2%) "Comfortable". There was no significant association with the university of graduation (χ^2=4.43, P=0.92) or SND undergraduate training (χ^2=6.62, P=0.25).

Government programs and initiatives for SND

Of those who responded to this question, the majority (n=167, 83.1%) were not aware of any government programs or initiatives for SND. Of those who knew of such programs, 93.9% (n=34) reported that they thought the programs were beneficial. There was no

significant association between those who treated SNPs and level of awareness of government programs or initiatives for SND patients (FE; P=0.02).

Perception on SND training: 89.4% of dentists felt that undergraduate dental students should have didactic and clinical training in SND. The majority (58.6%) felt didactic teaching in SND should take place in the final (5th) year of training with 45.7% reporting it to be better placed in the 4th year. A small percentage (22.7%) reported it should take place in the 3rd year, with only 3.8% and 1.6% believing it should be earlier (2nd and 1st years, respectively).

In terms of attending continuous professional development, 66.8% expressed interest in attending training in SND; however, only 21.8% expressed interest in perusing postgraduate specialty training.

Referring Special Needs Patients to SND specialist

Approximately 40% of the participants reported "sometimes" referring to an SND specialist for a second opinion with 30% doing so when they felt uncomfortable performing the necessary procedure or when they were unsure how to proceed with treatment for medically complex or compromised patients (Table 4). Approximately one-third of the respondents said they always referred in situations where patients were intellectually disabled and unable to cooperate, had behavioural problems or were physically disabled and there were no facilities available to facilitate his needs. In addition, 38.2% of respondents always referred patients who had a psychological problem that precluded treatment in a general dental surgery (Table 4).

	Always %	Very often %	Often %	Sometimes %	Almost never %	Never %
I would like second opinion (n=188)	13.30	12.80	22.90	40.40	9.00	1.60
I am uncomfortable performing the necessary procedure (n=191)	22	17.80	18.80	29.30	10.50	1.60
I am unsure how to proceed with treatment for patient who is medically complex or compromised (n=192)	19.8	16.7	21.4	25.00	15.1	2.1
Patient is intellectually disabled and unable to co-operate (n=192)	32.30	21.40	22.90	18.20	5.20	0
Patient is physically disabled and I have no facilities (n=191)	30.90	11.50	16.80	22	14.70	4.20
Patient has psychological problem with precludes treatment in a general dental surgery (n=191)	38.20	19.90	14.70	15.70	9.90	1.60
Patient has behavioural problem which makes treatment delivery difficult (n=192)	30.20	23.40	18.20	21.40	5.70	1.00

Table 4: Criteria to refer to SND specialist.

Discussion

The promotion of healthier lifestyles, continued improvements in living standards, and ongoing medical advances are attributed to increasing life expectancy and a trend towards retention of natural teeth highlights the need for dental maintenance [7]. People with special needs are not a homogeneous population and have varying health needs and living arrangements. The heterogeneity of this population and the diversity amongst this group adds to the challenges faced by researchers, clinicians, and the individuals themselves. Oral health needs of special needs individuals are complex, and may be related to underlying congenital or developmental anomalies as well as the inability to receive adequate personal and/or professional care to maintain adequate oral health [34-37].

Internationally, it has been recognised that there is a lack of clinical training in the management of people with special needs at both undergraduate and postgraduate levels [15]. The dearth of individual dentists who are prepared or comfortable in providing care for special needs patients is another issue that impacts on the management of this patient cohort. A lack of education regarding the SND is by far, the greatest barrier to achieving oral health outcome for this group in line with their non-special needs counterparts [38,39].

The generally accepted consensus is that the student experience in these specialized environments is an essential component of formal SND undergraduate training and is required to enhance confidence, knowledge, skills [40], to fully understand the extent of oral health care needs and diversity in the community and would result in enhanced outcomes in this specific area of dentistry [41-44]. Curricula design is key in achieving the required level of knowledge, skills and behaviour [45]. Most of the respondents of this study graduated from the University of Western Australia (UWA), which suggests that the bulk of their training in this field would have stemmed from a single tertiary institution. In Australia, most of the dental schools including UWA offered a specific module in SND, provided clinical training in SND, as well as incorporated elements of SND in other subjects in the undergraduate curriculum [39].

Current literature shows that the definition and terminology related to this discipline are varied and inconsistent and also discussed through a number of different professional bodies with "Special Needs Dentistry" used in Australasia compared with "Special Care Dentistry" which is used in Europe, the UK and the USA [46,47]. Terminology preferences were reflected in the current study. In border terms, SCD could focus on the clinicians' caring for the patients, whereas, SND focus more on the patients' needs rather than the care given. Having

clear definitions to guide program planning, financing and expansion of managed care arrangements and the identification of individuals with complex health needs is an important consideration [29,47,48]. According to the Royal Australasian College of Dental Surgeons, SND is defined as dentistry that "Supports the oral health care needs of people with an intellectual disability, medical, physical or psychiatric conditions that require special methods or techniques to prevent or treat oral health problems, or where such conditions necessitate special dental treatment plans" [33].

International consistency in the terminology might be difficult to achieve due to cultural, social, political and economic diversity that exists [47]. Regardless of terminology, the discipline is mainly concerned with the improvement in the oral health of a diverse group with a range of disabilities and complex additional needs. These include individuals and groups in society who have physical, sensory, intellectual, mental, medical, emotional or social impairment or disability or, more often, a combination of a number of these factors [29,49]. It was reassuring in the present study that most of the respondents were able to at least define two or more SND categories in the RACDS definition [33] despite their limited undergraduate SND didactic or clinical exposure.

Dentists play an important role in the provision of dental care to people with special needs. This requires special skills, knowledge, patience, willingness, empathy and motivation. However, lack of dentist skills and knowledge in managing people with special needs were one of the most frequent barriers cited by dentists, carers and patients to providing treatment for this group which was also supported in the current study [9,15,19,50,51]. This could be due to extra time and patience needed to manage this cohort [15]. It has also been documented that dentists who had undergone training in SND during their undergraduate years treated more patients with special needs and had better attitudes towards providing care for this population, compared to dentists who were not exposed to such training experience at the undergraduate level [52-54]. It is evident in the present study that high percentage of respondent provided treatment for patients with special needs as they were exposed to SND training at undergraduate level. This could also be attributed in part to the fact that in WA at least, there would be no other option for SN patients to receive care because there are currently no registered specialists in that state.

It was reported that positive training in SND during undergraduate years was essential for dental students to overcome their anxieties with these patients together with the development of sound management and patient care skills [55,56]. In the present study, approximately half of those who were not providing treatment to special needs patients reported a lack of experience and difficulty in managing behaviour as main reasons. This had been reported as one of the main factors for unmet oral health needs in other studies [9,15,19,50,51] reflecting an increased need for knowledge, abilities, and willingness to be developed among general dental practitioners. This would provide services for individuals with special needs [23] regardless of it being a separate specialty as it is clear it would take many years before sufficient SND specialists were available to cater for the 4.2 million individuals with advanced health care needs. This, together with increased disease chronically reported by Australian institute of Health and Welfare [57] and population projections of more individuals retaining teeth into their older years [6] highlights a need for better understanding of attitudes and needs of the general workforce. Once this baseline data is gathered there can be a greater push towards developing advanced training centred around management of special needs patients at both student and practitioner level.

General dental practitioners have been trained to provide care for special needs patients whose spectrum of need is less complicated, however, still potentially quite challenging [29,34]. They often report difficulties with communication, thus creating sometimes seemingly insurmountable barriers to accessing mainstream dentistry by this population [58]. In the current study, approximately half of the respondents felt positive and were comfortable providing treatment to those in most special needs categories except for those with psychological or behavioural issues. This is consistent with the findings in a study conducted amongst general dentists in Victoria [30] and reflects a positive attitude amongst dentist towards caring for these patients despite the lack of educational experience and the presence of patients' special needs.

Another key aspect of this study centered on receiving didactic teaching and clinical preparation in SND at the undergraduate level. In the present study, a high percentage of respondents agreed that they should have SND component in their final year. The lack of exposure to SND during the undergraduate years reflected by the fact that a large number of the dentists in WA would consider Continuing Professional Development courses in SND which were consistent with what had been reported by dentists in another Australian study [30]. There was also consistency in terms of a lower interest in commencing postgraduate training across both states [30]. This was similar to the findings of another study in which the desire to undergo additional training in SND was more apparent among those who had previous training in the management of patients with special needs [42].

The provision of comprehensive oral and dental care to meet the complex individual needs of people with special needs cuts across a number of dental specialties and requires additional specialist knowledge, skills and training. However, because the only low number of dental graduates continue onto postgraduate training programs, particularly in SND, many dentists rely on their undergraduate training when treating special needs patients [44]. This was no different in the present study especially considering that there were no SND specialists registered in WA. In order for them to manage this patient cohort, the general dentists would rely on their undergrad training or CPD courses attended post-graduation. Patients whose special needs were more complex and fell outside the scope of general practice had traditionally referred to paedodontists [29,34], or Oro-Maxillofacial Surgeons [34] since children with specialist oral care needs were often treated for by paediatric dentists. If their access to oral care is to be assured as they move through adolescence to adulthood, this will require a transition to other oral health specialists skilled and trained in their management [34,59]. Today, in a country such as Australia, a clear treatment pathway is now available for patients with complex special needs under the auspices of Specialists in Special Needs Dentistry. In this study, around 40% of dentists reported that sometimes they referring the patient to get a second opinion or when they felt uncomfortable providing treatment for medically complex patients, however, they always referred the patients with psychological problems.

The danger in creating such a broad speciality to cater for this patient cohort could reinforce a sentiment of "Let someone else do it" [60]. In order for this to be avoided, a national effort is needed to make the necessary changes to transform the experience of people with special needs and demonstrate the benefits for all Australians in having more inclusive communities [23]. Together with this, there is a need

for increased knowledge, abilities, and willingness among a greater number of dental practitioners to provide services for individuals with special needs [23] regardless of a separate specialisation since it will take some time before sufficient SND specialists are available to cater for the 4.2 million individuals with advanced health care needs. This, together with increased disease chronically reported by the Australian Institute of Health and Welfare [57] and population projections of more individuals retaining teeth into their older years [6] indicates a need for better understanding of attitudes and needs of the general workforce. Once this baseline data is gathered there can be a greater push towards developing advanced training centred on the management of special needs patients at both student and practitioner levels.

Conclusion

General dentists play an important role in the provision of dental care to people with special needs. This requires special skills, knowledge, patience, willingness, empathy and motivation. However, lack of dentist skills and knowledge in managing people with special needs were one of the most frequent barriers that cited by dentists, carers and patients to providing treatment for people with special needs. The level of awareness of SND amongst dentists may be increased with more professional developmental training programs in SND. However in order to further direct the growth of SND more research is needed, including studying other factors that may influence dentists' willingness to treat people with special needs.

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