

Special Needs Dentistry Training and Education for Preparedness in the Oral Health Therapy curriculum: Taking a **STEP** Forward

Dorothy Kiat Li Koh
BOHT, DipDHT

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Doctor of Philosophy

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Statement of Originality

This thesis is submitted in fulfilment of the requirements for the degree of Doctor of Philosophy (Medicine and Health) at The University of Sydney. I hereby declare that the research performed in this thesis is an original report of my work and has not been submitted, in whole or in part, in any previous application for a degree. Except where indicated otherwise by reference or acknowledgement, this thesis is the product of my own work.



Dorothy Kiat Li Koh

12 December 2025

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Authorship Attribution Statement

The research presented in this thesis was conducted during my (DK) PhD candidature from March 2022 to December 2025 at the Faculty of Medicine and Health, University of Sydney. This work was carried out under the guidance of my supervisors, Professor Woosung Sohn (WS), A/Professor Delyse Leadbeatter (DL), A/Professor Archana Pradhan (AP) and A/Professor Melanie Aley (MA). A/Professor Janet Wallace (JW) was involved during the initial phase of this candidature but later stepped down from the supervisory team in September 2022. A/Professor Archana Pradhan and A/Professor Melanie Aley joined the team in September 2023. Prof Woosung Sohn served as the lead supervisor from March 2022 to September 2024, and A/Prof Archana Pradhan assumed the role of lead supervisor from September 2024 to December 2025.

I am the first author of the three published and two submitted manuscripts that are part of this thesis. I made substantial contributions to each project, developing the study design and methodology, obtaining ethics approval, being responsible for overseeing recruitment and data collection, analysis, drafting the manuscripts, and making revisions in response to peer review. In the preparation of this thesis, various tasks were undertaken by multiple contributors to ensure the quality and integrity of the research were maintained. The following statement details the specific contributions made by each author, recognising the collaborative effort that forms this thesis:

Chapter 1: Introduction and background

Contribution	Authors
Chapter drafting	DK
Critical review of the chapter	DK, MA, DL, WS, AP

Chapter 2: Barriers and Facilitators Influencing Dental Practitioners' Willingness to Treat People with Disability: A Scoping Review

Contribution	Authors
Development of the study concept and design	DK, JW, DL, WS
Data collection	DK
Data analysis and interpretation	DK
Manuscript drafting	DK
Critical review of the manuscript	DK, JW, DL, WS

Chapter 3: A Content Analysis of Special Needs Dentistry Curriculum in Australian Oral Health Programs

Contribution	Authors
Development of the study concept and design	DK, DL, MA, WS, AP
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Data analysis and interpretation	DK, DL, MA, AP
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Critical review of the manuscript	DK, DL, MA, WS, AP

Chapter 4: Oral Health Care for People with Disability: Curriculum Content in Oral Health Programs

Contribution	Authors
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Data collection	DK
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Chapter 5: Perception of Special Needs Dentistry among Oral Health Students and Practitioners

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Development of the study concept and design	DK, DL, AP, WS, MA
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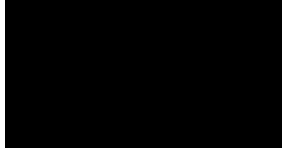
Chapter 6: Undergraduate and Postgraduate Special Needs Dentistry Curricula for Oral Health Therapists: A Delphi Study

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Development of the study concept and design	DK, MA, DL, WS, AP
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Critical review of the manuscript	DK, MA, DL, WS, AP

Chapter 7: Discussion and Conclusion

Contribution	Authors
Chapter drafting	DK
Critical review of the chapter	DK, DL, MA, WS, AP

In addition to the authorship attribution statements above, in cases where I am not the corresponding author of a published item, all reproduced material has been fully cited and appropriately acknowledged.



Dorothy Kiat Li Koh

12 December 2025

As the supervisor for the candidature upon which this thesis is based, I can confirm that the authorship attribution statements above are correct.



A/Professor Archana Pradhan

12 December 2025

Artificial Intelligence Attribution Statement

During the preparation of the thesis, the author used ChatGPT for the purposes of text enhancement. The use of this generative AI tool included paraphrasing, improving sentence structure, correcting spelling and grammar, providing examples of academic phrasing, and assisting with formatting or reorganising text. The author confirms that where text was modified or assisted by generative AI, it was carefully reviewed for possible errors, inaccuracies, and bias. The author takes full responsibility for the submitted thesis and ensures the work is their own and has used generative AI within the parameters outlined in the University of Sydney's generative AI guide for researchers.

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Abstract

People with disability experience significantly poorer oral health than the general population, largely due to persistent barriers in accessing dental care. Despite the recognition of Special Needs Dentistry (SND) as a specialty in Australia in 2005, the small number of registered specialists highlights the need to engage the broader oral health workforce in addressing inequities. The oral health workforce, consisting of dental therapists (DTs), dental hygienists (DHs), and oral health therapists (OHTs), represents a skilled yet underutilised workforce with considerable potential to play a greater role in SND. However, limited education and clinical training remain as major barriers to their preparedness and confidence in managing the dental needs of people with disability. While calls to strengthen SND education have increased in recent years, documentation of how SND is delivered in oral health curricula remains scarce.

This thesis shifts the focus onto the oral health workforce, with the aim of investigating the educational preparation, perceptions, and potential role of the workforce, and to develop a SND curriculum framework for oral health therapy programs. A multi-phase approach was adopted to systematically address these aims. A scoping review was initially undertaken to identify the global barriers and facilitators influencing practitioners' willingness to provide dental treatment to people with disability. The subsequent phases examined the trends in SND education integrated in oral health programs and evaluated how these programs prepare students for clinical practice, including the challenges they faced. The latter phases focused on understanding the perspectives of oral health students and practitioners regarding their confidence, preparedness, and willingness to engage in SND care. Finally, to integrate these findings into a practical outcome, a Delphi study was conducted to establish consensus on key curriculum domains, learning outcomes, and teaching strategies for SND education in oral health therapy training.

The findings revealed persistent educational gaps, particularly in clinical training, which contributed to low confidence of the oral health workforce in providing care to people with disability. Survey results demonstrated strong interest among practitioners in pursuing further education, with many expressing willingness to integrate care for people with

disability into their practice if better supported. The project concluded with a Delphi study, which achieved expert consensus on a comprehensive SND curriculum framework for OHTs, emphasising the integration of theoretical knowledge with clinical training, the development of communication and behaviour management skills, and a strong foundation in patient-centred care.

This thesis contributes new knowledge by highlighting the important role of the oral health workforce in advancing inclusive oral healthcare and by proposing a structured, consensus-based curriculum framework for SND education. Broader national and international initiatives are needed to validate and adapt this model across oral health programs, ensuring that the workforce is equipped with the skills, confidence, and values required to reduce oral health disparities and improve quality of life for people with disability.

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List of Abbreviations, Acronyms and Terminologies

Table 1. Abbreviations, acronyms and definitions used in this thesis

Abbreviations and acronyms	Definition
ADC	Australian Dental Council
ADOHTA	Australian Dental & Oral Health Therapists' Association
AFDO	Australian Federation of Disability Organisations
AHPRA	Australian Health Practitioner Regulation Agency
ASSCID	Australian Society of Special Care in Dentistry
BOH/T	Bachelor of Oral Health/Therapy
CODA	Commission on Dental Accreditation
CPD	Continuing Professional Development
CRPD	Committee on the Rights of Persons with Disabilities
CYDA	Children and Young People with Disability Australia
DBA	Dental Board of Australia
DHAA	Dental Hygienists Association of Australia
DHs	Dental Hygienists
DTs	Dental Therapists
HREC	Human Research Ethics Committee
iADH	International Association for Disability and Oral Health
ICF	International Classification of Functioning, Disability and Health
IPE	Interprofessional education
JBI	Joanna Briggs Institute

LOs	Learning outcomes
NDIS	National Disability Insurance Scheme
OHTs	Oral Health Therapists
OH workforce	Oral Health Workforce
PG	Postgraduate
PWDA	People with Disability Australia
RACDS	Royal Australasian College of Dental Surgeons
REDCap	Research Electronic Data Capture
SCD	Special Care Dentistry
SND	Special Needs Dentistry
TAFE	Technical and Further Education
WHO	World Health Organization
UG	Undergraduate

Table 2. Terminology and definitions used in/for this thesis

Terminology	Definition
Barriers	Factors that reduces the intention to provide dental treatment for people with disability.
Dental (or oral health) practitioner	Dental professional who is qualified to perform dental procedures on patients. This include specialists, dentists, dental hygienists, dental therapists, oral health therapists, dental prosthetists.
Dental hygienist	Dental practitioner who focuses on periodontal health and disease prevention. Their scope includes oral health assessment, preventive interventions, diagnosing and

	<p>managing periodontal diseases through non-surgical periodontal therapy.</p> <p><i>Refer to Chapter 1, Part C for more information.</i></p>
Dental therapist	<p>Dental practitioner who performs examination, diagnoses, manages and provides preventive dental services, including limited range of restorative care and non-surgical extractions.</p> <p><i>Refer to Chapter 1, Part C for more information.</i></p>
DHAA/ADOHTA	<p>As of July 2025, Australian Dental and Oral Health Therapists' Association (ADOHTA) and Dental Hygienists Association of Australia (DHAA) merged to form a new association, called the Oral Health Association of Australia (OHAA).</p>
Facilitators	<p>Factors that enhances the experience of providing dental treatment for people with disability.</p>
Interprofessional	<p>According to the World Health Organisation (WHO), interprofessional education (IPE) occurs when students from two or more professions learn about, from, and with each other to enable effective collaboration and improve health outcomes.</p> <p>The Australian Dental Council (ADC) defines interprofessional collaborative practice as multiple health workers from different backgrounds working together with patients, families, and communities to deliver high-quality care.</p>
Intersectoral	<p>A broader approach that goes beyond healthcare, involving collaboration between different sectors.</p>

Oral health institutions	Institutions that offers Dental Hygiene, Dental Therapy or Oral Health Therapy programs.
Oral health programs	Dental Hygiene, Dental Therapy or Oral Health Therapy programs.
Oral health therapist	Dual-qualified dental practitioner trained in the combined roles of dental therapist and dental hygienist. <i>Refer to Chapter 1, Part C for more information.</i>
Oral health (therapy) workforce	A term for dental practitioners comprises of dental therapists, dental hygienists and oral health therapists.
People/Patients with disability	People who experienced physical disabilities, mental impairment, intellectual and cognitive disorder, developmental disability, sensory and behavioural, geriatric, the underserves or a combination. In line with the Australian Government's inclusive language guidelines, this document adopts more inclusive terminology by replacing the term "special needs" with "disability", and including person-first language when referring to people with disability. <i>See also special needs dentistry</i>
Special needs dentistry	Also known as special care dentistry. According to Royal Australasian College of Dental Surgeons (RACDS), special needs dentistry is “the branch concerned with the oral healthcare of people that require special methods or techniques to prevent or treat oral health problems, or where their conditions necessitate special dental treatment plans”.
Vulnerable population	Also referred to as ‘Priority Population’. Population that face systemic barriers limiting their access to essential services, such as healthcare and dental care.

Peer-reviewed Publications included in this Thesis

1. **Koh D**, Wallace J, Leadbeatter D, Sohn W. Barriers and Facilitators Influencing Dental Practitioners' Willingness to Treat People with Disability: A Scoping Review. The Australian & New Zealand Journal of Dental and Oral Health Therapy. 2024;12(2):22-31. **[Chapter 2]**
2. **Koh D**, Leadbeatter D, Aley M, Sohn W, Pradhan A. A content analysis of Special Needs Dentistry curriculum in Australian oral health programs. Eur J Dent Educ. 2025; [Epub ahead of print]. doi:10.1111/eje.70082. **[Chapter 3]**
3. **Koh D**, Pradhan A, Aley M, Sohn W, Leadbeatter D. Oral Health Care for People with Disability: Curriculum Content in Oral Health Programs. Journal of Dental Education. 2025;89(11):1627-35. 10.1002/jdd.13894 **[Chapter 4]**

Conference Presentations

1. **Koh D**, Wallace J, Leadbeatter D, Sohn W. Oral Health and Demand of Special Needs Population. The University of Sydney, Faculty of Medicine and Health; 2023 [Oral Presentation]
2. **Koh D**, Pradhan A, Aley M, Sohn W, Leadbeatter D. Enhancing Oral Health Care for Patients with Special Needs: A survey of Curricula in Oral Health Institutions. Australian Dental and Oral Health Therapists' Association, Dental Hygienists Association of Australia (ADOHTA-DHAA) National Congress; 2024; Sydney, Australia. [Oral Presentation]
3. **Koh D**, Pradhan A, Aley M, Sohn W, Leadbeatter D. Enhancing Oral Health Care for Patients with Special Needs: A Survey of Curricula in Oral Health Institutions. Sydney Dental School Research Day; 2024; Westmead Hospital, Sydney. [Oral Presentation]
4. **Koh D**, Pradhan A, Aley M, Sohn W, Leadbeatter D. Enhancing Oral Health Care for People with Disability: Curriculum Content in Oral Health Programs. College of Oral Health Academics (COHA) Conference; 2024; New Zealand. [Poster Presentation]
5. **Koh D**, Pradhan A, Aley M, Sohn W, Leadbeatter D. Enhancing Oral Health Care for People with Disability: Curriculum Content in Oral Health Programs. International Oral Health Congress; 2025; Singapore. [Poster/oral presentation] **Awarded 'Best Oral Presenter Award'**.
6. **Koh D**, Leadbeatter D, Pradhan A, Sohn W, Aley M. Perception of Special Needs Dentistry among Final Year Oral Health Students and Graduates: An Online Survey. International Oral Health Congress; 2025; Singapore. [Poster/oral presentation] **Awarded 'Winner (1st) for Poster Competition'**.
7. **Koh D**, Leadbeatter D, Pradhan A, Sohn W, Aley M. Perceptions of Special Needs Dentistry among Oral Health Students and Practitioners. Faculty of Medicine and Health Higher Degree by Research (FMH HDR) Conference; 2025; Westmead, Sydney. [Oral Presentation]
8. **Koh D**, Aley M, Leadbeatter D, Sohn W, Pradhan A. Undergraduate and Postgraduate Special Needs Dentistry Curricula for Oral Health Therapists: A Delphi

Study. Sydney Dental School Research Day & International Conference for Future Dentistry 2025; Westmead, Sydney. [Poster Presentation]

9. **Koh D**, Aley M, Leadbeatter D, Sohn W, Pradhan A. Developing Special Needs Dentistry Curricula for Oral Health Therapists. International Association for Dental, Oral, and Craniofacial Research Australia New Zealand Division (IADR-ANZ Colgate Competition); 2025. [Abstract submission] **Awarded 'Sydney Section Postgraduate winner'**.
10. **Koh D**, Aley M, Leadbeatter D, Sohn W, Pradhan A. Developing Special Needs Dentistry Curricula for Oral Health Therapists. International Association for Dental, Oral, and Craniofacial Research Australia New Zealand Division (IADR-ANZ Colgate Competition); 2025. [Poster/Oral presentation]

CHAPTER 1

Introduction and Background

Chapter Overview

Chapter 1 is structured into four parts to provide a comprehensive foundation for this thesis.

- **Part A** discusses the prevalence of disability and explores the patient perspective, highlighting the unique oral health needs, challenges, and barriers faced by people with disability when accessing dental care.
- **Part B** provides an overview of Special Needs Dentistry (SND) and shifts to the practitioners' perspective. It examines the factors influencing practitioners' intention to provide dental care to people with disability, emphasising the connection between SND education and preparedness to deliver appropriate care. This section also presents how the research aligns with the national initiatives, addressing the evolving needs of SND training for the dental workforce.
- **Part C** presents the oral health workforce, detailing their roles and how they can contribute to SND. This section also discusses the summary gaps of the current knowledge in SND education.
- **Part D** outlines the aims and objectives of this thesis, which seeks to better prepare the workforce to meet the growing oral health demands of people with disability.

The term *special needs* has traditionally been used to describe a wide range of disabilities, medical conditions, and additional healthcare needs.² In this thesis, the term *disability* is used instead, reflecting inclusive terminology consistent with current Australian conventions.³ This approach is aligned with guidance from the Australian Federation of Disability Organisations (AFDO)⁴ and the People with Disability Australia (PWDA) language guide,³ both of which advocate for inclusive, person-first language that reflects the social model of disability. This model emphasises that disability arises from the interaction between individuals and societal barriers, rather than solely from medical conditions or impairments.³

⁴ As the use of acronyms for “people with disability” is generally discouraged in disability-inclusive language, this thesis consistently uses the full term. This ensured the focus is on the individuals rather than a homogenous group.⁵

Part A

People with Disability

Disability is a complex and multidimensional concept that affects millions of people worldwide. Disability conditions can include physical disability, intellectual and developmental disability, psychiatric disorders, complex medical conditions, and aged care.² According to the World Health Organisation (WHO), more than 1.3 billion people, around 16% of the global population, live with significant disability.⁶ In Australia, there are approximately 4.4 million people, or one in six, with an additional 22% of the population experiencing chronic health conditions. Of those with disability, one in three has a profound level of impairment, while one in four faces significant mental health challenges.⁷

Beyond medical diagnoses, disability reflects the interaction of functional, social, and environmental factors that influence everyday life. The WHO's International Classification of Functioning, Disability, and Health (ICF) provides a holistic framework for understanding disability. Within the ICF, disability is defined as the outcome of interactions between impairments in body functions and structures, limitations in daily activities, restrictions in participation, and broader environmental and personal factors (**Figure 1**).⁸ This perspective is vital. It acknowledges that disability is not only about what a person cannot do, but also about how society can remove barriers and create opportunities for their inclusion.

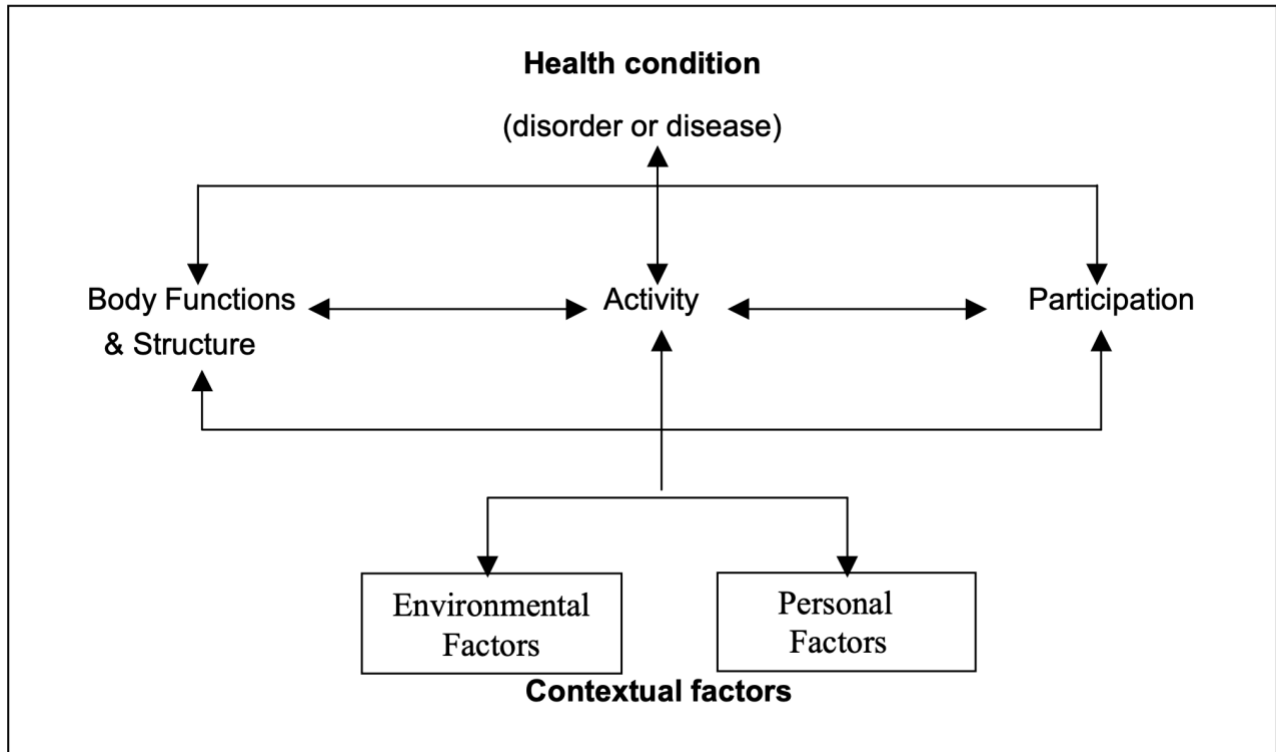


Figure 1. The ICF Model: Interaction between ICF components⁸

Source: World Health Organisation. *Towards a common language for functioning, disability and health: The International Classification of Functioning, Disability and Health (ICF)*. 2002. Reproduced with permission according to Creative Commons Attribution 3.0 International License: <https://creativecommons.org/licenses/by/3.0/>

Oral Health of People with Disability

Everyone is vulnerable to oral diseases. Oral diseases can affect anyone regardless of age, gender, or background. However, poorer general health, adverse effects of medications, and impairments that limit independence in daily oral hygiene contribute to increased vulnerability to oral health problems for people with disability.⁹ In many cases, oral health is overlooked or considered secondary to other medical needs, leading to greater neglect compared with the general population. Reduced access to regular dental care further compounds this problem, leaving many with unmet treatment needs.¹⁰

Depending on the nature of the impairment, people with disability may present with communication and behavioural issues, making it challenging to diagnose and treat the dental problem effectively. The difficulty in accessing dental services, including the limited availability of dental practitioners who are trained to work with people with disability, has

resulted in an ongoing cycle of untreated disease, poorer treatment outcomes, and reduced quality of life (**Figure 2**).¹¹



Figure 2. The cascading impact on accessibility to dental services for people with disability¹²

In 2018, it was reported that approximately half (51%) of the disability population in Australia saw a dental practitioner in the last 12 months.⁷ Access to and provision of dental services for this population remain inadequate.^{13, 14} It was highlighted that ‘people with disability have been and continue to be subject to systemic neglect in the Australian health system’.¹⁵ Dental diseases are reported to be up to seven times more prevalent in people with disability compared to the general population.¹⁶ These realities raise an important question: *What underlying factors contribute to the ongoing challenges faced by people with disability in utilising dental services?*

Barriers and Access to Dental Care

Barriers, by definition, are obstacles or challenges that impede access to essential dental services.¹³ In this context, they include physical, financial, informational, patient and practitioner-related factors that limit the accessibility of oral healthcare. Access to oral healthcare remains a significant challenge for people with disability.¹⁷ These persistent barriers not only limit their ability to seek timely treatment but also prevent them from receiving the care necessary to maintain optimal oral health and overall well-being (**Table 1**).¹⁸

Table 1. Barriers to accessing oral healthcare experienced by people with disability

Barriers to accessing oral healthcare experienced by people with disability	
Physical accessibility	<ul style="list-style-type: none"> • Accessibility and transport barriers¹⁹⁻²⁵ • Architectural or equipment limitations^{23, 25, 26}
Informational	<ul style="list-style-type: none"> • Lack of accessible, timely information about dental care needs and recommended procedures^{13, 27, 28} • Lack of access to supported decision making and opportunities for providing informed consent^{13, 29} • Lack of ongoing, accessible information and education about preventative oral health^{13, 28} • Lack of awareness of sedation options¹³
Patients or carers	<ul style="list-style-type: none"> • Patient not able to cooperate^{19, 22, 30} • Medical conditions complicate dental treatment^{19, 22, 24, 25} • Dental fear and anxiety^{19, 20, 24} • Communication problems^{22, 26} • Anxious carers or parents¹⁹ • Dental care not priority¹⁹ • Lack of perceived needs^{24, 26}
Financial or time factors	<ul style="list-style-type: none"> • Cost of dental care^{19, 21, 23, 24, 28, 30} • Exclusion of dental care from Medicare or absence of dental insurance^{19, 24, 30} • Long wait times for appointments^{21, 23} • Time constraint^{19, 25}
Practitioners-related	<ul style="list-style-type: none"> • Lack of dentists trained in special needs dentistry or inability to find a clinic that caters to their needs,^{19-21, 23, 24, 26, 31} leading to subsequent dismissal or referral • Negative attitudes and assumptions about disability,³¹ or feeling of rejection¹⁹ • Lack of dentists practicing in the public sector¹³

Among these barriers, practitioner-related issues are particularly concerning and directly relevant to the topic of discussion. Many people with disability report difficulties in finding a dental practitioner willing to receive them as a patient, or experience denial of access to services (**Figure 3**).³² Health services are often perceived as inadequately

designed to accommodate their needs, and healthcare providers were described as lacking the necessary disability knowledge and skills to deliver appropriate care.³³

Lilyana

'A lot of doctors don't seem to understand ... people with disability and how to work with them. They think it's too hard.'

Figure 3. View of People with Disability, highlighting that unless changes are made, people with disability will continue to face barriers³⁴

Source: Royal Commission into Violence Abuse Neglect and Exploitation of People with Disability. Voices of People with Disability - Book 1. 2023. Reproduced with permission according to Creative Commons Attribution 4.0 International License: <http://creativecommons.org/licenses/by/4.0/>

A key factor contributing to this issue is inadequate training and experience, where some dental practitioners may not have received sufficient training to effectively manage oral problems for people with additional healthcare needs.^{31, 35, 36} This unfamiliarity can create reluctance to provide dental care.³⁷ Some people with disability may exhibit behavioural difficulties that require additional time, patience, and understanding.³⁶ Dentists who are not accustomed to managing these needs may feel unequipped to handle these challenges. Carers and people with disability emphasise that if the practitioners appear unsure or insecure, it can heighten anxiety for both patients and their carers, discouraging engagement with dental services.³¹ A conceptual map (**Figure 4**) supports these findings by providing a comprehensive overview of the challenges and opportunities in disability training. A key observation is the relationship between provider attributes and patients' feelings of rejection, with provider confidence emerging as a critical factor linking these elements. Attributes such as compassion, empathy, and clear communication were highlighted as crucial for successful treatment outcomes. Dental practitioners with greater experience and specialised training in disability care demonstrated higher confidence levels, which translated into more effective communication and empathetic interactions.³¹ Closely related, another research in geriatric dentistry highlighted a parallel challenge: dentists with limited experience, exposure, and insufficient education in managing the oral health of older

patients, particularly those with severe disabilities, are significantly less likely to be willing to treat them.³⁸

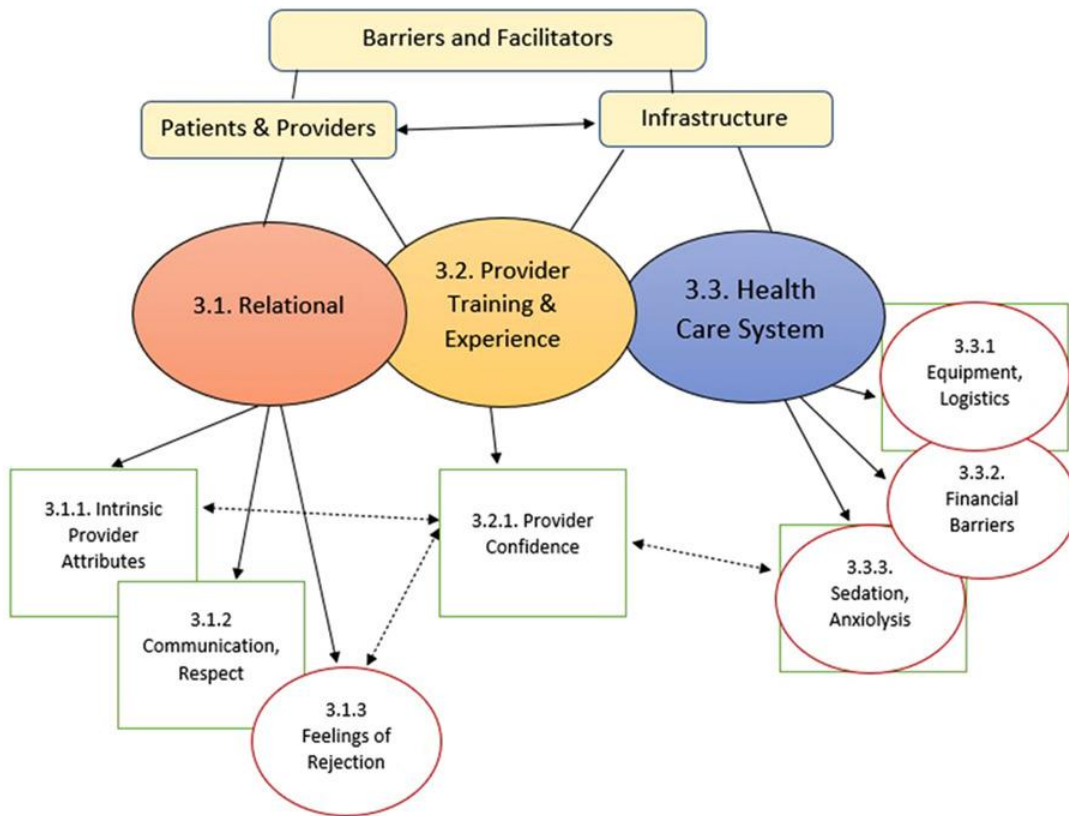


Figure 4. Thematic map of barriers and facilitators for adults with additional oral health care needs. Key: green squares indicate facilitators; red circles indicate barriers³¹

Source: Chavis SE, Roth E, Dababnah S, Tepper V, Badawi DG, Mullins CD. Qualitative inquiry from multiple perspectives of barriers and facilitators of oral health care for adults with disabilities. *Spec Care in Dent.* 2023;43(1):47-55. 10.1111/scd.12734. Reproduced with author's permission.

Prolonged wait times for dental services are another significant barrier.³⁶ 1 in 8 (13% or 202,000) Australians with disability who need to see a dental practitioner are placed on a public dental waiting list. Of those who were waiting, 7 in 10 (70% or 98,000) waited 1 month to more than 1 year before receiving dental care. 34.6% of people with disability aged under 65 living in major cities waited at least 6 months on the public dental waiting list before receiving dental care. The percentage was nearly doubled (63.9%) in outer regional and remote areas.⁷ This extended delay in accessing timely care may exacerbate existing dental problems and lead to poorer treatment outcomes.²⁶ The anticipation of a long wait can deter

individuals from seeking necessary dental care, particularly if they have had negative experiences or anxiety related to dental visits, further compounding the problem.³⁹ Delays in accessing dental care can greatly impact their overall quality of life, leading to pain and difficulties with eating. Poor oral health has broader implications beyond the mouth, being linked to various systemic conditions such as heart disease, diabetes, and respiratory infections.⁴⁰ For people with disability who might already be managing multiple health issues, the added burden of poor oral health can complicate their overall medical care and health outcomes.⁴¹

The Royal Commission into Violence, Abuse, Neglect and Exploitation of People with Disability stated, “Quality health care is an essential service and a human right in itself”.³² Similarly, the Committee on the Rights of Persons with Disabilities (CRPD) also emphasised that people with disability have the right to ‘the enjoyment of the highest attainable standard of health without discrimination on the basis of disability’.¹⁸ Despite these principles, people with disability continue to face poor accessibility and significant inequalities in dental care.⁴²⁻⁴⁴ Addressing these challenges requires targeted strategies, with education emerging as a viable and impactful solution in the field of disability care.⁴⁵ Equipping practitioners with the expertise to provide comprehensive care is a vital step to address the growing demand for dental services within this underserved population.^{36, 46, 47}

Part B

Dental Practitioners

Dental practitioners are fully qualified, licensed professionals competent in diagnosing, preventing, and treating oral diseases. This group encompasses general dentists, specialists, dental hygienists, dental therapists, oral health therapists, and dental prosthetists. In Australia, dental practitioners represent approximately 3% of the health workforce.⁴⁸ Their responsibilities extend beyond treatment to include providing guidance and education on proper oral hygiene practices to maintain healthy oral health status, within their level of competency and scope of practice.⁴⁹

Special Needs Dentistry

The Royal Australasian College of Dental Surgeons (RACDS) defines special needs dentistry (SND) as “the branch of dentistry that is concerned with the oral health care of people with an intellectual disability or medical, physical, and/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”.⁵⁰ The term SND can be used interchangeably with special care dentistry (SCD). Both SND and SCD involve scopes of practice where procedures are tailored to accommodate the unique healthcare needs of people with disability.⁵¹ It is acknowledged that some countries have moved away from the term SND, often preferring the broader terminology SCD. However, for the purpose of this thesis, the term SND will be used consistently, as it reflects the officially recognised specialty in Australia.

Despite its recognition as a specialty in Australia in the early 2000s, SND remains a very small profession, with only 29 registered specialists in 2025 – representing less than 1.5% of all dental specialists, and 0.1% of all dental practitioners.⁵² This limited workforce is particularly concerning given the steadily rising prevalence of disability.⁵³ Mobilising the entire dental team to work collaboratively is therefore crucial to meet the dental demands of people with disability. Understanding the barriers that limit practitioners’ involvement in caring for this population is a critical first step. Identifying and addressing these barriers is essential to fostering a more inclusive approach to dental care.

Barriers and Enablers to the Provision of Dental Care for People with Disability

Dental practitioners frequently encounter barriers that restrict their ability or willingness to treat patients with disability. A joint submission by the Australian Federation of Disability Organisation (AFDO), Children and Young People with Disability Australia (CYDA), Down Syndrome Australia, and Inclusion Australia identified several barriers that dentists encounter when providing care to people with disability, summarised in **Table 2**.

Table 2. Barriers experienced by dental practitioners when providing treatment for people with disability¹³

Source: Australian Federation of Disability Organisations, Children and Young People with Disability Australia, Down Syndrome Australia, Inclusion Australia. Joint submission to the Select Committee into the Provision of and Access to Dental Services in Australia. June 2023. Reproduced with permission according to Creative Commons Attribution 4.0 International License: <http://creativecommons.org/licenses/by/4.0/>

Barriers Experienced by Dental Practitioners
<ul style="list-style-type: none">• Lack of opportunities for student dentists to upskill in SND at a tertiary level and beyond• Funding models that don't support dentists to provide additional time and resources to people who may need it• Workforce shortages in metropolitan, but especially, regional, rural and remote areas• Lack of access to or upkeep of specialist equipment to treat people with complex needs• Lack of funding to support oral healthcare involvement in multidisciplinary intervention

The scoping review, further detailed in **Chapter 2**, reinforces these concerns, consistently identifying insufficient education and training in SND as a major barrier.⁵⁴⁻⁵⁷ Education in SND at undergraduate levels is often less extensive compared to other dental specialties, despite the fact that dental practitioners frequently encounter people with disability in their professional practice.⁵⁸ Majority reported that the educational opportunities provided during their undergraduate training were inadequate.⁵⁹⁻⁶¹ The lack of preparation directly influences professional behaviour, attitudes, and comfort levels when caring for patients with disability.⁶²⁻⁶⁶

Educational Gaps in SND

Despite improvements in oral health over recent decades, significant disparities remain in Australia.¹⁴ The socially disadvantaged groups, including low-income individuals, rural and remote populations, Indigenous communities, the elderly, and people with disability, bear the greatest burden.⁶⁷ Recognising these disparities, the Australian Dental Council

(ADC) emphasises that graduates must demonstrate competence in treating those who face significant barriers to accessing oral healthcare.⁶⁸ To meet these expectations, it is critical that dental practitioners receive adequate training to address the unique challenges and needs of this population. However, inadequate education in SND remains one of the most commonly reported barriers to care.^{36, 58} SND is an often-overlooked area within the dental speciality, with a noticeable absence of structured learning objectives, teaching methodologies, or assessment frameworks.⁶⁹ Where included, SND is typically incorporated into other dental topics, competing for priority with core subjects, such as restorative care, in an already overcrowded curriculum.⁶⁰ The inadequate curriculum time limits the focus on SND, which then leaves graduates feeling underprepared.^{70, 71}

The consequences of these educational gaps are well documented: positive educational experiences in SND are associated with greater confidence,⁴⁷ increased willingness to treat patients with disability,^{62, 72, 73} while inadequate training results in discomfort, avoidance, and unnecessary referrals that burden specialist services.⁷³⁻⁷⁵ Supervised clinical oral health care is particularly influential in building practitioners' confidence and competence,^{62, 76} yet clinical opportunities remain limited compared with didactic instruction.⁷⁷ Without adequate exposure, the students can learn the theory but may find it difficult to translate it into practice.⁷⁸ This may result in a domino effect where graduates continue to feel ill-equipped to manage this population effectively. Authors have therefore called for stronger integration of clinical training alongside theoretical teaching to bridge this gap.^{64, 79, 80} Increased exposure to patients with disability during training not only improves practitioners' confidence but also fosters their intention to pursue additional education, which is perceived as valuable to their profession.⁶⁰ Despite this, many practitioners still report a tendency to refer patients with disability to specialists without first exploring whether care could be delivered within general dental practice.⁸¹ Given that nine out of ten people with disability could be treated in primary care settings,⁵⁵ the extent to which this is achieved largely depends on the practitioners' knowledge, skills and willingness to integrate people with disability into their professional practice.^{13, 82}

Opportunities for supervised clinical placements are a concern highlighted during a Public Hearing, which recommended expanding clinical placements as a priority.³² Addressing this is crucial, as insufficient undergraduate experience can later become a barrier to providing oral health care for people with disability.³² Enhancing students' confidence through increased clinical opportunities could be a viable approach to improving the provision of SND.⁸² The Australian Government Department of Health and Aged Care has also prioritised improving access to clinical placements in disability health services (Recommendation 6.28). This initiative includes expanding learning opportunities by integrating structured placements within interprofessional teams with education providers and clinical placement sites.³³

The Path Forward to Strengthen SND Education

Strengthening SND education requires a comprehensive approach that integrates theoretical learning with practical training.⁸³ Incorporating clinical training alongside didactic teaching is crucial for alleviating practitioners' anxiety and fear,⁸⁴ while also enhancing their competence and confidence in providing care.^{58, 75, 85} Continuous professional development opportunities, such as workshops, seminars, and advanced courses further reinforce these abilities by keeping practitioners informed on the latest advancements in SND.^{37, 63, 78, 86} In addition, practitioners also express a desire to pursue further postgraduate training,^{69, 87} explore opportunities to network with, or receive guidance from, and communicate with specialists and more experienced clinicians.^{35, 82, 88}

Not only in the field of dentistry, literature on medical education similarly indicates that many new graduates feel underprepared, resulting in negative impacts at both personal and systemic levels. A study in the medical field concludes that preparedness for practice is linked to learners' confidence as doctors and their integration into medical teams. Preparedness is closely associated with how medical undergraduates view themselves as professionals and how they perceive their educational environment.⁸⁹


Students and practitioners from several studies endorse the importance of undergraduate SND training and express strong interest in continuing their education to improve the quality of care provided to people with disability.^{37, 47, 90} Without systemic reform,

however, dental practitioners will continue to enter the workforce underprepared, perpetuating a cycle of discomfort and avoidance. Comprehensive and practical training are key factors in cultivating a more capable and willing workforce to meet the needs of this underserved population. If these educational gaps remain unaddressed, oral health inequities will persist, leading to more severe dental problems, increased healthcare costs, and a diminished quality of life for people with disability. Ensuring the quality of the education delivered to the students is therefore paramount in developing future dental practitioners who are competent in SND.^{78, 80}

National Initiatives

Recent Australian policy initiatives align with the need to improve SND education and clinical practice. *Australia's Disability Strategy 2021–2031* emphasises inclusion, rights, and better access to health services to address significant health inequities faced by people with disability (**Figure 5**). A major focus of the *National Roadmap* is the integration of disability health capability frameworks into training pathways. It calls for the inclusion of disability health training across all stages of health practitioner education, including entry-level programs, postgraduate training, in-service education, and continuing professional development (CPD).⁹¹

Roadmap – Australia’s Disability Strategy 2021–2031



Working together
Everyone has a role to play. We will work across governments and communities towards our shared vision.

Taking action
We will have an action-orientated approach to achieving clear goals. We will guide action and reform across Australia.

Connecting
We will listen to people with disability, their families and supporters, and respect what they have to say.

Accountability
We are responsible for our actions. We will regularly report on progress, and recognise where more work is needed.

Vision
An inclusive Australian society that ensures people with disability can fulfil their potential, as equal members of the community.

Strategy milestones



Outcome Areas

- Employment and Financial Security
- Inclusive Homes and Communities
- Safety, Rights and Justice
- Personal and Community Support
- Education and Learning
- Health and Wellbeing
- Community Attitudes

Connecting

- People with disability are at the heart of the Strategy. You can take part in the Strategy through:
- Australia's Disability Strategy Advisory Council
 - National Public Forums
 - State and Territory Forums
 - Public consultation to support reviews and new work of the Strategy
 - Australia's Disability Strategy Engagement Plan
 - 2025: Community Engagement Plan will set out more and different ways to take part in the Strategy
 - Good Practice Guidelines for Engaging with People with Disability

Taking action

- We are committed to improving the lives of people with disability through our actions:
- Targeted Action Plans, focusing on priority areas for change:
 - 2021-24: Community attitudes, employment, early childhood, safety, and emergency management
 - 2025-27: Inclusive homes and communities, community attitudes, and safety, rights and justice
 - The Guide to Applying Australia's Disability Strategy to support policy development and program design across government
 - State and Territory disability plans align with the visions and goals of Australia's Disability Strategy
 - Collaboration across governments to implement the Strategy

Impact

- We are responsible for our actions and their impact. We are held accountable by Australia's Disability Strategy:
- Outcomes Framework
 - Quarterly updates to the data
 - Outcomes Framework dashboard
 - Outcomes Framework annual report
 - Reporting
 - Annual Targeted Action Plan Reports
 - Two-yearly Implementation Reports
 - Data Improvement Plan
 - Independent Evaluations in 2025-26 and 2029-30

Legend: ● Complete ★ In progress

<https://www.disabilitygateway.gov.au/ads> Email: Australia'sDisabilityStrategy@dis.gov.au

DSS3540_Dvc2024

Figure 5. Roadmap - Australia's Disability Strategy 2021 - 2031

Source: Australia Government, Disability Gateway, Roadmap – Australia's Disability Strategy 2021–2031. 2021. Reproduced with permission according to Creative Commons Attribution 4.0 International License: <http://creativecommons.org/licenses/by/4.0/>

Complementing this, the *National Oral Health Plan* identifies people with disability as a priority population and sets strategic goals across six foundation areas: oral health promotion; access; systems alignment and integration; safety and quality; workforce; and research and evaluation (**Figure 6**).¹⁴

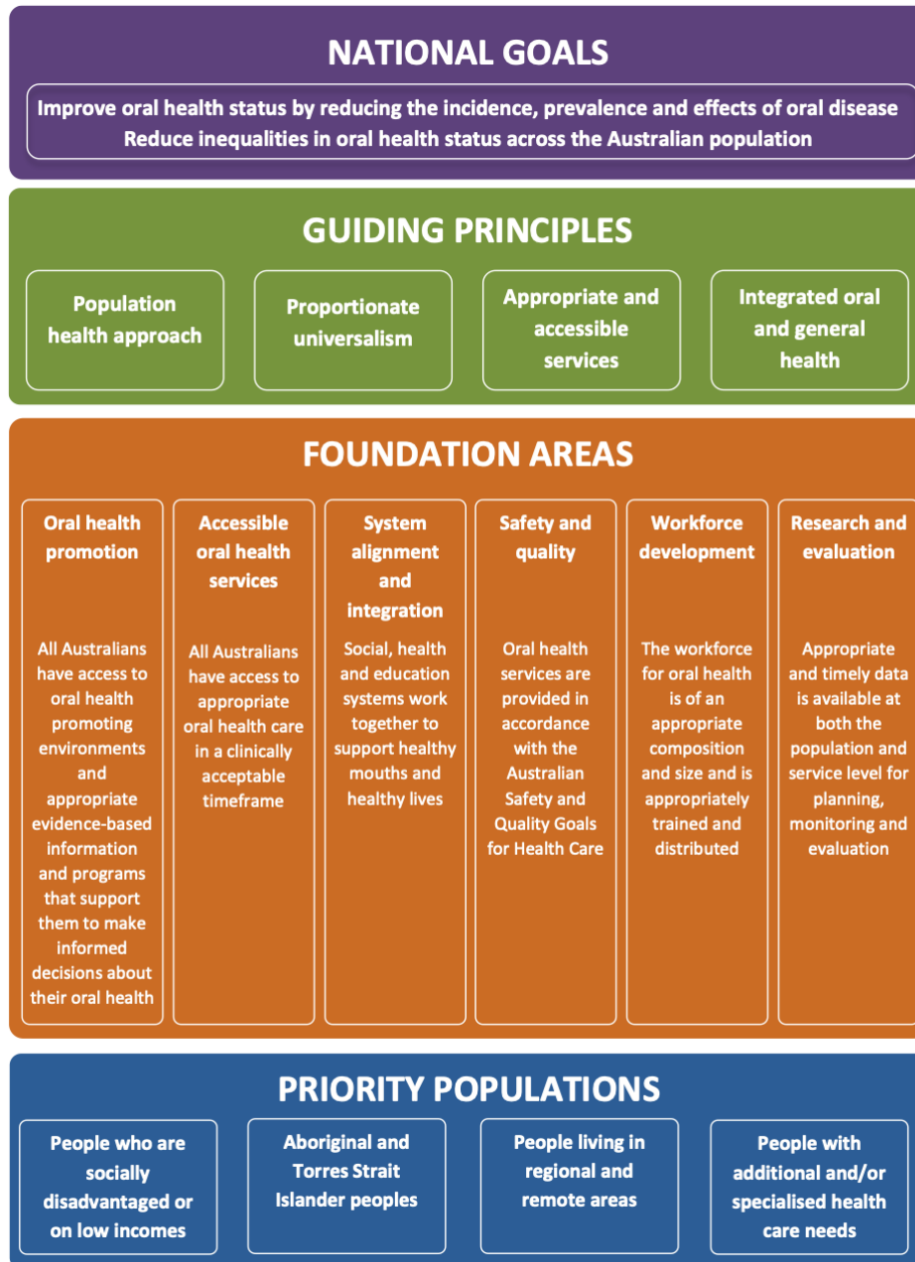


Figure 6. A summary diagram of the National Oral Health Plan¹⁴

Source: *National Oral Health Plan. Healthy Mouths Healthy Lives; Australia's National Oral Health Plan 2015-2024. 2015. Reproduced with permission according to Creative Commons Attribution 4.0 International License: <http://creativecommons.org/licenses/by/4.0/>*

A key priority is to "improve oral health outcomes and reduce the impact of poor oral health for people with additional or specialised health care needs".¹⁴ The indicators include:

- Collecting national baseline and ongoing data to better understand the number of people with specialised health care needs, their oral health status, and treatment needs;
- Improve the oral health knowledge and skills of carers and support workers for individuals with additional or specialised health care needs, so they can consistently include oral health considerations within their assessment, care planning, and processes.
- Expand the capability and preparedness of the oral health workforce to deliver appropriate and effective care for people with additional or specialised health care needs; and
- Improving the physical accessibility of dental treatment facilities to ensure equitable access for people with disability.¹⁴

These national directions echo the central findings of this thesis: education of the dental practitioners in SND is the gateway to improved equality in dental care.⁵⁸ This thesis seeks to reduce the burden of poor oral health in people with disability. Recognising the need for curriculum reform is an important step toward expanding opportunities for students to engage with and manage patients with disability. Aligning curricula with policy frameworks offers a pathway to reducing oral health disparities and ensuring that people with disability receive equitable, high-quality dental care.

Part C

Overview of the Oral Health Workforce in Special Needs Dentistry

In Australia, approximately one-fifth (20.7%) of the registered dental practitioners are made up of the oral health workforce - oral health therapists (OHTs), dental hygienists (DHs), and dental therapists (DTs).⁵² Dental hygiene and dental therapy have been established for over 50 years, whereas OHTs are a relatively recent profession, with programs first introduced in Queensland in the late 1990s. Today, DHs, DTs and OHTs are included in the “dental health practitioner” category of registration alongside dentists, prosthetists and dental specialists. The oral health workforce, with its extensive training in preventive dentistry, represents a valuable, yet underutilised resource for improving access to dental care for people with disability.⁹²⁻⁹⁵

Role and Scope of Practice

The oral health workforce plays a vital role in advancing oral health and preventing dental disease,⁹⁶ with their training placing strong emphasis on community oral health promotion and disease prevention⁹⁷ – the DHs are highly trained in preventive oral care, periodontal maintenance, and educating patients on effective oral hygiene practices; DTs primarily focused on primary care for children, are trained to deliver preventive and restorative care; OHTs qualified in both dental hygiene and dental therapy, provide a broad range of dental services and fulfil a dual role in preventive and restorative care for patients across all ages. This workforce often works collaboratively with dentists and other health practitioners to support oral health promotion.

Scope of practice is determined by the clinician’s level of education, depth of training and competence, which may vary from one individual to another in the same division,^{98, 99} as outlined by the Dental Board of Australia (**Table 3 and 4**). Adherence to ethical standards and professional guidelines ensures safe, high-quality patient care.

Table 3. Guidelines for scope of practice⁹⁹

Division	Scope of Practice
Dental Hygienists	<p>Focus: Oral health.</p> <p>Services: Examination, diagnosis, treatment, management, education to prevent oral disease, promotion of oral health.</p> <p>May include: Periodontal treatment, preventive services, other oral care.</p> <p>Patients: All ages.</p>
Dental Therapists	<p>Focus: Oral health.</p> <p>Services: Examination, diagnosis, treatment, management, prevention.</p> <p>May include: Restorative treatment, fillings, extraction, promotion of oral health, other oral care.</p> <p>Patients: Mainly children and adolescents, but some adults.</p>
Oral Health Therapists	<p>Focus: Oral health, with qualifications in both dental therapy and dental hygiene.</p> <p>Services: Examination, diagnosis, treatment, management, prevention.</p> <p>May include: Restorative treatment, fillings, extractions, periodontal treatment, other oral care to promote healthy oral behaviours.</p> <p>Patients: All ages</p>

Table 4. Specific scope of practice for DH, DT, OHT ⁹⁹

Treatment procedures	DH	DT	OHT
Examination & Diagnosis	√	√	√
Non-surgical periodontal management	√	X	√
Restorative procedures	X	√	√
Endodontics eg. Direct pulp cap, pulpotomy	X	√	√
Preventive procedures eg. Fissure sealants, fluoride application	√	√	√
Oral hygiene instructions, diet counselling and smoking cessation	√	√	√
Administer local anaesthetic	√	√	√
Removal of deciduous tooth	X	√	√
Radiographs of teeth and jaw	√	√	√
Take impressions	√	√	√
Patient age range Note: 'Patient age range' refers to the age of patients that each professional is clinically allowed to treat. Additional training may extend this scope.	All ages	Up to 26 years of age	May have age limit
Extended scope		Undertaken additional training can have extended scope such as providing restorative treatment for adults of all ages, or Aged Care.	

How can the Oral Health Workforce Contribute to SND?

Despite the increased government expenditure on dental care, the oral disease burden remains alarmingly high, warranting the need to “value prevention as a service and health as an outcome of the dental health system”.¹⁰⁰ Preventive-focused models of care could reduce the burden of oral disease and subsequently reduce the long-term demand for public dental services.¹⁰¹

The oral health workforce can make a substantial impact on SND through a multifaceted approach. The workforce’s knowledge and proficiency are in oral health and public health promotion.¹⁰⁰ Within their scope of practice, they contribute to promoting oral health for patients with disability, who often require more attention and assistance in many aspects of care.⁸⁷ In addition, the oral health workforce can play a vital role in preventative care by conducting routine dental examinations and providing oral hygiene education to patients and their carers, which helps in reducing dental disease prevalence and promoting overall oral health.⁴⁹ It is widely recognised that the oral health workforce is capable of providing high-quality and cost-effective dental services, which enables dentists to focus on more complex procedures.¹⁰² This division of labour not only improves patient flow and shortens wait times but also ensures a more effective distribution of resources within dental clinics. It also maximises the capacity of the dental healthcare team, optimising the oral health workforce’s professional expertise and training, which enhances both service quality and patient outcomes.¹⁰³

Community outreach and advocacy are also crucial, as the oral health workforce can raise awareness about the oral health needs of people with disability and advocate for better access to dental services at various levels.¹⁰⁴ They can enhance the delivery of care through a collaborative, interdisciplinary approach, working alongside other healthcare providers to create comprehensive care plans. Establishing strong referral networks with specialists in SND also ensures patients receive appropriate care when needed.¹⁰⁵ In Minnesota, dental therapists and advanced dental therapists primarily practice in settings serving low-income, uninsured, and underserved patients, or in dental practitioner shortage areas. Their role has led to improved care quality and increased access to care, with clinics reporting more new

patients, reduced travel and wait times, direct personnel cost savings, higher team productivity, lower patient failure rates, and improved patient satisfaction. Dental therapists also help reduce unnecessary emergency visits and effectively address access issues for underserved patients.¹⁰⁶ By utilising the expertise of this workforce, the dental system can more effectively address the ongoing challenges and move towards a more sustainable model of care.

Summary of Knowledge and Evidence Gaps

While significant strides have been made in recognising the importance of SND education, critical gaps in knowledge and practice persist.⁵⁸ Existing evidence highlights inadequate clinical training, insufficient integration of SND into dental curricula, and limited opportunities for clinical training as key barriers to preparing future practitioners with the skills and confidence necessary to treat patients with disability.⁶² While much of the existing literature focuses on dental students and dentists, there is a notable lack of research focused on the oral health workforce. Specifically, little is known about how the oral health workforce perceives their educational opportunities, the quality of training they received, or their willingness to pursue further education in SND, either at the undergraduate or postgraduate level. While some oral health programs in Australia incorporate didactic and clinical training in SND, the overall inclusion of SND content remains unknown.

The connection between insufficient education of the dental practitioners and reduced willingness to treat patients with disability has been well documented; however, no studies have investigated the consistency in the quality and quantity of SND training across oral health institutions. There is also limited information on whether the current SND education and training prepare oral health graduates for real-world challenges. For instance, a study from Nigeria revealed that nearly 60% of dental students felt inadequately prepared to treat patients with disability, which was associated with the absence of a well-defined curriculum.¹⁰⁷ Addressing these gaps through targeted educational initiatives is important to improve practitioners' willingness to treat patients with disability.¹⁰⁸

Integrating comprehensive SND training into undergraduate and postgraduate oral health therapy programs has the potential to improve the overall standard of care delivered

to people with disability. Training should include interdisciplinary and interprofessional collaboration while emphasising oral health promotion and disease prevention, supporting a holistic and patient-centred approach to care.³⁶ However, a deeper understanding of the current state of SND education in oral health programs is critical before implementing such initiatives. Identifying what is currently being taught and areas for improvement will allow for the development of targeted educational interventions to better prepare future oral health therapists for managing the unique challenges associated with treating people with disability.

Although the International Association for Disability and Oral Health (iADH) published curriculum guidance on SND in 2013 for both undergraduate and postgraduate levels, these frameworks predominantly focus on dentistry programs. The authors acknowledged the need to establish similar learning outcomes for other members of the oral healthcare team.¹⁰⁹ Furthermore, there is no comprehensive documentation on the specific SND topics that should be incorporated into oral health curricula or evidence of consistent implementation in Australian oral health programs. There are unanswered questions on how effectively oral health schools are preparing the oral health workforce and whether further education will be suitable for equipping students to manage patients with disability. These critical gaps highlight the urgent need for more robust research on more comprehensive educational frameworks, effective training methods and strategies to foster confidence and inclusive attitudes toward caring for this underserved population.¹¹⁰ Addressing these issues is a core aim of this thesis, which seeks to investigate and enhance the SND curriculum for oral health programs.

Recent literature has prompted positive steps toward curriculum reform in dental programs globally.⁷⁰ The Australian Parliament's dental services report recommends incorporating new training and competency requirements to improve care for people with disability (Recommendation 19), and amending National Disability Insurance Scheme (NDIS) regulations to enable oral health professionals, such as DHs and OHTs to provide assessments and recommendations (Recommendation 20).¹¹¹ These directions recognise the broader dental workforce, beyond dentists alone, as essential to advancing equitable care. Building on these efforts, this thesis examines the need for structured improvements in oral health therapy programs. There is growing recognition of the importance of well-

structured, outcomes-based approaches to teaching students how to care for people with disability.⁸² Adequate training in SND is essential to empower the entire dental team to improve care standards for patients with additional healthcare needs and reduce global inequalities in oral health.¹¹²

A joint submission emphasised that “Many people with disability can be seen in general dentistry settings, depending on staff training/experience, adequate processes, suitable facilities, and proficiency in engaging with the relevant disability support systems and inter-disciplinary planning methods.”¹¹³ This reinforced the need for more interest from general dental practitioners, so specialist practice can be reserved for the more complex and medically unwell patients. This also highlights the need for broader education and support for general dental practitioners, including the oral health workforce. Given their capabilities and the possible impact of targeted education on SND, enhancing the educational preparation of OHTs will likely improve accessibility to dental care for people with disability.

Part D

Aims and Objectives of the Thesis

The rationale for this project is to explore the factors that contribute to the lack of confidence and willingness among oral health practitioners when managing the needs of people with disability. By identifying these gaps, the project aims to inform practical strategies to strengthen the preparedness of the oral health workforce. As existing literature points to the lack of education in SND as a significant barrier, this research seeks to enhance the competency and, ultimately, the willingness of the oral health workforce to provide dental care to people with disability.

Primary aim:

- To investigate the relationship between education in SND and the readiness of the oral health workforce to treat people with disability.

Subsidiary aim:

- To propose a comprehensive curriculum framework for Oral Health Therapy programs, with a specific focus on SND.

An oral health workforce highly trained and adequately equipped with knowledge can play a crucial role in supporting the field of SND. The findings from this research will contribute to current evidence and peer-reviewed publications, providing valuable insights. In turn, these insights will help address the increasing dental demands and reduce oral health disparities between people with disability and the general population.

To achieve these aims, the study established the following objectives:

1. To analyse the oral health demands and underlying factors contributing to unmet needs among people with disability.
2. To identify and evaluate the barriers and facilitators that influence dental practitioners' willingness to provide dental services for people with disability.
3. To explore the current depth and scope of SND training in undergraduate oral health programs.
4. To identify curriculum gaps and challenges within undergraduate oral health programs related to SND and discuss future agenda to enhance the skills and preparedness of the oral health workforce in this field.
5. To investigate the perceptions and attitudes of final-year oral health students and practitioners in Australia toward providing dental care to people with disability.
6. To evaluate the acceptance of additional SND training opportunities among the Australian oral health workforce, considering their potential impact on professional practice.
7. To develop and propose a comprehensive curriculum framework in SND for integration into Australian oral health programs, addressing identified educational gaps.
8. To justify the need for future research to determine whether additional SND training can help reduce oral health disparities between people with disability and the general population.

By addressing these objectives, this thesis seeks to establish a standardised, comprehensive curriculum framework as a key educational strategy to enhance the skills and confidence of the oral health workforce in SND and reduce discrepancies in the quality of care provided to people with disability. Ultimately, this thesis provides a comprehensive understanding of the critical question: *Is the oral health workforce adequately prepared to deliver optimal dental care for people with disability?*

Overview of the Thesis

This thesis is presented in seven chapters, including a series of manuscripts that have been published or submitted for publication in peer-reviewed journals (**Figure 7**).

Chapter 1 establishes the groundwork for the thesis by introducing the background and literature relevant to the research topic. It outlines the current oral health status among people with disability and identifies the barriers that limit their access to dental care (**Research Objective 1**). The chapter also considers the role of the oral health workforce in SND and reviews national initiatives aimed at improving educational opportunities and workforce development to reduce oral health inequities. The chapter concludes with the aims and objectives of the thesis.

Chapter 2 presents a scoping review of the factors influencing dental practitioners' willingness to provide care for people with disability (**Research Objective 2**). The review highlights the recurring barriers identified across the literature and emphasises the importance of SND education in shaping practitioners' preparedness and confidence to deliver appropriate care.

Chapter 3 builds on the findings of the scoping review through a comprehensive content analysis of the SND curriculum within Australian Oral Health Programs. This chapter critically evaluates the current curriculum, identifying both areas of strength and where it falls short in preparing future practitioners (**Research Objectives 3 and 4**). The analysis provides an overview of the current educational landscape that informs the subsequent chapters.

Chapter 4 extends this investigation by exploring the implementation of SND content in oral health programs across various countries. It analyses teaching methods, resources, and assessment strategies, and how well these programs equip students with the necessary knowledge and skills to manage the dental needs of people with disability (**Research Objective 3 and 4**).

Following chapter 4, **chapter 5** delves into the perceptions of final-year oral health students and practitioners, examining how their educational experiences influence their confidence and willingness to treat people with disability in both the teaching clinic and professional practices (**Research Objective 5**). It also offers insight into the acceptance toward future training opportunities to enhance the workforce's capabilities in SND (**Research Objective 6**).

Chapter 6 presents the findings of an online Delphi study designed to develop a comprehensive curriculum for OHTs in the field of SND. This chapter details the proposed curriculum, which is essential for addressing the educational gaps identified in earlier chapters and for ensuring that future OHTs are adequately prepared to provide the best quality care for people with disability (**Research Objective 7**).

Lastly, **Chapter 7** synthesises the key findings from the entire thesis collectively and reflects on the implications of the research for current practice as well as future research and policy development (**Research Objective 8**). This provides a balanced perspective on the contributions of this thesis to the field of SND.

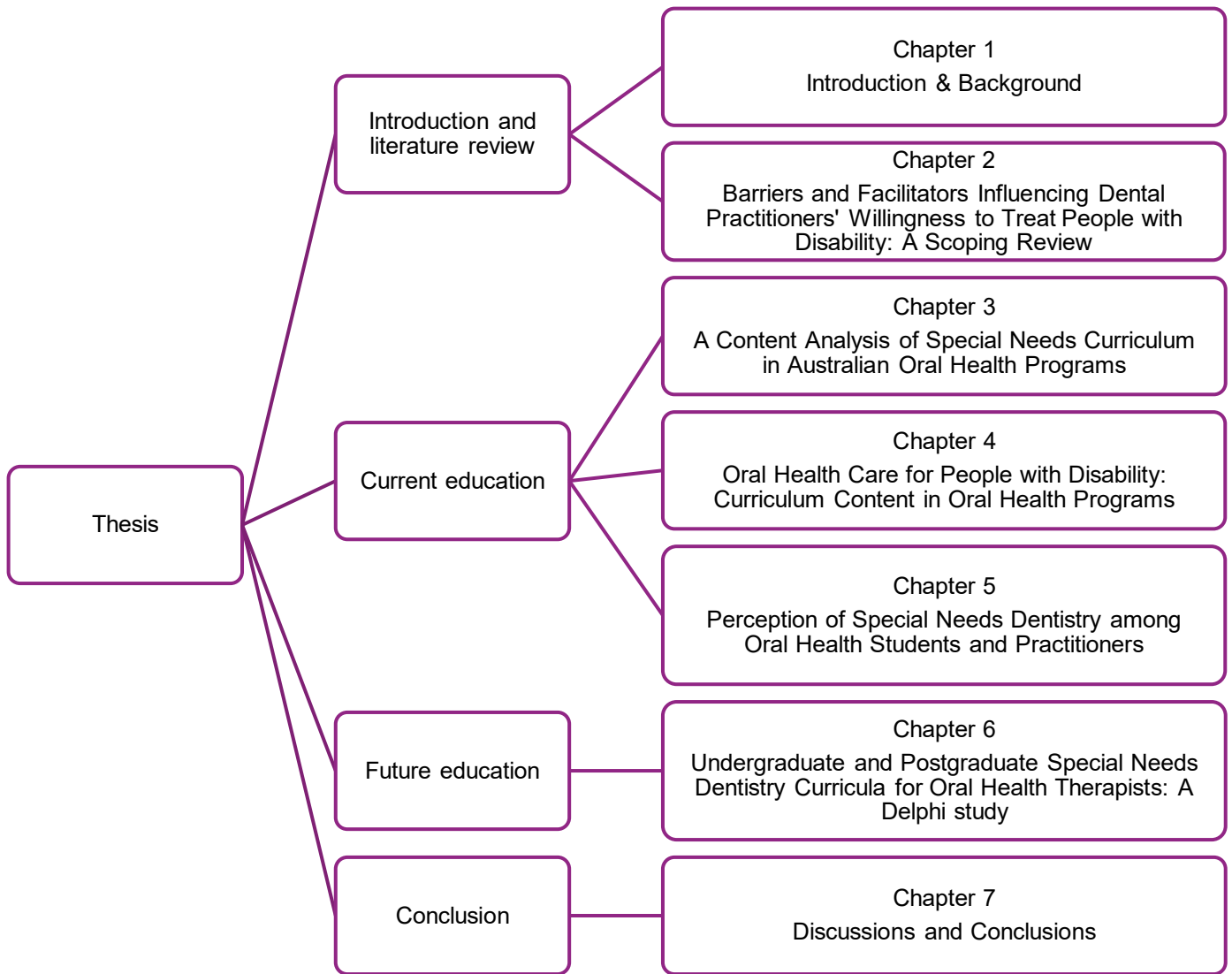


Figure 7. A diagram of the thesis structure

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CHAPTER 2

**Barriers and Facilitators Influencing Dental Practitioners'
Willingness to Treat People with Disability: A Scoping Review**

Chapter Overview

The previous chapter examined the barriers to dental care experienced by people with disability, highlighting the increasing demand for dental services amid a limited number of dental specialists in Special Needs Dentistry (SND). Despite a growing population, people with disability continue to face exclusion from dental services, often due to an insufficient number of practitioners willing or confident to manage their needs. This prompts an important question: *What barriers and facilitators shape practitioners' willingness to provide dental care to people with disability?*

Building on the foundational concepts introduced in Chapter 1, this chapter presents a scoping review that explores the factors influencing dental practitioners' willingness to treat people with disability, with a particular focus on the challenges relevant to SND. Using the Joanna Briggs Institute (JBI) methodology, the review systematically identifies the barriers and facilitators reported in the literature (**Research Objective 2 – To identify and evaluate the barriers and facilitators that influence dental practitioners' willingness to provide dental services for people with disability**). The findings emphasise that while many students in entry-level dental practitioner programs receive some form of education in SND, it is often insufficient, leading to gaps in knowledge and clinical experiences that directly affect practitioners' confidence and readiness to provide care.

This chapter lays the groundwork for the thesis, reinforcing the need for enhanced training and curriculum development in SND. The material presented in this chapter has been peer-reviewed and published in *The Australian & New Zealand Journal of Dental and Oral Health Therapy*. The Scoping Review Protocol is included in **Appendix A**.

Citation

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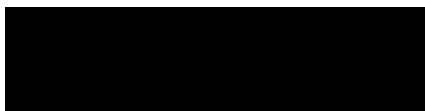
I hereby confirm that Dorothy Koh is the primary author of this published manuscript. She led the development of the study concept and design, conducted the literature search and screening, extracted and analysed the data, and prepared all tables and figures. She drafted the full manuscript and coordinated revisions in response to peer-review feedback.

The individual contributions of the co-authors are as follows:

Contribution	Authors
Development of the study concept and design	DK, WS, DL, JW
Data collection	DK
Data analysis and interpretation	DK
Manuscript drafting	DK
Critical review of the manuscript	DK, WS, DL, JW

All co-authors approved the final version for publication and support the inclusion of this work in the thesis.

Yours sincerely,



A/Prof Archana Pradhan
Lead Supervisor

Barriers and Facilitators Influencing Dental Practitioners' Willingness to Treat People with Disability: A Scoping Review

D Koh¹; J Wallace², D Leadbeatter¹, W Sohn¹

¹ The University of Sydney

² The University of Newcastle, Health, Medicine and Wellbeing

ABSTRACT

The oral health needs of people with disability are largely neglected, resulting in a higher risk of dental problems due to limited access to regular dental care. The shortage of dental practitioners willing to include this patient population in their professional practice is a concerning issue globally, including in Australia. With disability prevalence on the rise, collaborative efforts within the dental team are imperative to bridge the oral health disparity between people with disability and the general population. Through a scoping review, this paper aims to identify the barriers and facilitators influencing dental practitioners' willingness to provide treatment to people with disability. Studies discussing barriers and/or facilitators identified by dental practitioners when providing dental services to people with disability were included. No language, time period, or age limitations were applied. A comprehensive search was conducted in the Cochrane Systematic Review Database, CINAHL, EMBASE, MEDLINE via Ovid, and Scopus, supplemented by grey literature searches and hand-searching references. Both published and unpublished articles were considered. Selected studies were charted by author(s), year, country, participants, methods, barriers, and facilitators. Twenty articles met the criteria for data extraction. Three main themes emerged: (1) dental practitioner factors, (2) patient factors, and (3) environmental factors. This scoping review has highlighted the multifaceted barriers and facilitators that influence dental practitioners' willingness and intention to provide care for people with disability. Inadequate undergraduate training and limited clinical exposure were identified as significant barriers, while additional training, supportive work environments, and access to specialized resources were recognized as crucial facilitators. The findings emphasize the critical role of comprehensive education and training in special needs dentistry, highlighting the importance of equipping dental practitioners with the skills and confidence to provide care for people with disabilities.

INTRODUCTION

The Royal Australasian College of Dental Surgeons (RACDS) defines special needs dentistry (SND) as "the branch concerned with the oral healthcare of people that require special methods or techniques to prevent or treat oral health problems, or where their conditions necessitate special dental treatment plans." This includes individuals with physical disabilities, mental impairments, intellectual and cognitive disorders, developmental disabilities, sensory and behavioral issues, geriatric conditions, and the underserved population, or a combination of these factors (Royal Australasian College of Dental Surgeons). In Australia, approximately one in six people (18%) have a disability and an additional 22% experience chronic health conditions (Australian Institute of Health and Welfare, 2024). People with disability generally experience poorer overall health and dental health, with dental diseases reported to be seven times more common as compared to the general population (Parliament of Australia, Nov 2023, p. 79). They often encounter significant barriers to accessing adequate oral healthcare, which increases their risk for dental problems such as dental caries and periodontal disease (da Rosa et al., 2020). The presence of other contributing factors including adverse general health outcomes, polypharmacy, impairments, and dependence on carers and family for oral hygiene care, makes optimal dental care challenging to achieve (Nelson et al., 2011).

Advancements in medical technology have significantly increased the life expectancy of people with disability, leading to population growth and increased demand for SND (da Rosa et al., 2020). Consequently, public dental waiting lists are growing exponentially, resulting in longer waiting times and poorer treatment outcomes for some patients (Mac Giolla Phadraig et al., 2012). In Australia, there are only 29 registered dental specialists in SND with the Australian Health Practitioner Regulation Agency (Dental Board of Australia, 2024). The shortage of dental practitioners has become a significant concern in recent years, not only in Australia but internationally. While some people with disability may require specialist care, many can be treated within the general dental community when practitioners are adequately trained and equipped to meet their diverse needs (Faulks et al., 2012). With the rising disability prevalence, it is crucial to mobilize all members of the dental team to work collaboratively to address this challenge. Lack of clinical exposure and inadequate training in dental schools has been shown to negatively impact confidence levels, attitudes, and willingness to provide treatment for people with disability (Ahmad et al., 2014; Mandasari et al., 2021). The shortage of dental practitioners willing to treat has increased referrals to the SND department, further lengthening waiting lists (Parliament of Australia, Nov 2023, pp. 26-29).

The purpose of this scoping review is to identify the barriers and facilitators affecting dental practitioners' willingness and intention to treat people with disability. By understanding these factors, we can highlight potential areas for intervention to eliminate barriers, enhance practitioners' experiences, and improve their confidence in managing dental care for this population. This understanding can lead to better preparedness and willingness among dental practitioners to manage the dental needs of people with disability, ultimately improving their dental health. A preliminary search in the Cochrane Systematic Review Database, Medline via Ovid, and Scopus revealed no existing scoping reviews focusing on the factors influencing dental practitioners' willingness and intention to manage the dental needs of people with disability.

REVIEW QUESTION

What are the barriers and facilitators that influence dental practitioners' intention to provide dental treatment to people with disability?

METHODS

This scoping review was conducted in accordance with the Joanna Briggs Institute (JBI) methodology for scoping reviews. The protocol was documented following the JBI scoping review protocol guidelines (Peters MDJ et al., 2020) and the reporting adhered to the PRISMA-ScR guidelines. The objective of this scoping review was to systematically explore the existing research on the barriers and facilitators influencing dental practitioners' intention to provide dental care to people with disability. Due to the limited evidence on this topic, studies involving all dental counterparts were included, with no period restrictions applied.

SEARCH STRATEGY

This scoping review utilized the three-step search strategy recommended by the JBI (Peters MDJ et al., 2020). An initial search was conducted on MEDLINE via Ovid and CINAHL using keywords such as "special needs dentistry", "dental practitioners", "barriers" and "facilitators". Additional keywords and index terms used in the titles and abstracts of relevant articles have been identified and used to establish a full search strategy (Appendix I). The search keywords included: 'dental practitioner', 'oral health practitioner', 'dental specialist', dentist, 'oral health therapist', 'dental therapist', 'dental hygienist', 'dental prosthetist', 'dental technician', 'dental student', 'oral health therapy student', 'special care dentistry', 'special needs dentistry', 'special needs', disability, attitude, perception, willingness, 'intention to treat', knowledge, 'clinical competence', confidence, training. Their combinations were used with Boolean operators to improve search parameters.

The search strategy was designed to capture all relevant literature. A comprehensive search was then conducted across several electronic databases, including the Cochrane

Systematic Review Database, MEDLINE via Ovid, CINAHL, EMBASE and Scopus. A grey literature search was also performed using Google to search for both published and unpublished articles, reports, guidelines and policy documents related to SND. Reference lists of all included studies were reviewed to identify any additional studies that may not have been captured in the database search. Additional searches were completed with the identification of key authors and experts in this field. The search was conducted in September 2022 and July 2024, before concluding the search.

ELIGIBILITY CRITERIA

Participants: Dental practitioners who provide or consider providing dental services to people with disability were eligible for inclusion in this review. People with disability are defined as individuals requiring specialized or additional accommodations to treat or prevent dental diseases. No limitations applied.

Concept: In this review, a 'barrier' refers to any factor that obstructs or reduces the willingness or intention of a dental practitioner to provide dental treatment to people with disability. A 'facilitator' is defined as any factor that promotes or enhances the experience of treating this patient population. All research instruments aimed at identifying barriers and facilitators experienced by dental practitioners were considered in this review.

DATA TO BE EXTRACTED:

1. Barriers and facilitators related to dental practitioners personally.
2. Barriers and facilitators related to the patient aspect.
3. Barriers and facilitators related to external support and additional resources.

Context: Literature inclusive of a range of disability was accepted. Literature focusing on managing a specific disability is out of the scope of this review and was not included. No age limit was applied to people with disability, nor were there limitations on the type of impairment or the type of dental facility involved.

The specific inclusion and exclusion criteria applied in this scoping review were summarised in Table 1:

Table 1: Inclusion and Exclusion Criteria for the Scoping Review

Criterion	Inclusion	Exclusion
Time period	No limitations applied to the time period	Nil
Language	No limitations applied to the language	Nil
Types of article	All types of publications focusing on SND (general term) Publications that involved discussion on the barriers and facilitators that influence clinicians' intention to treat Publications that has a clear explanation or results on the factors that influence clinicians' intention to treat	Publications that focused on a specific health condition Publications that did not identify barriers and facilitators Publications on treatment methods or recommendation Publications on effectiveness of an educational intervention
Target population	Dental practitioners - dental students, oral health therapy students, dental specialists, dentist, oral health therapist, dental therapists, dental hygienists, dental prosthetist	Non-dental personnel; Parent or caregiver of people with disability, hospital or nursing home staff members, medical counterparts

STUDY SELECTION

Following the search, all identified citations were collated and uploaded onto Zotero v6.0.10 where duplicates were removed. One reviewer independently screened titles and abstracts for eligibility. Full-text articles of potentially relevant studies were then reviewed to confirm inclusion. Discrepancies were resolved through discussion with other reviewers. The quality of the included studies was assessed using a data extraction tool template (Appendix II), ensuring the robustness and reliability of the findings. The results of the search and reasons for excluding evidence that did not meet the inclusion criteria were reported comprehensively in the final scoping review. The results were presented using a Preferred Reporting Items for Systematic Reviews and Meta-analyses extension for scoping review (PRISMA-ScR) flow diagram (Tricco et al., 2018).

DATA EXTRACTION

Following the selection of studies, data were extracted using a standardized form recorded on Microsoft Excel v16.63.1. The table contains the following information:

1. Author(s)
2. Year of publication
3. Country of origin

4. Study participants
5. Methods and study design
6. Identified barriers
7. Identified facilitators

DATA ANALYSIS

Extracted data were analyzed thoroughly to identify common themes and patterns related to barriers and facilitators. Thematic analysis was employed to categorize these factors into three main themes: (1) dental practitioner factors, (2) patient factors, and (3) environmental factors. Descriptive statistics were used to summarize the frequency and distribution of identified barriers and facilitators.

ETHICAL CONSIDERATIONS

Submission for ethics approval was not required as the study relied on secondary data analysis of scientific literature available from databases.

RESULTS

After performing searches across the selected databases and grey literature, 2,653 articles were identified of which 859 duplicates were removed. A further screening of abstracts resulted in the exclusion of 1,546 irrelevant articles. The remaining 248 articles were screened for eligibility based on the inclusion and exclusion criteria. The final 20 articles were included in this scoping review for data extraction and analysis. The identification and selection process is documented in the PRISMA flow diagram.

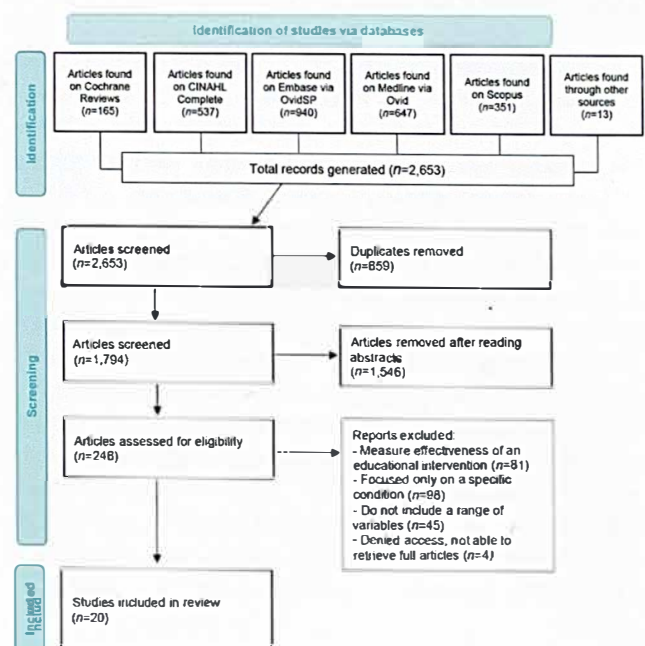


Figure 1: PRISMA flowchart diagram

The final 20 articles included in this scoping review were published between 2004 and 2024. The majority of studies were conducted in India (n = 4), followed by Australia (n = 2), the United States (n = 2), and Saudi Arabia (n = 2). Other countries represented include Italy, Indonesia, the United Kingdom, Brazil, Malaysia, Taiwan, Belgium, Nigeria and Singapore. The studies employed various methodologies, including quantitative, qualitative, and mixed methods. Most studies collected data through questionnaires, with a few utilizing semi-structured interviews and focus groups.

The articles explored the perceptions of dental practitioners toward providing treatment for people with disability, with seven studies specifically focusing on children with disability. The study populations included dentists, dental students,

paediatric dentists, interns, specialists, consultants, dental nurses, dental prosthetists, oral health therapists, dental therapists, and dental hygienists. The results are categorized into 'barriers' and 'facilitators' experienced by dental practitioners when providing dental treatment to people with disability. Three main themes emerged from the analysis:

1. Dental practitioner factors
2. Patient factors
3. Environmental factors

Barriers that affect dental practitioners' intention to provide dental treatment to people with disability

The review identified multiple barriers that dental practitioners face when providing treatment

to people with disability. These barriers were categorized into three main themes: dental practitioner factors, patient factors, and environmental factors. Table 2 provides a summary of the barriers identified in each article.

Table 2: Identified barriers in each article (blue = dental practitioner factors; green = patient factors; orange = environmental factor)

Author(s)	Dental practitioner factors						Patient factors						Environmental factors								
	Inadequate undergraduate training in SCD	Lack of confidence / not prepared	Not comfortable treating	Not interested	Previous bad experience	Prefers to refer for specialist management	Refused to compromise on quality of work	Complex medical history	Communication and interaction issue	Behavioural compliance	Physically challenges	Level of disability / disease	Disturbance to other patients	Patient and carer not motivated to maintain	High incidence of failed appointments	Inaccessibility issues	Staff lack of training	Time consuming	Lack of suitable equipment	Lack of financial benefits / reimbursement	Lack of support from clinic and staff
(Chuang et al., 2024)	x	x		x			x	x	x	x	x		x		x		x	x			x
(Ramadhani et al., 2024)	x	x	x			x		x		x	x	x							x		
(Patil et al., 2022)	x	x		x	x								x				x	x			
(D'Addazio et al., 2021)				x				x		x			x		x		x	x			
(Lim et al., 2021)				x				x	x	x	x					x	x				x
(Mandasari et al., 2021)	x		x	x		x		x		x				x	x		x	x			x
(Alumran et al., 2019)	x	x		x				x		x		x	x					x			
(Rajan et al., 2019)	x			x	x	x		x	x	x			x			x	x	x			x
(Wilson et al., 2019)	x	x	x						x									x			
(Adyanthaya et al., 2017)	x	x				x			x	x			x		x				x		x
(Alves et al., 2016)	x							x		x		x				x					
(Derbi & Borromeo, 2016)	x		x	x		x			x					x	x		x	x			x
(Bindal et al., 2015)	x								x	x						x		x	x	x	x
(Chadha et al., 2015)	x							x	x		x	x				x		x	x	x	
(Halawany et al., 2011)	x			x	x				x	x								x		x	
(Tsai et al., 2007)				x				x	x	x		x	x	x				x	x	x	x
(Declerck et al., 2006)	x								x	x			x		x			x	x	x	
(Oredugba & Sanu, 2006)	x			x		x			x	x		x						x	x	x	
(Siegal & Marx, 2005)	x		x	x						x					x				x	x	
(Casamassimo et al., 2004)	x			x				x		x		x					x				x

The first theme demonstrated the dental practitioner factors that impacted the willingness to treat people with disability. A significant barrier identified in this review is the inadequate undergraduate training in SND. This issue was highlighted by multiple studies, with 90 percent (n=18) of the articles indicating that they either did not receive any or had insufficient training and clinical exposure in managing the dental needs of people with disability. Conversely, a minority of participants in studies by Tsai et al (16.3%) and Siegal and Marx (7.2%) expressed satisfaction with their training (Siegal & Marx, 2005; Tsai et al., 2007). These contrasting findings highlight the variability in training quality and its impact on practitioners' readiness to treat people with disability. Table 3 records the percentage of participants reporting inadequacy in their undergraduate training in SND across various studies.

Table 3: Percentage (%) of the participants who reported inadequate training in SND at the undergraduate level

Author(s)	Percentage of Participants Reporting Inadequate Training (%)	Country
(Chuang et al., 2024)	54.9	Singapore
(Ramadhani et al., 2024)	20	Indonesia
(Patil et al., 2022)	65.41	India
(Mandasari et al., 2021)	65.2	Indonesia
(D'Addazio et al., 2021)	Not reported	Italy
(Lim et al., 2021)	Not reported	Australia
(Alumran et al., 2019)	Not reported	Saudi Arabia
(Rajan et al., 2019)	58	India
(Wilson et al., 2019)	Qualitative study	United Kingdom
(Adyanthaya et al., 2017)	55	India
(Alves et al., 2016)	61.4	Brazil
(Derbi & Borromeo, 2016)	66.7	Australia
(Bindal et al., 2015)	81.4	Malaysia
(Chadha et al., 2015)	60	India
(Halawany et al., 2011)	54	Saudi Arabia
(Tsai et al., 2007)	16.3	Taiwan
(Declerck et al., 2006)	58.6	Belgium
(Oredugba & Sanu, 2006)	88.2	Nigeria
(Siegal & Marx, 2005)	7.20	United States
(Casamassimo et al., 2004)	Not reported	United States

There is a noticeable difference in the perception of SND training adequacy between high-income countries (like the U.S) and middle- to low-income countries (like Nigeria and India). However, some high-income countries, such as Australia, still report significant dissatisfaction, suggesting that factors beyond income level are critical for improving educational outcomes in SND. Inadequate comprehensive training in SND during undergraduate education leave many practitioners feeling ill-prepared to handle the unique challenges (Patil et al., 2022). The lack of interest or desire to treat this patient population was noted in 65 percent (n=13) of the studies, which is often rooted in insufficient exposure and education during formative years. This in turn cultivates a lack of confidence and comfort in treating people with disability (Faulks et al., 2012). Many practitioners reported feeling unprepared and lacking confidence, reflecting a broader sentiment echoed across the studies.

Several studies indicated that dental practitioners' previous bad experiences with treating people with disability further deterred them from engaging with this population (Halawany et al., 2011; Patil et al., 2022; Rajan et al., 2019). These negative experiences often reinforce existing apprehensions and contribute to a cycle of avoidance and discomfort. Personal preferences also play a role, with some practitioners opting to refer patients to specialists rather than attempting treatment themselves due to the compounded barriers, such as inadequate education and perceived complexity (Adyanthaya et al., 2017; Mandasari et al., 2021; Rajan et al., 2019).

The second theme explored the patient factors. The two most commonly mentioned factors were behavioural compliance (n=16) and communication or interaction issues (n=12) when managing the dental needs of people with disability. Complex medical histories (n=10) were also frequently cited as significant obstacles. Other factors reported include the high levels of anxiety often observed in people with disability, the varying levels of disability, and the patients' ability to cooperate during treatment. These issues further contribute to the overall challenge of treating this population. Physical challenges during dental treatment and the disturbance caused to other patients in the waiting area were additional factors that reduced practitioners' willingness to accept people with disability. In some cases, challenges related to adherence to treatment plans, such as difficulties in attending appointments or maintaining continuity of care, may arise due to various factors, including the complex needs of people with disability and their caregivers. These challenges can inadvertently impact dental practitioners' interest in treating people with disability. However, it is important to recognize that these situations are multifaceted and vary widely, and should not be generalized across all patients or caregivers.

The third theme detailed the factors requiring additional resources or external support that influence dental practitioners' ability to provide care for people with

access to routine dental care, further increasing their risk of dental health problem (Lim et al., 2020). One of the most frequently cited barriers is the inadequacy of training in SND. Many studies indicate a lack of both the didactic and clinical components, resulting in insufficient experience, confidence, and exposure in managing the oral health of people with disability (Ahmad et al., 2015; Vainio et al., 2011). Notably, Bindal et al. and Oredugba and Sanu's studies found that over 80% of dental practitioners rated their undergraduate training as inadequate (Bindal et al., 2015; Oredugba & Sanu, 2006). This lack of educational opportunities diminished competence and confidence. Derbi and Borromeo's study revealed that 52.2% of participants felt "somewhat competent" after completing undergraduate training, one-third felt incompetent and 58.3% had no interest in treating people with disability, primarily due to a lack of experience and feelings of incompetence (Derbi & Borromeo, 2016). Similar findings were reported by Mandasari et al. and Alves et al., who associated practitioners' reluctance with insufficient academic preparation (Alves et al., 2016; Mandasari et al., 2021). However, contrasting findings from Tsai et al. and Siegal and Marx suggest many participants were satisfied with their undergraduate training in SND (Siegal & Marx, 2005; Tsai et al., 2007). These studies, however, may have evaluated professional training more generally, which limits insights into the depth of SND-specific education. Moreover, Siegal and Marx's focus on pediatric care may skew their results more toward pediatric dentistry than SND as a whole.

This scoping review demonstrated that insufficient training in SND can impact dental practitioners' willingness to treat patient with disability. A lack of sufficient knowledge and experience in managing treatment for this patient population can leave dental practitioners feeling unprepared and lacking confidence (Alumran et al., 2018; Wilson et al., 2019). This issue may be compounded by unfamiliarity with the patients, which can contribute to misconceptions and negative stereotypes, further discouraging practitioners from providing care (Holzinger et al., 2020). In some cases, dental practitioners may perceive people with disability as more challenging to treat due to heightened anxiety, complex medical histories, or difficulties with behavioral compliance, all of which can increase stress for practitioners, staff, and other patients (D'Addazio et al., 2021). Despite these challenges, it is estimated that 90% of people with disability can receive treatment in a regular dental clinic setting, based on the adequacy of the practitioner's education and training in SND (Faulks et al., 2012). Research has demonstrated that dental practitioners who underwent additional training in managing patients with special healthcare needs exhibited greater comfort and confidence in treating this patient population compared to those without such training (Ahmad et al., 2020; Mohamed Rohani & Mohd Nor, 2021). Furthermore, studies involving dental students have reported that those who perceived their undergraduate educational experiences positively felt better prepared and expressed a stronger intention to include people with disability in their future professional practice (Dao et al., 2005).

While the barriers and facilitators to treating people with disability generally apply across various categories in SND, some exceptions or more pronounced factors exist for specific conditions. For instance, in the management of patients with physical disabilities, Baird et al. identified inaccessibility and clinical costs as the main factors decreasing dental practitioners' willingness to treat these patients (Baird et al., 2008). Similarly, Sullivan et al. found that, for dental practitioners managing patients with spinal cord injuries, structural barriers and inaccessibility were significant issues, alongside a lack of knowledge about the condition (Sullivan et al., 2009). These findings suggest that, while general barriers and facilitators are widely applicable, specific conditions may present unique challenges that require targeted interventions.

The findings of this scoping review have several implications for practice. Although various studies identified multiple factors that could positively impact dental practitioners' intention to treat people with disability, the most fundamental factor is the clinical proficiency and knowledge of the dental practitioner in managing these patients' dental needs. This foundational competence is crucial because it integrates and enhances the effectiveness of other factors. Dental education programs should incorporate comprehensive training in SND to better prepare future practitioners. Subjects like SND and the management of people with disability are crucial elements of undergraduate curricula and should receive greater emphasis to accommodate the increasing demand for specialised care. Additionally, training should include the use of inclusive language, to foster respectful and effective communication. Dental practices should also strive to create supportive environments with adequate resources and staff training to address the unique challenges faced by people with disability. Policymakers should consider providing financial incentives and support to encourage more practitioners to include people with disability in their practice.

Future studies should investigate dental practitioners' perceptions of SND and explore the effectiveness of undergraduate training in preparing them to manage the dental needs of people with disability. Research should focus on evaluating the current undergraduate curriculum coverage in SND to identify gaps in knowledge and improve educational experiences. These efforts will help ensure that future dental practitioners are better equipped to provide high-quality care to people with disability.

LIMITATIONS OF THIS STUDY

This scoping review identified the barriers and facilitators of providing dental care for people with disability. However, because the study generalized different disabilities, states, or conditions under the broad term "special needs dentistry," the factors identified may not be universally applicable to each specific disability condition, and their importance may vary. Given the diversity within "special needs dentistry," many available studies focused on

specific conditions such as developmental disabilities, intellectual disabilities, spinal cord injuries, and craniofacial anomalies. Publications that exclusively reported findings on a specific condition were excluded, resulting in a relatively small number of available publications. Additionally, a quality evaluation of the included publications was not conducted, consistent with the nature of a scoping review.

CONCLUSION

This scoping review has highlighted the multifaceted barriers and facilitators that influence dental practitioners' willingness and intention to provide dental care for people with disability. The findings indicate that the primary barriers to providing dental treatment to people with disability stem from both educational shortcomings and personal discomfort. It reinforces the critical role of comprehensive education and training in SND, which impacts practitioners' confidence and competence in managing this patient population. These barriers emphasize the need for enhanced educational opportunities and support systems within the dental profession to build confidence and competence among practitioners. While this review provides a comprehensive overview of the current landscape, it also highlights the need for more high-quality research to further understand and address these challenges. By addressing the identified barriers and leveraging the facilitators, the dental profession can move towards a more inclusive and prepared approach, ultimately improving access to dental care and health outcomes for the special needs population.

CONFLICTS AND ACKNOWLEDGMENTS

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Appendix I: Search strategy

Database search engine	Search terms	Results
Cochrane Reviews	Cochrane Reviews matching oral health practitioner* OR dental practitioner* OR dental student* OR dental specialist* OR dentists OR dental hygienist* OR oral health therapist* OR dental auxiliaries OR dental therapist* OR dental prosthetist* OR dental technician* OR oral health therapy student* in All Text AND clinical competence OR training OR attitude OR perception OR confidence OR knowledge OR willingness OR intention to treat in All Text AND disabled persons OR special needs OR special needs dentistry OR special care dentistry OR special needs patient* in All Text AND Dentistry & oral health in Cochrane Topic - (Word variations have been searched)	165
Cinahl Complete	(oral health practitioner* OR dental practitioner* OR dental student* OR dental specialist* OR dentists OR dental hygienist* OR oral health therapist* OR dental auxiliaries OR dental therapist* OR dental prosthetist* OR dental technician* OR oral health therapy student*) AND (clinical competence OR training OR attitude OR perception OR confidence OR knowledge OR willingness OR intention to treat) AND (disabled persons OR special needs OR special needs dentistry OR special care dentistry OR special needs patient*)	537
Embase via OvidSP (1947 - present)	Embase Classic <1947 to 1973> Part 1 of 2 Embase <1974 to 2024 July 05> 1. oral health practitioner*.mp. 82 2. dental practitioner*.mp. 6075 3. dental students.mp. or Students, Dental/ 11756 4. dental specialist*.mp. or Specialties, Dental/ 32896 5. dentists.mp. or Dentists/ 45188 6. Dentists/ or Dental Hygienists/ or oral health therapist*.mp. or Dental Auxiliaries/ 26762 7. Dental Auxiliaries/ or Dental Hygienists/ or Dentists/ or dental therapist*.mp. 27015 8. Dental Hygienists/ 912 9. dental prosthetist*.mp. or Dentists/ or Dental Technicians/ 26193 10. Dental Hygienists/ or Students, Dental/ or Dental Auxiliaries/ or oral health therapy student*.mp. or Students/ 127392 11. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 202995 12. perception.mp. or Perception/ 470689 13. Attitude/ or attitude.mp. 553213 14. confidence.mp. 933074 15. competency.mp. 42630 16. willingness.mp. 56438 17. intention to treat.mp. 58242 18. 12 or 13 or 14 or 15 or 16 or 17 1997228 19. Disabled Persons/ or special needs dentistry.mp. 37572 20. Dental Care for Disabled/ or special care dentistry.mp. 33151 21. (special needs or special care).mp. 15458 22. disability.mp. 418153 23. 19 or 20 or 21 or 22 487656 24. 11 and 18 and 23 1924 25. (dentistry or oral health).mp. 116774 26. 24 and 25 950 27. remove duplicates from 26 940	940
Medline via Ovid (1946 - present)	Ovid MEDLINE(R) ALL <1946 to July 03, 2024> Ovid MEDLINE(R) ALL <1946 to July 03, 2024> 1. oral health practitioner*.mp. 79 2. dental practitioner*.mp. 5837 3. dental students.mp. or Students, Dental/ 11433 4. dental specialist*.mp. or Specialties, Dental/ 2238 5. dentists.mp. or Dentists/ 43297 6. Dentists/ or Dental Hygienists/ or oral health therapist*.mp. or Dental Auxiliaries/ 26590 7. Dental Auxiliaries/ or Dental Hygienists/ or Dentists/ or dental therapist*.mp. 26747 8. Dental Hygienists/ 5995 9. dental prosthetist*.mp. or Dentists/ or Dental Technicians/ 21863 10. Dental Hygienists/ or Students, Dental/ or Dental Auxiliaries/ or oral health therapy student*.mp. or Students/ 100632 11. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 150093 12. perception.mp. or Perception/ 443909 13. Attitude/ or attitude.mp. 334347 14. confidence.mp. 733013 15. competency.mp. 47665 16. willing*.mp. 63137 17. intention to treat.mp. 31141 18. 12 or 13 or 14 or 15 or 16 or 17 1574027 19. Disabled Persons/ or special needs dentistry.mp. 49118 20. Dental Care for Disabled/ or special care dentistry.mp. 4478 21. special needs.mp. 4966 22. disability.mp. 296013 23. 19 or 20 or 21 or 22 327865 24. 11 and 18 and 23	647
Scopus	(TITLE-ABS-KEY ("oral health practitioner*" OR "dental practitioner*" OR "dental student*" OR "dental specialist*" OR dentists OR "dental hygienist*" OR "oral health therapist*" OR "dental auxiliaries" OR "dental therapist*" OR "dental prosthetist*" OR "dental technician*" OR "oral health therapy student*") AND TITLE-ABS-KEY ("clinical competence" OR training OR attitude OR perception OR confidence OR knowledge OR willingness OR "intention to treat") AND TITLE-ABS-KEY ("disabled persons" OR geriatric OR "special needs" OR "special needs dentistry" OR "special care dentistry" OR "dental care for chronically ill" OR "special needs patient*"))	351

CHAPTER 3

**A Content Analysis of Special Needs Curriculum in
Australian Oral Health Programs**

Chapter Overview

A frequently cited barrier to providing dental care for people with disability is the inadequacy of training in Special Needs Dentistry (SND). The scoping review in Chapter 2 demonstrated that a lack of knowledge and experience in SND often leaves practitioners feeling underprepared, affecting their confidence and willingness to provide care. SND involves managing individuals with a diverse range of conditions that require tailored approaches, yet this area is not always adequately covered in standard dental curricula. As the demand for specialised care continues to grow, it is imperative to equip future dental practitioners with the necessary skills to address the unique needs of this population. While SND care was typically directed towards dentists, the oral health workforce is well-positioned to play a significant role in improving access to care for people with disability. Understanding SND education in oral health programs is, therefore, a crucial first step toward enhancing the preparedness of this workforce.

This chapter partially addressed **Research Objective 3** (*To explore the current depth and scope of SND training in undergraduate oral health programs*) by evaluating the educational landscape of SND within Australian oral health programs through a content analysis of publicly available curriculum documents. The analysis is guided by the methodological principles described by Weber (1990),¹ offering a structured approach to reviewing curriculum content. In doing so, this chapter also contributes to **Research Objective 4** (*To identify curriculum gaps and challenges within undergraduate oral health programs related to SND and discuss future agenda to enhance the skills and preparedness of the oral health workforce in this field*). The domains and learning outcomes established by the International Association for Disability and Oral Health (iADH) were used as reference frameworks to assess the program contents. By comparing curriculum content against the standards set by iADH, this chapter highlights both the strengths and gaps in the oral health programs across different institutions. This chapter also discusses the implications of these findings on the future of SND education and practice, emphasising the need for curriculum improvements to ensure graduates are adequately prepared to meet the oral health needs of people with disability.

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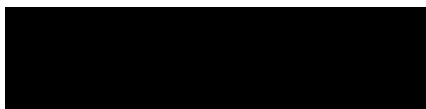
I hereby confirm that Dorothy Koh is the primary author of this published manuscript. She led the development of the study concept and design, conducted the search and screening, analysed the data, and prepared all tables and figures. She drafted the full manuscript and coordinated revisions in response to peer-review feedback.

The individual contributions of the co-authors are as follows:

Contribution	Authors
Development of the study concept and design	DK, DL, MA, WS, AP
Data collection	DK
Data analysis and interpretation	DK, DL, MA, AP
Manuscript drafting	DK
Critical review of the manuscript	DK, DL, MA, WS, AP

All co-authors approved the final version for publication and support the inclusion of this work in the thesis.

Yours sincerely,



A/Prof Archana Pradhan
Lead Supervisor

ORIGINAL ARTICLE

A Content Analysis of Special Needs Curriculum in Australian Oral Health Programs

Dorothy Koh  | Delyse Leadbeatter  | Melanie Aley  | Woosung Sohn | Archana Pradhan

Faculty of Medicine and Health, The University of Sydney, Sydney, Australia

Correspondence: Dorothy Koh (dorothy.koh@sydney.edu.au)

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ABSTRACT

Aims: This study aimed to investigate the extent to which special needs dentistry (SND) content is incorporated into Australian undergraduate oral health programs and to assess the depth and sufficiency of training provided.

Methods: A comprehensive content analysis was conducted by reviewing publicly available information from the official websites of Australian oral health courses, including course handbooks and subject learning outcomes. The curriculum content was compared with the established learning domains and outcomes outlined by the International Association for Disability and Oral Health (iADH), which were accessed from publicly available documents on the organisation's website.

Results: The analysis revealed significant variation in the depth and scope of SND content across different institutions, indicating a lack of consistency in training standards. Some programs demonstrated coverage of theoretical and clinical components, while others offered minimal exposure to SND-related content.

Conclusion: The findings highlight the need for enhanced education and training through curriculum development to improve the preparedness of the oral health workforce. Strengthening SND training can better equip graduates to meet the complex dental needs of people with disability and help reduce disparities in oral health care for this vulnerable population.

1 | Introduction

Special needs dentistry (SND), also known as special care dentistry, is a branch of dentistry that focuses on providing oral health care to people with disability. It encompasses the care of patients with a wide range of conditions, including but not limited to physical disability, intellectual and developmental disability, psychiatric conditions, complex medical conditions and aged care [1, 2]. The disability prevalence in Australia is approximately one in six (18%), with an additional 22% of the population experiencing chronic health conditions [3]. With only 29 specialists in SND nationwide [4], there is an urgent need to build the workforce capacity to meet the growing demand for dental care.

The oral health workforce—including oral health therapists, dental therapists and dental hygienists—is known not only to deliver primary dental treatment but also to enhance accessibility to dental care for people with disability [5], particularly through oral health promotion and preventive dentistry [6]. People with disability generally have poorer overall health. The oral health of this population is largely neglected, and they have reduced access to regular dental care. Consequently, they face an increased risk of dental issues such as dental caries and periodontal disease [7, 8]. The presence of other contributing factors, including the adverse outcomes of their general health, polypharmacy, impairments and reliance on caregivers and family members to assist with oral hygiene care, further complicates efforts to achieve appropriate dental care [9, 10]. Dental

treatment can often be challenging for people with disability due to multiple factors such as communication barriers, behavioural issues, physical limitations or medical complexity [11]. With the increased unmet dental needs of people with disability, an oral health workforce that is confident and well-prepared to manage these challenges is essential to improving oral health outcomes for this population.

Research demonstrates that dental practitioners' willingness to treat patients with disability is strongly associated with adequate undergraduate education and clinical experience in SND [12–15]. Enhancing education and exposure has been shown to improve practitioner confidence and attitudes to provide care, reducing oral health disparities [16–18]. Addressing gaps in undergraduate education has been recognised as a key strategy to improve practitioners' willingness to treat people with disability and encourage their inclusion in general practice [14, 15, 19].

Despite this need, there is a lack of documentation on the extent of SND training within Australian undergraduate oral health programs, resulting in a limited understanding of whether students graduate with sufficient preparation in this field. While SND-related content is included in most programs, coverage is often limited and may not adequately support translation from theory to clinical practice [20]. This study aims to examine the SND content of Australian undergraduate oral health courses, map it against the learning outcomes proposed by the International Association for Disability and Oral Health (iADH), identify curriculum gaps and inform future efforts to refine or develop curricula that strengthen education and workforce preparedness in SND. In this study, the term oral health programs refers specifically to undergraduate programs that educate oral health therapists or dental hygienists, and does not include dental (dentist) education programs.

2 | Materials and Methods

The undergraduate curriculum in SND by iADH outlined the domains, learning outcomes, including examples of descriptive learning and teaching methods, assessment and feedback [17]. It is designed to adequately equip undergraduates with theoretical understanding and clinical experience, fostering the skills, attitudes and behaviours required when managing the dental needs of people with disability. Educators from different countries are encouraged to tailor their program content based on the requirements, utilising the learning outcomes as a curriculum guide. It is paramount that upon graduation, the dental students should be competent and confident to respond dynamically to these challenges of unmet dental healthcare needs, as outlined in the objective of this document [21]. This established information was accessed through publicly available documents provided by the organisation on its website (iadh.org). It can be downloaded from the 'Resource' section under the 'Education and Training' category [22]. The initial three domains provide fundamental knowledge on the scope, access and barriers to dental care and obtaining informed consent from people with disability. The subsequent three domains build upon the existing knowledge with a focus on a more clinical and translation-to-practice aspect (Table 1).

To explore the SND content in Australian undergraduate oral health courses against the learning outcomes set forth by the iADH, a comprehensive curriculum content analysis, guided by the methodological principles described by Weber [23], was conducted. Content analysis is a research approach that enables systematic interpretation of data [24]. This analysis involved reviewing publicly available information from the official websites of Australian undergraduate oral health courses. In Australia, there are eight institutions providing courses in oral health therapy and two offering courses in dental hygiene. Of these, nine courses are delivered at universities and one at Technical and Further Education (TAFE)—a public vocational education provider in Australia, also an alternative option to higher education institutions. Nine of the courses are 3-year full-time programs and one is a 2-year full-time program. Inclusion criteria stipulated that Australian institutions must offer programs in dental therapy, dental hygiene, or oral health therapy. All 10 institutions were included in the analysis. A review was conducted to examine the incorporation of SND content within the curriculum. The data collection process occurred between March and April 2024 (Table 2). Given that online information is subject to changes, it is imperative to note that the collected data accurately represented the status at the time of collection. The latest course handbook (2024) from each oral health program was accessed directly from the institutions' websites. Within the course handbook, the unit of study and corresponding learning outcomes were detailed. The process of analysing the content of the oral health programs was standardised and consistent across all institutions. The same approach and methodology were employed when reviewing the curriculum content of each program, ensuring a fair and objective comparison. As part of the content analysis process, information on each subject was obtained and analysed to ascertain the learning outcomes and coverage of SND topics within the curricula. Keywords were identified and used to locate subjects within the courses containing content on SND. The contents were carefully examined and cross-referenced with these keywords. They include:

- Geriatric, gerontology, elderly, aged care.
- Special needs, special medical needs, vulnerable community, high health needs, additional healthcare needs and disability.
- Medically compromised, complex care, health disorder, systemic diseases.
- Physical, sensory, intellectual, mental, medical, emotional, social impairments or disabilities.

For each subject that included the keywords, they were then categorised according to how the subjects were delivered:

- Independent: A specific SND subject.
- Integrated: A SND content incorporated into clinical subjects.
- Blended: A SND module integrated with another department such as paediatrics, oral pathology, periodontics, population of oral health and orthodontics.

The data obtained from the analysis were summarised and presented in tabular form, allowing for easier interpretation and

TABLE 1 | Domains and learning outcomes extracted from International Association for Disability and Oral Health (IADH) Undergraduate Curriculum in Special Care Dentistry [21].

	(A) Knowledge (cognitive)	(B) Skills (psychomotor)	(C) Attitudes behaviours (affective)
1. Scope of special care dentistry	Describe the cultural, legal and social context of people with disability and other marginalised groups	Discuss epidemiology, terminology, concepts and classifications of human function, disability and health	Demonstrate positive attitudes in relation to human difference and diversity
2. Access & barriers to oral health for people with disability & other marginalised groups	Identify the social determinants of health in relation to health inequalities in people with disability and other marginalised groups	Recognise barriers and facilitators to oral health for people with disability and other marginalised groups	Use social and environmental facilitators to oral health and oral health promotion within service structure
3. Consent for people requiring special care	Outline the appropriate consent process when providing care for people with communication, cognitive or sensory impairments	Obtain valid consent for oral health procedures appropriately	Demonstrate respect for patient autonomy and the role of the family and caregivers
4. Communication skills in special care dentistry	Describe appropriate methods of communication for people with cognitive, sensory and/or other communication impairments	Use appropriate methods of communication for people with cognitive, sensory and/or other communication impairments	Demonstrate culturally sensitive and inclusive language with patients, colleagues and care givers
5. Impact of impairments, disabilities & systemic conditions on oral health & oral function	Describe common impairments, disabilities and systemic conditions in relation to their impact on oral health and oral function	Identify the key elements of impairments, disabilities and systemic conditions that may impact on oral health or oral function for individual patients	Consider the need for and benefits of inter-professional liaison in patient assessment

(Continues)

TABLE 1 | (Continued)

	(A) Knowledge (cognitive)	(B) Skills (psychomotor)	(C) Attitudes behaviours (affective)
6. Clinical management of patients requiring special care dentistry	(i) Describe the factors (medical, social and environmental) that impact on risk assessment and treatment planning for individual patients requiring special care (ii) Discuss behavioural and pharmacological approaches that facilitate dental treatment for individual patients requiring special care dentistry (according to local guidelines and protocols)	(i) Design oral health education for individual patients and their caregivers (ii) Provide simple clinical treatment using appropriate facilitation techniques for patients requiring special care, likely to present to a primary care service	(i) Recognise the value of teamwork in the management for patients requiring special care (ii) Take responsibility for referring or arranging care for patients with more complex needs

understanding of the findings. Information about the program was collected from publicly available institutions' websites. Ethics approval was therefore not deemed necessary.

3 | Results

The data identified that different oral health institutions employed diverse teaching approaches in SND (Table 3). Overall, 80% of the courses had clear indications containing the keywords on the subject of SND. All courses varied in the number of subjects during the curriculum, ranging from 16 to 34. The number of subjects containing SND, therefore, varied significantly between the courses. The percentage of subjects with SND integrated within the course ranged from 0% to 43%. Out of these institutions, the majority ($n=9$) contained integrated subjects, where content on dental management of people with disability was delivered in clinical settings. 70% incorporated blended didactic learning into other departments such as medical emergencies, oral pathology, pedodontics, periodontics, population of oral health and orthodontics. Only 40% had standalone SND subjects which were delivered during the second or third year of the curriculum.

Eight of the oral health courses containing at least one SND subject met at least one of the six domains recommended by the iADH undergraduate curriculum in SND (Table 4). However, they mainly addressed the fourth, fifth and sixth domains (4. Communication skills in special care dentistry; 5. Impact of impairments, disabilities and systemic conditions on oral health and oral function; 6. Clinical management of patients requiring

special care dentistry) and only one institution covered the domain of access and barriers to dental care.

4 | Discussion

The findings of the preliminary exploration revealed significant variability in the extent and depth of SND learning outcomes across Australian undergraduate oral health programs. While it is encouraging that most courses engaged with at least one iADH-recommended learning domain, coverage was inconsistent and fundamental topics were often not fully addressed. Only 2 of the 10 programs offered SND-related subjects in the first year, with the remainder introduced later in the curriculum. This limited and inconsistent integration could be an outcome of allocating a significant amount of focus on the development of technical skills such as restorative dentistry and periodontics within the curriculum.

The majority of oral health courses incorporated some content on SND within other subjects, but this integration of SND content across subjects may limit the opportunity to delve deeper into each specific domain, leading to a limited understanding of the complexities of this specialised field. Programs with standalone SND subjects are likely to provide more focused and thorough learning experiences. However, the critical question remains: *are current educational efforts sufficient to prepare the oral health workforce to confidently manage the dental needs of people with disability, and what is the training necessary to reach the preparedness goal?*

TABLE 2 | Summary of institutions and programs included in the content analysis.

Name of institution	Name of program	Data access date
University of Adelaide	Bachelor of Oral Health	20 March 2024
Curtin University	Bachelor of Science (Oral Health Therapy)	20 March 2024
Central Queensland University	Bachelor of Oral Health	20 March 2024
University of Melbourne	Bachelor of Oral Health	21 March 2024
La Trobe University	Bachelor of Oral Health Science	21 March 2024
University of Newcastle	Bachelor of Oral Health Therapy	21 March 2024
Charles Sturt University	Bachelor of Oral Health (Therapy and Hygiene)	3 April 2024
University of Sydney	Bachelor of Oral Health	3 April 2024
Griffin University	Bachelor of Dental Hygiene	3 April 2024
Tafe South Australia	Advanced Diploma in Oral Health (Dental Hygiene)	3 April 2024

Early works in this area have reported unanimous findings—participants felt that the undergraduate educational opportunities in SND were inadequate in preparing them and suggested that an increase in didactic and clinical training in this field would improve their confidence and acceptance in treating these patients [19, 25–27]. Borromeo et al. found that 87% of the students could not define SND and 69% reported insufficient clinical experience in providing dental treatment to people with disability. Despite this, students exhibited comfort and positivity towards treating these patients, with more than half indicating willingness to pursue further education in SND [19]. Similar findings have been documented internationally, with a majority of dental students in Jakarta and Malaysia reporting limited SND education and experience, which negatively impacted their readiness to treat this population [13, 15]. These findings highlight the global gap in SND training and the need to update and expand curriculum content to reflect the growing demand for care.

Experience and exposure are strongly linked to perceptions of preparedness and willingness to treat. Without adequate knowledge in SND, graduates are less likely to include patients with disability as part of their professional practice, leading to further exclusion and unmet needs [28, 29]. It is vital for the dental team to acquire personal experience and exposure to

people with disability. This is essential for fostering positive attitudes towards diversity and ultimately improving access to oral healthcare for this patient population [29–31]. The iADH ‘Undergraduate Curriculum in Special Care Dentistry’, developed in 2012, provides a valuable framework but would benefit from review and refinement to better suit the needs of the oral health workforce today.

The limitation of this study lies in its focus solely on Australian undergraduate oral health programs. This narrow scope may not fully capture the breadth of educational approaches and training standards for addressing SND globally. Reliance on curriculum content analysis of learning outcomes from publicly available course handbooks may not provide a comprehensive understanding of the depth of training in SND. This method may overlook clinical components and hands-on experiences, which are crucial components of preparing the students to effectively address the dental needs of people with disability. This study does not assess the actual proficiency or competency of graduates. Therefore, using learning outcomes as the measure may not accurately gauge the extent of coverage in SND, making it an unreliable indicator of training depth. A countervailing view, which is worth considering, is that tertiary institutions demonstrate their strategic priorities through publicly available information. The portrayal of strategic priorities around inclusivity and public good cannot be ignored when judging representations of curricula in the public domain.

Given that oral health practitioners comprise 20% of Australia’s registered dental workforce [4], their potential contribution to improving access to dental care for people with disability is significant. Oral health therapists, dental therapists and dental hygienists are highly trained in prevention, oral health promotion and basic restorative procedures (Table 5) [5, 6]. By leveraging their skills, dentists can then focus on complex cases [32, 33]. However, concerns remain about the underutilisation of this workforce. Strengthening their training in SND could enable them to play a more active role in reducing oral health disparities and alleviating pressure on specialist services [34].

The oral health workforce could be a valuable asset in SND. As we proceed with our research, it is imperative to shift our focus to this workforce, to further explore the:

- Depth of SND training and clinical exposure across programs,
- Workforce’s perception of education received and potential further training opportunities in SND,
- Perception of their preparedness and willingness to treat people with disability,
- Possibilities of developing a comprehensive curriculum framework that aligns with workforce needs and national priorities.

This research addresses the pressing demand for education in SND to be explored on a national level. Future research should focus on how we can support the next generation of the oral health workforce to be more competent, confident and willing to respond to the challenges of inequalities in oral health of people with disability.

TABLE 3 | Summary of special needs dentistry content within the oral health curriculum.

Institution	Total no. of subjects	No. of SND subjects	No. of subjects with SND components in Year 1	No. of subjects with SND components in Year 2	No. of subjects with SND components in Year 3	SND delivery method
A	21	6	0	2	4	Blended, integrated
B	16	3	0	1	2	Independent, integrated
C	20	3	0	1	2	Blended, integrated
D	12	3	0	2	1	Blended, integrated
E	16	4	0	2	2	Independent, blended, integrated
F	21	3	1	1	1	Independent, blended, integrated
G	14	4	0	2	2	Independent, blended, integrated
H	18	7	1	4	2	Blended, integrated
I	16	0	0	0	0	—

Note: Data collected between March and April 2024.
Abbreviation: SND, special needs dentistry.

TABLE 4 | Institutions' courses that has met International Association for Disability and Oral Health (iADH) learning outcomes.

Institution	iADH learning outcomes statements met (Year 1)	iADH learning outcomes statements met (Year 2)	iADH learning outcomes statements met (Year 3)
A	—	5B	4C, 6A, 6C
B	—	5B, 6A, 6C	4C, 5B, 6C
C	—	6A	6A, 6C
D	—	5B	6A, 6C
E	—	5B, 6A	5B, 6A
F	5A	4C, 5A, 6B	4A
G	—	6C	5A, 5C, 6C
H	6A	2A, 5A, 6A	3C, 6A
I	—	—	—
J	No learning outcomes to refer to		

Note: Data collected between March and April 2024.
Abbreviation: iADH, International Association for Disability and Oral Health.

5 | Conclusion

This study offers an insight into the SND content within the oral health curriculum in Australia. This proves that training on SND varies greatly across institutions and not all recommended

learning outcomes are being met. It is beneficial for the development of a standardised curriculum outline to give more emphasis on the topics of SND to address the significant variance at present. This will empower the future oral health workforce with the confidence and readiness to effectively address the

TABLE 5 | A summary table of the job scope of Dental Hygienist, Dental Therapist and Oral Health Therapist in Australia [6].

Treatment procedures	Dental hygienists	Dental therapists	Oral health therapists
Examination and Diagnosis	✓	✓	✓
Non-surgical periodontal management	✓	X	✓
Restorative procedures	X	✓	✓
Endodontics, for example, direct pulp cap, pulpotomy	X	✓	✓
Preventive procedures, for example, fissure sealants, fluoride application	✓	✓	✓
Oral hygiene instructions, diet counselling and smoking cessation	✓	✓	✓
Administer local anaesthetic	✓	✓	✓
Removal of deciduous tooth	X	✓	✓
Radiographs of teeth and jaw	✓	✓	✓
Take impressions	✓	✓	✓
Patient age range	All ages	Up to 26 years of age	May have age limit

Undertaken additional training can have extended scope such as providing restorative treatment for adults of all ages, or Aged Care

Note: 'Patient age range' refers to the age of patients that each professional is clinically allowed to treat. Additional training may extend this scope.

dental needs of people with disability upon graduation and throughout their professional careers.

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Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The authors have nothing to report.

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CHAPTER 4

**Oral Health Care for People with Disability:
Curriculum Content in Oral Health Programs**

Chapter Overview

The curriculum content analysis identified variance in the depth and scope of Special Needs Dentistry (SND) education across Australian Oral Health programs, indicating inconsistencies in training standards. While the findings offered useful preliminary insights, they were based largely on course handbooks and published learning outcomes, which may not fully reflect the actual student learning experience in SND. This approach may overlook clinical training components, which are crucial for preparing the students to manage the dental needs of people with disability upon graduation. To address this gap, the present chapter further expands on the findings of Chapter 3, examines how SND content is delivered and integrated within oral health curricula across Australia, New Zealand, the United Kingdom, the United States, and the Republic of Ireland (**Research Objectives 3 and 4 – 3: To explore the current depth and scope of SND training in undergraduate oral health programs; 4: To identify curriculum gaps and challenges within undergraduate oral health programs related to SND and discuss future agenda to enhance the skills and preparedness of the oral health workforce in this field**).

Through documenting the current state of SND education and highlighting areas for improvement, this chapter contributes valuable insights to the thesis. These include identifying curriculum gaps, understanding the challenges faced by educators in delivering SND content, and recognising best practices that could promote clinical preparedness and confidence among graduates. Together, these can inform efforts to improve the quality of care for people with disability across diverse educational contexts.

A manuscript based on this chapter has been peer-reviewed and published in the Journal of Dental Education. The survey instrument utilised in this chapter is provided in **Appendix B**.

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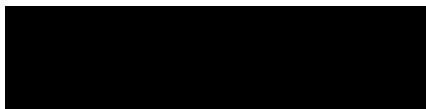
I hereby confirm that Dorothy Koh is the primary author of this published manuscript. She led the development of the study concept and design, initiated survey distribution, and conducted data collection, analysis and interpretation. She drafted the full manuscript and coordinated revisions in response to peer-review feedback.

The individual contributions of the co-authors are as follows:

Contribution	Authors
Development of the study concept and design	DK, WS, DL, AP, MA
Data collection	DK
Data analysis and interpretation	DK, AP, MA, DL
Manuscript drafting	DK
Critical review of the manuscript	DK, WS, DL, AP, MA

All co-authors approved the final version for publication and support the inclusion of this work in the thesis.

Yours sincerely,



A/Prof Archana Pradhan
Lead Supervisor

ORIGINAL ARTICLE OPEN ACCESS

Oral Health Care for People With Disability: Curriculum Content in Oral Health Programs

Dorothy K. L. Koh  | Archana Pradhan | Melanie J. Aley | Woosung Sohn | Delyse M. Leadbeatter 

Faculty of Medicine and Health, The University of Sydney, Sydney, Australia

Correspondence: Dorothy K. L. Koh (Dorothy.koh@sydney.edu.au)**Received:** 9 September 2024 | **Revised:** 26 January 2025 | **Accepted:** 7 March 2025**Funding:** The authors received no specific funding for this work.**Keywords:** curriculum | dental care for disabled | dental education | oral health therapy | people with disability | program evaluation | special needs dentistry

ABSTRACT

Purpose/Objectives: The shortage of dental practitioners willing to treat people with disability has become a significant concern, attributed mainly to inadequate undergraduate education and clinical experience in special needs dentistry (SND). Working closely with dentists, the Oral Health Therapy workforce is highly skilled in preventive dentistry, and they could provide dental services to enhance accessibility for people with disability. This study aimed to assess the current state of SND education within oral health programs and highlight the importance of high-quality SND training to prepare oral health graduates to manage the dental needs of people with disability.

Methods: A total of 39 oral health institutions offering undergraduate programs in Oral Health Therapy, Dental Therapy, and Dental Hygiene from Australia, New Zealand, the United States, the United Kingdom, and Ireland were selected. An online survey was distributed in March 2024, to collect data on the status of SND education, teaching methods, clinical training opportunities, and curriculum resources.

Results: Survey responses from eleven institutions (28% response rate) revealed variability in the current status and comprehensiveness of SND education. Some programs offered dedicated courses, while others provided only a limited overview. The SND teaching and instructions are primarily provided by qualified dental hygienists, dental therapists, and oral health therapists with specialised training and experience in disability (73%). Classroom-based instruction was the most common teaching method, with limited clinical training opportunities.

Conclusion(s): The findings emphasise the need for standardised guidelines to ensure consistency and adequacy in SND education across oral health programs. Enhancing clinical training opportunities, promoting interprofessional collaboration, and expanding educational resources are essential steps toward improving oral health care for people with disability.

Dorothy K. L. Koh, PhD candidate, The University of Sydney, Faculty of Medicine and Health. Associate Professor Delyse Leadbeatter, Director of Academic Education, Sydney Dental School, The University of Sydney, Faculty of Medicine and Health. Associate Professor Archana Pradhan, Stream Coordinator of Special Needs Dentistry, Sydney Dental School, The University of Sydney, Faculty of Medicine and Health. Associate Professor Melanie Aley, Director of Oral Health, Sydney Dental School, The University of Sydney, Faculty of Medicine and Health. Professor Woosung Sohn, Chair of Population Oral Health, Sydney Dental School, The University of Sydney, Faculty of Medicine and Health.

The views expressed in this study are those of the authors and do not necessarily reflect the official policy or position of the University of Sydney or any other affiliated institutions.

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1 | Introduction

Special needs dentistry (SND), also referred to as special care dentistry, is a branch of dentistry that focuses on providing oral health care to people with disability. SND encompasses the care of patients with a wide range of conditions, including but not limited to physical disability, intellectual and developmental disability, psychiatric conditions, complex medical conditions, and aged care [1]. Over the years, there has been a significant surge in the prevalence of people with disability, largely due to the aging population and chronic medical conditions [2]. Consequentially, with the continual advancement in medical technology, the life expectancy of people with disability has steadily increased [3]. Approximately 1.3 billion people or sixteen percent of the world population experience some form of disability [4]. In Australia, one in six lives with disabilities, with an additional 22% of the population having some form of chronic health issues [5]. The population growth has also resulted in an increase in dental demands.

Even though SND has received considerable effort and attention over the decade, it is still widely acknowledged that the oral health of people with disability is generally poorer with greater unmet dental needs than those without disability conditions [6, 7]. People with disability are more prone to dental problems as a consequence of the inability to perform oral hygiene care, behavioural and mental challenges, polypharmacy, and congenital abnormalities of oral and facial development [8, 9]. Due to the perceived shortage of dental practitioners equipped with adequate knowledge of SND, people with disability encounter additional challenges in finding a practitioner willing to accept them in their professional practice [8, 10]. Previous studies investigating dental practitioners' perceptions of SND have shown a correlation between education and the willingness to provide dental services for individuals with a disability, often attributing their reluctance to inadequate undergraduate education and clinical experience [11–13]. Contrastingly, several studies validate the theory that individuals who perceive their education positively tend to exhibit a more favourable attitude and are more inclined to provide treatment to this population in their professional practice [14, 15]. This emphasises the significance of incorporating adequate didactic and clinical elements in the education and training pertaining to the dental management of people with disability.

The Oral Health Therapy workforce, comprising of Oral Health Therapists (OHTs), Dental Therapists (DTs), and Dental Hygienists (DHs), plays a crucial role in preventive dentistry and oral health promotion. They are highly trained to deliver primary dental treatment which helps improve accessibility to dental care [16]. The workforce receives training that provides them with fundamental knowledge of dental care across diverse patient populations, including those with disability [17]. However, the extent of their expertise in SND may differ based on their educational background, professional experience, and continuous professional development efforts. While the current oral health university programs offer components or subjects on SND, such inclusion may be limited to a basic overview due to the constraints of an overly crowded curriculum.

Dental management for people with disability necessitates specialised theoretical and practical expertise to accommodate their unique needs [15]. This supports the importance of our dental

workforce to enhance their preparedness and abilities in SND, effectively addressing the challenges associated with providing dental care to people with disability. Additional development may be required to ensure the effective translation of theoretical knowledge into clinical practice. However, to achieve this goal, it is essential to first understand the educational opportunities and preparation processes available to undergraduate students. This study aims to explore the educational effort in SND, allowing a better understanding of the status of training within the Oral Health Therapy, Dental Therapy, and Dental Hygiene curriculum. This research will highlight the importance of establishing high-quality dental education programs to prepare the oral health graduates, to increase their willingness to treat patients with disability now and throughout their professional practices. Such improvements could be beneficial in reducing the oral health disparity between the special needs population and the general population.

2 | Methods

This study was approved by the Human Research Ethics Committee at the University of Sydney (2023/315).

This study utilised a descriptive and quantitative approach through a self-administered online survey. A total of 39 oral health institutions were selected through a comprehensive review of academic databases and professional organizations' directories. Inclusion criteria stipulated that institutions must offer programs in Oral Health Therapy, Dental Therapy, and Dental Hygiene. The participants were program directors of oral health programs located across Australia, New Zealand, Ireland, the United States (US), and the United Kingdom (UK). In Australia, there are eight Oral Health Therapy programs and two Dental Hygiene programs, while New Zealand has two Oral Health Therapy programs. The UK does not have a specific Oral Health Therapy program, however, 20 institutions offer qualifications in Dental Therapy and Dental Hygiene for students to be highly trained in oral health promotion and preventive dental care. Ireland has two schools providing Dental Hygiene training, while the US has five schools offering Dental Therapy training. US hygiene programs were not included in this study as a similar study was already conducted previously [18].

The questionnaire of this study (Appendix SI) was adapted from a validated instrument developed by Dehahitem et al. [18]. Modifications were made to include additional questions tailored to capture nuanced details of training and practices, as well as to identify challenges in SND education. To ensure the validity and reliability of the modified questionnaire, a panel of experts involving dental educators and practitioners, reviewed the changes. Their feedback was incorporated to enhance clarity and content relevance. The questionnaire comprises 27 items, predominantly multiple-choice questions (MCQ). Information was collected on: (i) General information about the institution's oral health course, (ii) The SND content of the course, (iii) Teaching methods and resources, and (iv) Students' level of competency in managing dental needs of people with disability. Among the MCQs, the majority were accompanied by a text box to allow respondents to provide further comments. Additionally, the questionnaire included five open-ended questions and seven Likert scale items.

TABLE 1 | Tabular representation of the demographic data.

Institution	Country	Course	Graduates per year	Total number of years
A	AUS	OHT	40	3
B	US	DT	6	2
C	NZ	OHT	55	3
D	UK	DT/DH	24	2.25
E	UK	DH	30	3
F	IRE	DH	12	2
G	NZ	OHT	75	3
H	AUS	OHT	50	3
I	US	DT/DH	8	3
J	AUS	OHT	50	3
K	AUS	OHT	20	3

Abbreviations: AUS = Australia, DH = Dental Hygiene, DT = Dental Therapy, IRE = Ireland, NZ = New Zealand, OHT = Oral Health Therapy, UK = United Kingdom, US = United States.

Email invitations for the surveys were sent to the program directors requesting them to nominate an educator, who is familiar with the special needs content of the program to complete the survey. The initial email sent in March 2024 contained information outlining the purpose and process of the study. Academic staff who were interested in participating were asked to complete an online survey via Research Electronic Data Capture, a secure web application for online surveys. After an initial contact of three weeks, a second reminder email was sent.

Respondents' answers were analysed for frequencies, where statistical analysis of quantitative data was performed using the SPSS software program (version 20). Descriptive statistics, such as frequency distributions, means, and standard deviations, were used to present an overview of the findings. Qualitative data from open-ended questions were thematically analysed to identify recurring themes and patterns.

3 | Results

Out of the 39 email invitations sent, one institution declined to participate. During the data analysis, we identified one response as a potential outlier. We contacted the corresponding institution for clarification but did not receive a response. This data was excluded from the final analysis. Consequently, the adjusted response rate is 28%.

3.1 | Demographic Characteristics

The collected data exhibited a balanced representation of respondents with responses received from at least two institutions in each of the countries of interest across various fields, including Oral Health Therapy and/or Dental Therapy and Dental Hygiene (Table 1). The number of students per year in the 2-year programs ranged from six to 24 students, and in the 3-year programs ranged from eight to 75.

3.2 | Topics on SND Addressed in the Curricula

The initial goal of this study was to ascertain the inclusion of SND-related content in oral health programs' curricula which involved identifying the specific types of disability addressed in these educational components. The options given were the classifications commonly used and recognised in the field of dentistry and healthcare. Only one institution reported not having any special needs component in the curricula. The majority of programs indicated that they deliver SND education in the second year (81%), which aligns with the period when students typically transition from theoretical learning to clinical practice. Programs that include a component on SND addressed conditions such as physical disability (81%), intellectual and developmental disability (91%), psychiatric conditions (81%), complex medical conditions (91%), and aged care (81%) (Table 2).

SND subjects can be incorporated into curricula through various modes, either independently or in conjunction with other subjects. 27% of the oral health programs in this study have specific special needs modules as one of their core subjects. Others have SND integrated with pediatric dentistry, clinical modules, or in collaboration with other disciplines in the special needs department or disability sector, such as occupational therapists and speech pathologists. To understand the topics of training, participants were given a question concerning the dental management of patients with disability (Table 3). The majority of the programs ($n = 10$) include effective communication in their curricula. Topics like critical thinking, clinical management, disease prevention, legal and consent matters, along with interprofessional care and collaborative practice have been recognised as important and included in the programs' curricula. Other topics suggested were application and knowledge on advocacy, teledentistry, community outreach, domiciliary care, communication aids, and billing for special needs services were proposed as beneficial to be part of the training process.

TABLE 2 | Frequency and percentage of responses.

Questions	Frequency (<i>n</i>) ^a	Percentage (%)
Which year did the students receive education on special needs?		
First year	3	27
Second year	9	81
Third year	4	36
None	1	9
Which of the special needs conditions was addressed during the curricula?		
Physical disability	9	81
Intellectual & developmental disability	10	91
Psychiatric conditions	9	81
Complex medical conditions	10	91
Aged care	9	81
None	1	9
How is the special needs content delivered in the course?		
A specific special needs module	3	27
SND integrated with the pediatric module	5	45
SND integrated with clinical dentistry	7	64
SND integrated with other departments	4	36
None	1	9
Are there any modules that involve working with other disciplines in the special needs department or disability sector?		
Yes	4	36
No	6	55
No SND content in the course	1	9

Abbreviation: SND = Special Needs Dentistry.

^aThe total number of responses for each question does not sum to the total number of participants ($n = 11$), as participants were able to select multiple options in the “select all that apply” questions.

3.3 | Teaching Methods, Resources, and Students' Assessments

SND employs a multifaceted approach in its educational practices (Table 4). Classroom-based settings emerged as the predominant teaching environment, averaging 17.4 h. Common methods utilised included lectures, seminars, problem-based learning, and case study presentations. Other methods encompassed various educational settings, such as clinical settings involving demonstration and observation (mean = 5.4 h), while clinical placements allowed students to provide dental treatment to patients with disability in the clinic (mean = 14.9 h). Additionally, community settings facilitated outreach activities and interactions with individuals with disability in social, non-clinical environments such as schools and homes (mean = 7.4 h). Participants were asked to specify the number of hours students spent studying in various settings. Both clinical placement and community settings exhibit a higher standard deviation of 17.49 and 19.71, respectively, suggesting that there is less standardization and greater disparity among programs in these areas.

Clinical experiences, essential for hands-on learning, were varied, with students gaining exposure in various settings (Table 5). 64%

of the oral health programs reported having clinical training through university or college clinics, followed by community-based or external rotations (45%). Hospital-based settings were also utilised for clinical sessions, reported by 36% of the programs. Notably, educators drew upon a diverse array of resources. The most commonly reported teaching resource utilised to deliver content for SND was referencing various organizations and practitioners with diverse levels of experience and specialty training in delivering such content. Others include pediatric dentistry curriculum material, peer-reviewed journals, websites and audiovisual materials, specific textbooks, online training, and interactive sessions with parents of/or people living with a disability.

The findings indicate that while there is an interprofessional approach to teaching, there is a noticeable lack of interprofessional collaboration in clinical training and patient care settings (Table 5). The SND teaching and instructions are primarily provided by qualified DHs, DTs, and OHTs with specialised training and experience in special needs (73%). Additionally, dentists with expertise in treating patients with disability and general DH, DT, or OHT (55%) also played a significant role in teaching. Furthermore, there were contributions from other professionals such as pediatric dentists, nurses, and representatives

TABLE 3 | Frequency and percentage of responses for a question on specific topics in the Special Needs Dentistry (SND) curriculum.

Question: Which specific issues were addressed in the subject of the treatment of patients with disability? Select all that apply.

A) Comprehensive understanding of SND (e.g., classification, etiology, life span issues, oral biology, etc.)

B) Effective communication: Verbal and non-verbal communication associated with pain, anxiety, and phobia among patients; cultural or unique background to patients, family, or carers

C) Non-pharmacological anxiety and behavior support techniques

D) Critical thinking and evidence-based dentistry revolving around patient-centered care, clinical management, and disease prevention

E) Safe transfer technique

F) Legal, ethical, guardianship, consent issues, and social and advocacy programs

G) Interprofessional care and collaborative practice.

Option (as above)	Frequency (n) ^a	Percentage (%)
A	5	45
B	10	91
C	7	64
D	8	73
E	5	45
F	9	82
G	8	73

Are there any topics you felt should be covered in the special needs content that are currently not in the curriculum?

- Improve opportunity for clinical experience, for example, oral health assessment, treatment planning, and preventive care
- Improve knowledge, for example, Contraindications to dental treatment
- Teledentistry
- Patient advocacy
- Domiciliary Care and community outreach
- Physical accommodations and communication aids for sensory needs
- Billing & coding for special needs services.
- Interaction with other disciplines such as Speech and Language Therapy.

Abbreviation: SND = Special Needs Dentistry.

^aThe total number of responses to this question does not sum to the total number of participants ($n = 11$), as participants were allowed to select multiple options.

TABLE 4 | An overview of the frequency, mean hours, standard deviation, and range of hours students spent in each setting.

Teaching methods	Frequency (n) ^a	Mean (hours)	SD/Range
Classroom-based settings	10	17.36	14.73/0–45
Clinical settings	4	5.36	12.32/0–40
Clinical placements	6	14.9	17.49/0–42
Community settings	2	7.36	19.71/0–65

Abbreviation: SND = Special Needs Dentistry.

^aThe total number of responses to this question does not sum to the total number of participants ($n = 11$), as participants were allowed to select multiple options.

from various organizations (i.e., Autism or other special care groups, trauma-informed care professionals, and individuals with lived experience).

To assess of educational outcomes and competency levels of the students, oral health programs employed a diverse variety of assessment methods, indicating a comprehensive evaluation process. The majority administered written examinations (73%) (Table 5). Other methods include clinical assessments, evaluation of students' management of patients with disability, oral presentations, and portfolios. Some participants identified other methods such as oral care planning, oral health assessment tools at residential care placement, discussion board, and writing of personal reflection.

3.4 | Evaluation of SND Resources in the Oral Health Course

While it is crucial to explore the status of training in SND, it is equally paramount to understand the challenges or barriers that the oral health programs encounter. Participants were asked to rate their level of agreement on a 5-point Likert scale for seven statements concerning the facilities and resources of the faculty (Table 6). The majority leaned towards agreement with statements indicating confidence in the presence of structured learning objectives. The participants also agreed that the oral health program has an overly crowded curriculum. On the other hand, there was disagreement regarding the adequacy of financial resources and clinical facilities allocation. There were neutral stances regarding the availability of patients with disability for clinical placement and the adequacy of educational resources. Overall, the respondents were moderately positive about the sufficiency of the curriculum in preparing students to manage the dental needs of people with disability upon graduation.

4 | Discussion

The present study aimed to evaluate current SND training provided to oral health students across various international programs in Oral Health Therapy, Dental Therapy, and Dental Hygiene. By involving diverse programs across selected countries, this research offers a comprehensive view of global educational practices and outcomes in SND. Common challenges and best

TABLE 5 | Frequency and percentage of responses for each question.

Questions	Frequency (<i>n</i>) ^a	Percentage (%)
In what settings were the students exposed to gaining clinical experiences by treating patients with a disability?		
Hospital-based setting	4	36
University/college clinic	7	64
Community-based or external rotation	5	45
Which teaching material or resources do the educators use?		
References externally	9	82
Specific textbooks	4	36
DVD	0	0
Pediatric curriculum material	6	55
Online training	2	18
Interactive session	2	18
Peer-reviewed journals	7	64
Websites and audio-visual materials	6	55
Who instructs and teaches the students on the topic of special needs in the course?		
Qualified DH, DT, or OHT with training and experience in SND	8	73
General DH, DT, or OHT	6	55
Dentist with training in special needs	6	55
General dentist	3	27
Pediatric dentist	2	18
Nurse	1	9
Teacher	0	0
Oral and maxillofacial surgeon	2	18
Physician	0	0
Others: Occupational therapist	1	9
How are the students' educational outcomes and competencies assessed?		
Written exams	8	73
Report	1	9
Essay	0	0
Oral presentation	2	18
Clinical assessments	6	55
Simulations	1	9
OSCEs	2	18
Oral examination	2	18
Standardized patient scenarios	0	0
Problem-based learning performance	2	18
Evaluation of the patient management	5	45
Portfolio	2	18

Abbreviations: DH = Dental Hygienist, DT = Dental Therapist, OHT = Oral Health Therapist, SND = Special Needs Dentistry.

^aThe total number of responses for each question does not sum to the total number of participants ($n = 11$), as participants were able to select multiple options in the "select all that apply" questions.

TABLE 6 | Frequencies and percentages of responses concerning the evaluation of special needs content in oral health programs.

Statement	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	N/A
The faculty/school has sufficient staff expertise to deliver education	0 0%	4 36.4%	2 18.2%	2 18.2%	2 18.2%	1 9.0%
The faculty/school has adequate financial resources	1 9.0%	4 36.4%	3 27.3%	1 9.0%	1 9.0%	1 9.0%
The program has allocated adequate clinical sites or special needs-friendly facilities for training	0 0%	6 54.5%	1 9.0%	2 18.2%	1 9.0%	1 9.0%
The clinic has enough patients with disability for students' clinical placement	0 0%	4 36.4%	2 18.2%	3 27.3%	1 9.0%	1 9.0%
The program has ample educational resources	0 0%	4 36.4%	1 9.0%	4 36.4%	1 9.0%	1 9.0%
The program has structured learning objectives or coherent guidelines to adhere to when teaching special needs dentistry	0 0%	0 0%	2 18.2%	7 63.6%	1 9.0%	1 9.0%
The oral health program has an overly crowded curriculum	0 0%	1 9.0%	2 18.2%	2 18.2%	5 45.5%	1 9.0%

Note: N/A = not applicable, particularly for institutions who reported no special needs content within curricula.

practices were identified, which will help inform the development of a standardised and effective curriculum framework. The results indicate that while there is some incorporation of SND content within oral health programs, there is significant variability in the approaches to the comprehensiveness of this education. Given the breadth and complexity of the practice of SND significant effort, attention, and focus are needed to educate students in SND. SND competes with other focal points, such as preventive dentistry and restorative techniques in oral health programs, and therefore may not be feasible to allocate the primary focus solely to SND. Most programs do cover the categories of special needs within their curricula. While some programs offer dedicated modules or courses focusing on SND, others provide only a limited overview within the broader curriculum. Courses that incorporate special needs content into other subjects may restrict the opportunity for in-depth learning of each specific domain, resulting in a limited understanding of the complexities of this specialised field. Conversely, those that offer standalone SND subjects are likely to provide more focused and effective learning experiences [19–21]. The absence of consistency in the curriculum highlights the need for standardised guidelines to ensure uniformity and adequacy in SND education across all oral health programs. This need is particularly pressing given the rising dental demands within the special needs population.

The variability in SND education in this study resonates with previous research highlighting inconsistencies in SND training across different institutions. Similar to Dehahitem et al., who found that a majority of dental hygiene programs included a classroom-based approach with less than 50% incorporating clinical training [18], our study also revealed a predominant reliance on classroom settings with limited clinical exposure. A recent study conducted in Chile demonstrated that 10.7% of participants undergoing undergraduate training had both theoretical and clinical training, which has a significant association with confidence in treating patients with disability [22]. There has been a notable progression of the integration of geriatric dentistry teaching over time, from

its absence in 1974 to its near-universal inclusion as a required course by 2016, at 92.8% [23]. However, even within geriatric dentistry, there were variations in the topics covered, similar to the variability we observed in SND education. These findings suggest that while there have been strides in standardising certain aspects of dental education, significant inconsistencies remain, particularly in the specialised field of SND. This highlights the need for ongoing efforts to enhance the comprehensiveness of SND training to better prepare dental professionals for treating patients with disability.

This research emphasises the importance of hands-on clinical experience in SND training. Despite the inclusion of theoretical content in many programs, the availability of clinical placements or specialised clinics for treating patients with disability appears to be limited. This shortage of practical training opportunities may hinder students' ability to develop essential skills and confidence in providing dental care to this population [24, 25]. Considering the lack of curriculum time can be the contributing factor for not allowing clinical training opportunities [26], programs with less than three years of curricula demonstrated their teaching to be predominantly classroom-based. Notably, two programs did not incorporate any clinical training, while one allocated less than 20 h throughout the entire curriculum. Clinical exposure correlated positively with enhanced self-efficacy in managing patients with disability and increased intentions to provide treatment for this population in future practice [25]. Wolff et al. reported that nearly 60% of the surveyed dental students expressed a lack of confidence in treating patients with disability, while 74.6% indicated they had received little to no preparation in their predoctoral education [27]. Dental practitioners who received comprehensive education encompassing both practical and theoretical aspects of SND were more likely to treat patients with disability [28, 29]. This indicated a significant correlation between inadequate education in SND and a lack of confidence in practicing within this domain [28, 30]. These studies suggest that enhancing the clinical experience and exposure to patients with

a disability during undergraduate training is a crucial component that increases the knowledge and comfort level, which influences the intention to treat.

The results demonstrated a lack of interprofessional collaborative practice in SND. Research involving medical, nursing, and pharmacy students has shown that interprofessional learning enhances their ability to work and communicate effectively, better understand other professional roles, and prioritise workloads, ultimately boosting professional confidence [31]. Studies also indicate that interprofessional educational approaches support increased knowledge and improved critical thinking skills [32]. These strategies not only deepen students' understanding of comprehensive patient care but also foster essential teamwork skills, leading to a more holistic approach to improving the quality of care for patients [33, 34]. To address the lack of interprofessional integration in SND, oral health students could engage in collaborative activities with peers from allied health disciplines, such as occupational therapists and speech pathologists. Examples may include shared clinical rotations and collaborative care planning exercises. Despite the recognised advantages, documentation of these approaches within SND remains limited. Future studies could explore the impact of interprofessional education and collaborative practice in SND, examining how these approaches can improve outcomes for patients with disability.

Some institutions acknowledged the constraints of limited curriculum time and considered the current curriculum to be contemporary and adequate given the time available. While others in this study undertook curriculum reviews aimed at reforming their programs to increase exposure to patients with disability. One strategy involved partnering with large community clinics that treat a significant population of these patients. Additionally, ongoing curriculum reviews were reported, with efforts focused on aligning the new curriculum with the General Dental Council (GDC) learning outcomes outlined in the Safe Practitioner framework, set to be implemented by September 2025. Participants also expressed interest in collaborating with dental schools or practitioners who specialise in treating patients with a disability to enhance the clinical component of their programs. There were discussions about incorporating more individuals with lived experiences into the teaching component, aiming to provide a more comprehensive and empathetic approach to SND education. These initiatives signify a proactive approach by oral health programs to address the challenges identified in this study and improve the quality of education in SND.

It is reassuring to observe the educational efforts undertaken by the institutions to equip the students with knowledge and clinical experiences in SND. However, the variability in the level of preparedness among students from different institutions demonstrated the differences in training protocols across oral health programs. Consequently, this diversity in preparedness levels may contribute to discrepancies in the quality of care provided to patients with disability. As such, there is a pressing need for standardized guidelines and comprehensive training programs to ensure that all graduates are adequately equipped to cater to the diverse needs of this patient population. Future research could explore the perceptions of the OHT workforce towards SND and their acceptance of future training opportunities. Understanding their attitudes will help identify areas for

improvement in SND education and professional development initiatives. This approach will ultimately enhance the effectiveness of SND education and improve the quality of care provided to people with disability.

While this study provides valuable insights into the current state of SND education within oral health programs, several limitations should be acknowledged. The small sample size, comprising a limited number of oral health programs from selected regions, may not fully represent the broader applicability of the findings. While the study achieved a diverse representation of institutions, programs lacking SND curriculum content might have been less inclined to participate, potentially skewing the results. The cross-sectional design provides a snapshot of SND education practices at a specific point in time, limiting the ability to observe curriculum refinements or trends over time. Additionally, the absence of inferential statistical analyses restricts the ability to identify broader patterns and relationships, emphasizing the need for future research with larger samples and advanced statistical approaches to strengthen generalisability and uncover global trends in SND education.

5 | Conclusion

This study sheds light on the current state of SND training within oral health programs and identifies several areas for improvement. Standardisation of curricular content, expansion of clinical training opportunities, and increased interprofessional collaboration are essential steps toward ensuring that oral health professionals are adequately prepared to meet the needs of people with disability. This study represents the initial phase toward creating advanced training opportunities with an expanded scope in SND for the OHT workforce. This would ensure they are highly trained and well-equipped to deliver oral healthcare services to this patient population.

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Conflicts of Interest

The authors declare no conflicts of interest.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section.

CHAPTER 5

**Perceptions of Special Needs Dentistry among
Oral Health Students and Practitioners**

Chapter Overview

While most oral health programs incorporate Special Needs Dentistry (SND) in their curricula, there is significant variability in the comprehensiveness and delivery of SND education. This inconsistency highlights the need for standardised guidelines to ensure adequate training across all oral health programs. The findings of the study on SND curricula (Chapter 4) align with Chapter 3, both of which identified gaps in the uniformity of SND learning. Despite such evidence, individual perceptions continue to play a crucial role in determining a practitioner's willingness to provide dental care to people with disability.

This chapter addresses **Research Objective 5 and 6** (5: *To investigate the perceptions and attitudes of final-year oral health students and practitioners in Australia toward providing dental care to people with disability*; 6: *To evaluate the acceptance of additional SND training opportunities among the Australian oral health workforce, considering their potential impact on professional practice*). This chapter explores how educational experiences influence the confidence and willingness of final-year oral health students and the oral health workforce to treat people with disability, both during training and professional practice. It also validates the significant role education has played in shaping their intention to treat this patient population. Additionally, this chapter provides insight into the workforce's acceptance of future training opportunities in SND, representing a critical step toward the development of training initiatives aimed at expanding the role of the oral health workforce in the provision of more inclusive oral healthcare for people with disability. The survey instrument utilised in this chapter is provided in **Appendix C**.

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Perceptions of Special Needs Dentistry among Oral Health Students and Practitioners

Dorothy Koh¹, Delyse Leadbeatter¹, Archana Pradhan¹, Woosung Sohn¹, Melanie Aley¹

1. The University of Sydney, School of Dentistry, Faculty of Medicine and Health

Correspondence: Dorothy Koh, Dorothy.koh@sydney.edu.au

ABSTRACT

Aims: This study examines the perceptions of final-year oral health students and practitioners regarding Special Needs Dentistry (SND) education, focusing on its impact on confidence and willingness to treat patients with disability, while also exploring the adequacy of current training, acceptance of future training, and identifying gaps to inform curriculum development.

Methods: A cross-sectional online survey, with 16 questions for students and 22 for practitioners, was pilot-tested and administered via the REDCap platform. Practitioners registered with the Australian Health Practitioner Regulation Agency (AHPRA) and the Dental Board of Australia were invited through professional associations, while students were invited through school emails. Both groups were additionally recruited through social media. Descriptive statistics were used to summarise the data, and independent t-tests were used for group comparisons ($p < 0.05$).

Results: A total of 105 students and practitioners completed the survey. Findings revealed low confidence in clinical preparedness, with only a third felt ready to treat patients with disability. Poor patient cooperation and limited clinical exposure were identified as key barriers. The majority agreed that more training opportunities and enhanced clinical experiences with flexible learning options are essential for future learning in SND.

Conclusion: Strengthening SND curricula through structured clinical training and accessible learning opportunities is vital to foster more competent and inclusive oral health practitioners.

Keywords: Dental care for people with disability; education, dental; dental therapist, dental hygienist, oral health therapist, perception

INTRODUCTION

Special Needs Dentistry (SND) focuses on providing oral healthcare to individuals with a wide range of conditions, including physical disability, intellectual and developmental disability, psychiatric conditions, complex medical conditions and aged care; which complicate the provision of routine dental care.¹ The oral health of people with disability is often overlooked, resulting in a significantly higher risk of developing dental diseases.^{2, 3} People with disability are three times less likely to receive dental care⁴ and up to seven times more likely to have dental diseases than those without disability.⁵

As of 2022, approximately 5.5 million Australians have disability, representing 21.4% of the population – an increase from 4.4 million (17.7%) in 2018.⁶ This growing demographic, coupled with an ageing population and rising prevalence of chronic health conditions, highlights the increasing demand for dental care, necessitating a well-equipped and confident dental workforce. Practitioners often perceive people with disability as challenging to treat,⁷ largely due to limited knowledge and clinical experience in SND.⁸ The reluctance to provide care can result in a higher prevalence of oral disease, unmet treatment needs, and poorer health outcomes.⁹ Addressing gaps in SND education is therefore crucial to ensuring equitable and comprehensive oral healthcare for this vulnerable population.

The oral health practitioners, comprising Oral Health Therapists (OHTs), Dental Therapists (DTs), and Dental Hygienists (DHs), can assume a vital role in SND.¹⁰ Given the challenges associated with providing in-chair treatment, this workforce can enhance accessibility to dental healthcare for underserved communities by delivering care through preventive services, health promotion, and education.^{11, 12} Despite the recognised importance of SND, there is limited research documenting the perceptions and preparedness, particularly among the final-year oral health students and practitioners. This dual-perspective study provides an understanding of the educational and practical challenges of SND, identifies curriculum gaps, and offers insights to improve future dental training. This inclusive approach ensures that the recommendations made are well-informed and applicable to both educational institutions and the broader dental workforce.

MATERIALS AND METHODS

This study utilised a cross-sectional survey design. Ethical approval was obtained from the Human Research Ethics Committee at the University of Sydney (HREC Approval No.: 2024/HE000231).

A structured questionnaire was developed based on the literature.¹³⁻¹⁵ There are two sets of surveys – oral health student and practitioner (**Appendix C**). Both contained a set of core questions that were identical across groups, allowing for direct comparison while also including a few group-specific questions to address the different experiences and perspectives. The practitioner survey included 22 questions, while the student survey had 16, predominantly using a five-point Likert scale and multiple-choice questions. A pilot test was conducted, and necessary modifications were made to the survey instrument. The survey was administered online using the REDCap platform.

OHTs, DTs and DHs in Australia, who were registered under the Australian Health Practitioner Regulation Agency (AHPRA) and the Dental Board of Australia, were invited to participate in this survey study. The practitioners were recruited through invitations sent by the Dental Hygienists Association of Australia (DHAA) and the Australian Dental & Oral Health Therapists' Association (ADOHTA) to their respective members. One of the associations has confirmed that the invitation reached 2,177 members, while another was unable to disclose recipient numbers due to privacy considerations. There are eight Oral Health Therapy institutions in Australia. Final-year students enrolled in these institutions were also invited. Information was sent to the program directors and non-academic support staff of each oral health institution, and further forwarded to the students.

Both surveys were distributed in July 2024, with reminders sent in the second and fourth weeks following the initial distribution. Due to an initially low response rate, a request for ethics approval was submitted to extend recruitment efforts to the broader community via social media platforms. Following approval, information about the survey was shared via LinkedIn, Instagram, and Facebook posts on groups specifically for oral health practitioners.

After concluding the surveys, the data were exported to Microsoft Excel for data cleaning, involving checking for completeness and standardising variable formats. Statistical analyses were conducted using IBM SPSS Statistics. For the shared questions, data from both surveys were combined to allow for comparisons between students and practitioners. Group comparisons were performed using independent t-tests. These tests were conducted to assess differences between groups and to identify factors associated with comfort and confidence in SND. For questions unique to each participant group, results were analysed and reported separately. Descriptive statistics were used to summarise the data and visualised through graphs and tables. Inferential statistics, including p-values, were reported to determine significance, with a threshold of $p < 0.05$ considered statistically significant for all tests.

RESULTS

General information

Among the oral health practitioners, 81 eligible participants completed the survey, representing approximately 1.4% of the total registered practitioners in Australia, which includes 5,751 DTs, DHs, and OHTs. Out of the ten invited institutions, five responded and 24 students completed the survey. An accurate response rate could not be determined as enrolment numbers for each program were not publicly available.

The majority (77.7%) of practitioners were OHTs or dually qualified DTs/DHs. DHs accounted for 14.8% of respondents, while 7.4% identified as DTs. Most (88.9%) were actively providing clinical care, while others were involved in academia, administrative, leadership or management roles. 93.8% of practitioners obtained their primary qualifications in Australia, 2.5% in New Zealand, and the remainder overseas. Work experience varied, with 28.4% having up to five years, 37.0% between six and ten years, and 16.0% over 20 years. Geographically, 54.3% were based in metropolitan areas, while the rest were based in regional and rural locations (**Table 1**).

Evaluation of educational experience in SND

Participants reported mixed perceptions regarding their preparedness and training adequacy in SND. While 40.0% remained neutral on whether their classes prepared them well, 27.7% disagreed or strongly disagreed. A strong majority (84.8%) agreed that more SND educational opportunities were needed, with only 28.6% felt that their education was sufficient. Perceptions of institutional commitment to SND education were generally positive; however, confidence in clinical preparedness after graduation remained low, with only 33.4% agreeing or strongly agreeing (**Table 2**). Among students, 70.8% felt moderately confident in their ability to provide dental treatment to people with disability upon graduation.

A higher proportion of practitioners (n = 15, 18.5%), compared to students (n = 1, 4.2%) reported having no SND components in their program. Among all others, 33 reported receiving only didactic teaching, 20 received only clinical training, and 36 experienced both components. Both practitioner and student participants favoured introducing didactic teaching and clinical learning in the middle phase of their programs.

Exposure to patients with disability

Both participant groups reported how often they treat people with disability in their current clinical practice. The majority of practitioners and students reported seeing 1-5 patients with disability per month. Across both groups, physical disabilities and psychiatric conditions were among the most frequently encountered, though exposure beyond 10 patients per month was uncommon for students. Among practitioners, the highest proportions of those seeing more than 10 patients per month were reported for aged care (30.8%), complex medical conditions (29.6%) and intellectual and developmental disability (28.4%). In contrast, only 16.7% of students reported seeing more than 10 patients with complex medical history and 20.9% aged care patients monthly, and none reported this level of exposure for other disability categories (**Figure 1A and 1B**).

Professional and referral practices

Comfort and confidence level

Participants rated their comfort and confidence levels in treating various patient groups using a 5-point Likert scale (1 = Very uncomfortable/Not confident at all, 5 = Very comfortable/Completely confident). Both comfort and confidence levels were highest for treating patients with physical disabilities (Mean = 4.05 and 3.88 respectively). Comfort level and confidence were lower for treating patients with psychiatric conditions (Mean = 3.51 and 3.32 respectively) (**Table 3**).

There were no statistically significant differences in comfort levels between the practitioners and students across most patient groups. However, the difference in confidence levels between practitioners and students was significant in physical disabilities ($p = .024$), and intellectual and developmental disability ($p = .020$). These findings suggest that practitioner participants may feel slightly more comfortable compared to students.

Perceived barriers and enablers in providing dental care

The most commonly reported barrier to providing dental care for patients with disability was poor patient cooperation (behavioural issues) cited by 64.8% of participants, followed by insufficient knowledge and experience in SND during undergraduate training (62.9%) and physical barriers with clinic facilities (56.2%). Additional challenges included inadequately trained staff, complicated medical histories, time constraints, and limited financial incentives. Respondents also highlighted broader systemic issues, such as a shortage of clinicians to meet the complex needs of patients and key performance indicators that create stress for staff.

Conversely, the top three enablers identified were training opportunities in SND (79%), improved undergraduate education and clinical exposure (63.8%), and a supportive work environment (e.g., less productivity pressure, access to timely advice) (62.9%). Others included increasing awareness and involvement of dental practitioners in special care, social and professional recognition, barrier-free facilities and financial incentives. A small proportion of respondents expressed no interest in treating patients with disability. A

respondent emphasised the importance of accessible, well-developed education and training opportunities for both future and existing clinicians.

Reasons for referrals

The primary reasons for referring patients with disability were lack of patient cooperation (71.4%), cases being outside the scope of practice (69.5%), and the need for a second opinion (51.4%). Additional comments from respondents highlighted key factors influencing referral decisions, including the inability of OHTs to administer sedation. These suggest that both clinical and systemic challenges contribute to the referral of patients with disability rather than their management within general practice settings.

Usual referral pathways in practice

The majority of respondents indicated that external referrals to selected specialist clinics (66.7%) were the most common pathway for patients with disability. 34.6% reported having an in-house specialist or dentist for internal referrals, while 12.3% stated that patients must find another dentist who can manage their dental needs.

Acceptance of future training opportunities in SND

The majority of respondents recognised the importance of an advanced training program for oral health practitioners in managing patients with disability. Over 90% rated it as very important (42.9%) or extremely important (48.6%). No respondents rated it as "not so important" or "not at all important" (**Table 4**).

Interest in advanced training in SND

There was a strong interest in an advanced training program for oral health practitioners in SND. Over half of the respondents (53.3%) were very interested, and 30.5% were somewhat interested (**Table 4**). The mean score was 4.28 (SD = 0.976), indicating a high level of enthusiasm for further education. A one-way ANOVA was conducted to assess whether age group influenced the interest in further training in SND. The results indicated that there was no significant difference in the levels of interest across the age groups, $F(4, 100) = 1.949, p = 0.108$.

Foreseeable barriers and enablers for advanced training

The most commonly reported barriers to participating in an advanced training program in SND were the cost of the program (78.1%), followed by time constraints (58.1%) and the inability to attend in person (25.7%). A smaller proportion of respondents (10.5%) indicated a lack of interest, while others (6.7%) raised concerns about eligibility requirements, such as the need for a baccalaureate degree qualification (**Table 4**).

The most appealing factors that could encourage participation included the option to complete lectures and tutorials online while attending in-person clinical training (81%) and subsidised training costs (80%). Part-time enrolment was also a significant enabler, selected by 51.4% of respondents. Some respondents highlighted the need for more flexible training opportunities and stronger collaborations with health and hospital services to enhance accessibility and support for clinicians pursuing advanced education in SND (**Table 4**).

DISCUSSION

This study provides insights into the perceptions influencing the provision of dental care for patients with disability among oral health students and practitioners. While participants generally expressed moderate confidence and comfort in treating these patients, education opportunities in SND remained limited. Both practitioner and student participants favoured introducing didactic teaching and clinical learning in Year 2. Year 1 typically focused on fundamental dental knowledge and pre-clinical skills, and introducing SND in Year 2 offers an adaptable approach, allowing students to build on foundational knowledge before managing more challenging cases.¹⁶ By this stage, students begin developing hands-on clinical skills, making it an appropriate time to integrate SND exposure.¹⁷ Gradual exposure to SND in Year 2 helps build confidence in treating patients with disability before their final clinical years, where they may be expected to manage more complex cases.¹⁸

Consistent with previous research,^{14, 15, 19-21} many respondents reported inadequate training opportunities, with less than 30% considering their education sufficient. Clinical preparedness is important in SND education, directly impacting practitioners' competence and willingness.^{22, 23} However, only a third of respondents agreed or strongly agreed that they felt prepared upon graduation. Without adequate clinical experience, graduates may

lack the confidence to include these patients in their practices, leading to unnecessary specialist referrals, overburdening specialist services.²⁴ Previous study supports this, with 70% of respondents believing patients with disability should be referred for specialised care, suggesting that they may refer directly to specialists without first exploring whether the patients' needs could be managed within the primary care setting.²⁵ Practical, hands-on opportunities in SND during training build confidence, enhance clinical skills, and encourage positive attitudes toward this underserved population.^{26, 27} While didactic education in SND has reportedly improved over time, clinical exposures remain insufficient,²⁸⁻³⁰ limiting students' ability to translate theoretical knowledge into practice.³¹ Practitioner participants who lacked SND training during their studies may recognise the benefit and advocate for its earlier integration into the curriculum.¹⁷ These findings highlight the significant role of undergraduate education in shaping practitioners' confidence in SND, identifying limited training as a primary obstacle to willingness to treat patients with disability.

Another key barrier identified in this study was poor patient cooperation due to behavioural issues. However, it is important to distinguish between non-compliance and neuro-motor conditions. Behavioural difficulties may be associated with intellectual or developmental disorders, whereas conditions such as cerebral palsy affect a patient's ability to control movements, follow instructions, or remain still during treatment. These challenges can sometimes be misinterpreted as uncooperative behaviour.³² This emphasises the importance of strong theoretical knowledge alongside clinical experience in SND. Without adequate education, clinical exposure alone may reinforce misconceptions rather than improve competency. A study analysing the relationship between dental students' theoretical knowledge and practical skills in endodontics found that theoretical understanding significantly impacts clinical performance.³³ Integrating didactic teaching with hands-on training is essential to ensure students can accurately assess patient needs and implement appropriate management strategies,³⁴ ultimately improving their confidence and willingness to provide care for this population.

A respondent highlighted that the inability of OHTs to administer sedation is a key restriction influencing referral decisions, particularly as sedation can play a critical role in behaviour management for successful treatment. While this limitation can present

challenges in managing patients with significant behavioural or medical complexities, it also emphasises the importance of maximising non-pharmacological behavioural support strategies that fall within the OHT scope of practice. Techniques such as tell-show-do, desensitisation, and positive reinforcement are evidence-based approaches that can enhance cooperation and reduce anxiety in patients with disability and additional healthcare needs.³⁵ These strategies are especially valuable in community and preventive care settings, where OHTs often provide first-line care. By ensuring OHTs are confident in applying these behavioural techniques, it may be possible to reduce unnecessary referrals for sedation or specialist intervention. Integrating such skills into undergraduate education and continued professional development could support more effective care for people with disability.

Despite the reported lack of SND education and clinical exposure, participants identified that it is important and were interested in further training. A similar study conducted in 2018 found that the majority of dental auxiliary students lacked knowledge and clinical experience in treating patients with disability, with 68.9% reporting no direct clinical exposure.¹³ However, students expressed comfort and positive intention of treating these patients independently and recognised the importance of SND education. Many showed interest in further training in this field, mirroring the findings of our study.¹³ Encouragingly, over 90% of respondents in our study viewed further education in SND as important, with more than half expressing interest in additional training. Unlike earlier reports citing financial incentives as a driver,¹⁹ our participants placed greater importance on accessible training and institutional support. This strong interest emphasises the growing recognition of SND education as essential for bridging knowledge gaps and improving clinical competencies. However, despite this enthusiasm, practical barriers such as cost, time constraints, and accessibility must be addressed to ensure successful implementation. Strengthening institutional support, offering flexible learning options, and providing financial incentives may be key strategies to encourage participation and enhance the delivery of care for this vulnerable population.

The key strengths of this study lie in its dual perspective, capturing insights from both students and practitioners. This study also provides an understanding of previously under-investigated areas, such as the acceptance of advanced training programs and perceived

enablers and barriers to further education in SND, offering new directions for curriculum development. Despite the valuable insights gained, this study has limitations. The small student sample size may be influenced by data collection occurring toward the end of the academic year. This resulted in a lower response rate, requiring the aggregation of data across institutions. Self-reported data may also introduce response bias, as participants might overestimate or underestimate their confidence and training adequacy. Additionally, recruitment of practitioners through professional organisations and social media may have excluded oral health professionals not affiliated with such networks, leading to potential underrepresentation of certain demographics or practice settings. The interpretation of the study's findings should be approached with caution, as the results may not be fully representative of the broader workforce or student population.

Future research should aim for a larger, more diverse sample and incorporate a mixed-methods approach, including qualitative follow-ups, to gain deeper insights into perceptions of SND among students and practitioner participants. Further studies should focus on developing a comprehensive SND curriculum for oral health practitioners and evaluating the long-term impact of training on clinical competency and patient outcomes. This could optimise educational strategies and improve practitioner readiness in SND.

CONCLUSION

By examining the perceptions of SND, this study stresses on the critical role of undergraduate education in influencing practitioners' confidence and willingness to provide dental care for patients with disability. The findings also highlight an urgent need for enhanced SND training opportunities through structured clinical experiences and flexible learning opportunities. These insights aim to inform educational reforms and policy directions that better prepare future dental practitioners to deliver equitable and high-quality dental care for people with disability.

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CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest.

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Table 1: Demographic Characteristics of the Study Participants

Demographic characteristics	Number of participants (column %)	
	Practitioner (n=81)	Student (n=24)
Age group (years)		
20 to 30	32.1	75.0
31 to 40	39.5	16.7
41 to 50	13.6	8.3
51 and above	14.8	0.0
Type of institution graduated from		
University (Oral health and dentistry course)	43.2	91.7
University (Oral health course only)	43.2	8.3
Colleges	4.9	0.0
Non-degree vocational school/institute	8.6	0.0
Types of practitioners		
Oral Health Therapist/Dental Therapist & Dental Hygienist	77.7	N/A
Dental Therapist	7.4	
Dental Hygienist	14.8	
Primary qualifications (Country)		
Australia	93.8	N/A
New Zealand	2.5	
Others	3.7	
Years of professional experiences		
0 to 5	28.4	N/A
6 to 10	37.0	
11 to 15	14.8	
16 to 20	3.7	
Over 20	16.0	
Current role		
Clinical practice (patient clinical care)	88.9	N/A
Teaching (academics)	13.6	
Administrative	6.2	
Leadership or management	12.3	
Not working temporarily	2.5	
Current practice location		
Metropolitan	54.3	N/A
Regional area	32.1	
Rural area	8.6	
Not currently practicing	4.9	
Current practice type		
Private practice	69.1	N/A
Public – local health districts	33.3	
Indigenous community clinics	2.5	
Institutions – Universities, academia	6.2	
Not currently practicing	4.9	
Others: Aged care, mobile dental	2.5	

Table 2: Perceptions of Undergraduate Education on Managing Patients with Disability for Practitioner and Student Groups

Statement	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)
My classes prepared me well for managing the dental needs of patients with disability	6.7	21.0	40.0	27.6	4.8
The curriculum should include more education on the dental problems and management of patients with disability	0.0	2.9	12.4	41.9	42.9
I believe that my oral health program has an honest interest in delivering knowledge pertaining to patients with disability	1.9	11.4	32.4	39.0	15.2
The dental education I received for managing the dental problems of patients with disability is adequate/sufficient	4.8	31.4	35.2	24.8	3.8
My clinical skills were adequate for me to be able to provide dental treatment to patients with disability after graduating	5.7	27.6	33.3	26.7	6.7

Respondents were asked: Do you agree or disagree with the following statements?

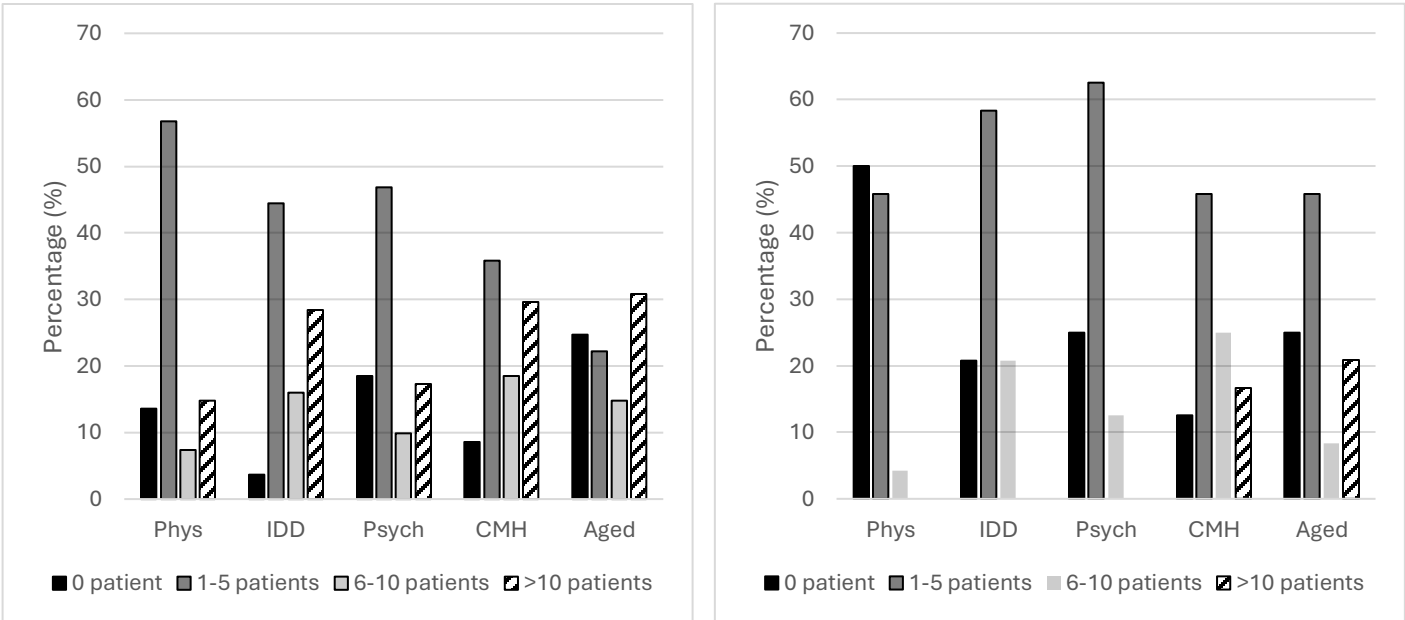


Figure 1A: Exposure to Types of Patients by Conditions for Practitioner (left) and Student (right) Participants

Note: 7.4% of practitioner respondents selected “Not working” and were excluded from this figure, representing practitioner participants.

- Key:
- Phys: Patients with Physical Disability
 - IDD: Patients with Intellectual and Developmental Disability
 - Psych: Patients with Psychiatric Conditions
 - CMH: Patients with Complex Medical Conditions
 - Aged: Aged Care Patients

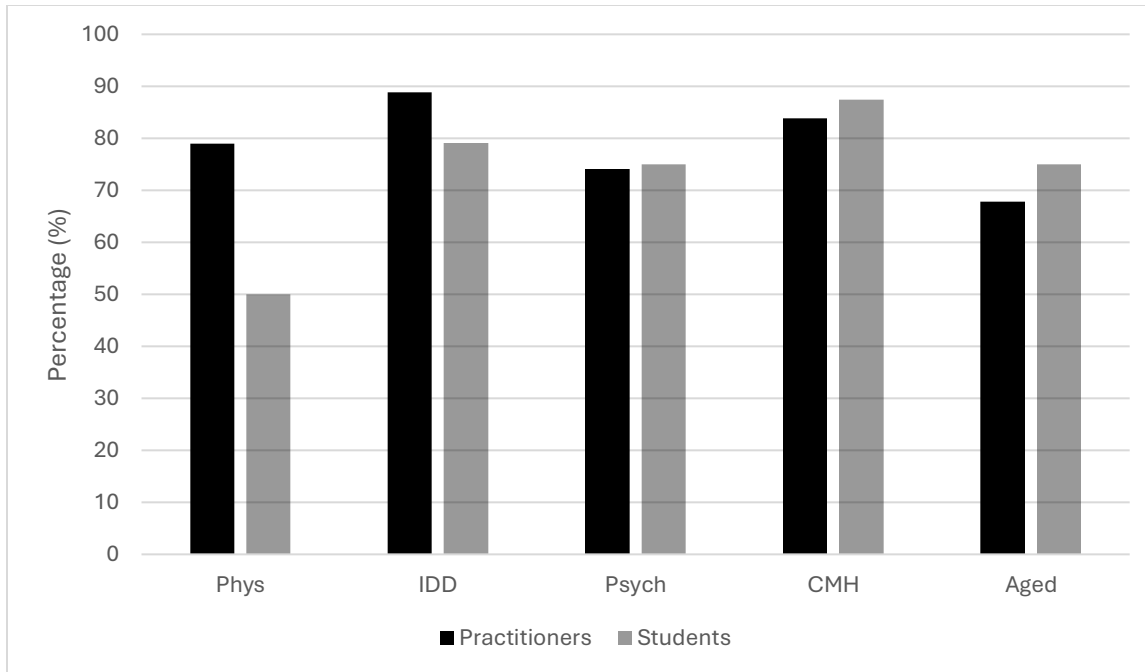


Figure 1B: Percentage of Practitioner and Student Participants who Provide Care to the Types of Patients by Disability Conditions

Key:

Phys: Patients with Physical Disability

IDD: Patients with Intellectual and Developmental Disability

Psych: Patients with Psychiatric Conditions

CMH: Patients with Complex Medical Conditions

Aged: Aged Care Patients

Table 3: Comfort and Confidence Levels Across Patient Groups Among Practitioner and Student Participants

Patient groups	Comfort level			Confidence level		
	Students (Mean)	Practitioners (Mean)	p-value	Students (Mean)	Practitioners (Mean)	p-value
Physical Disability	3.71	4.05	.072	3.46	3.88	.024*
Intellectual and Developmental Disability	3.54	3.94	.063	3.25	3.72	.020*
Psychiatric Conditions	3.33	3.51	.443	3.17	3.32	.498
Complex Medical Conditions	3.46	3.49	.881	3.08	3.33	.332
Aged Care	3.88	3.83	.822	3.79	3.68	.600

* p < .05 indicates statistical significance.

Table 4: Perception of Future Training in SND Among Practitioner and Student Participants

Perception on future training in SND	Percentage of participants (%)	Number of participants (n)
Importance of having an advanced training program in SND		
Not at all important	0	0
Not so important	0	0
Somewhat important	8.6	9
Very important	42.8	45
Extremely important	48.6	51
Interest in advanced training program in SND		
Not at all interested	1.9	2
Not very interested	5.7	6
Unsure	8.6	9
Somewhat interested	30.5	32
Very interested	53.3	56
Barriers		
Time barriers	58.1	61
Cost of advance training program	78.1	82
Cannot be present physically, can only do online	25.7	27
Self doubt	7.6	8
Not interested	10.5	11
Enablers		
Options of enrolling as a part time student	51.4	54
Subsides cost of training	80	84
Lectures and tutorials can be completed online, but in-person clinical training	81	85
Training incentive	40	42
Not interested	6.7	7

CHAPTER 6

**Undergraduate and Postgraduate Special Needs Dentistry Curricula for
Oral Health Therapists: A Delphi study**

Chapter Overview

Undergraduate education plays a significant role in practitioners' confidence and preparedness in Special Needs Dentistry (SND). As demonstrated in Chapter 5, oral health therapy students and practitioners reported varying levels of confidence and comfort in managing the dental needs of people with disability, with limited clinical exposure identified as one of the barriers. The findings emphasise the clear need to improve the integration of theoretical knowledge and clinical training in SND education.

Building on the identified need, this chapter presents the findings of an online Delphi study undertaken to develop a proposed SND curriculum framework for Oral Health Therapists (OHTs) at both undergraduate and postgraduate levels. Through a structured, multi-round consensus process involving Australian and international experts, the study identifies key learning domains, curriculum components, and teaching strategies required to prepare OHTs with the knowledge and skills to provide quality care for people with disability. The findings directly respond to the educational gaps outlined in earlier chapters and provide a robust, evidence-informed foundation for curriculum reform. This chapter also contributes to enhancing the workforce's capability and improving access to dental services, reducing disparities, and better oral health outcomes for people with disability (**Research Objective 7: To develop and propose a comprehensive curriculum framework in SND for integration into Australian oral health programs, addressing identified educational gaps**).

The supporting documents referenced throughout this chapter are compiled in **Appendix D**. The final curriculum document, *Undergraduate and Postgraduate Special Needs Dentistry Curricula for Oral Health Therapists*, is presented immediately following the manuscript. A manuscript based on this chapter was submitted to the Journal of Dental Education in October 2025.

Undergraduate and Postgraduate Special Needs Dentistry Curricula for Oral Health Therapists: A Delphi study

Dorothy KL Koh¹, Melanie J Aley¹, Delyse M Leadbeatter¹, Woosung Sohn¹, Mathew AWT Lim², Troy Longbottom³, Karen Lansdown^{1,4}, Kadambari Rawal⁵, Samuel D Carrington⁶, Jessica Francis⁷, Masita Mandasari⁸, Ceara Cleary⁹, Archana Pradhan¹

1. School of Dentistry, Faculty of Medicine and Health, The University of Sydney, Sydney, Australia
2. Melbourne Dental School, The University of Melbourne, Melbourne, Australia
3. Centre for Dental Studies, TAFE South Australia, Adelaide, Australia
4. Department of Oral Health, School of Clinical Sciences, Faculty of Health and Environmental Sciences, Auckland University of Technology, Auckland, New Zealand
5. Division of Geriatric Dental Medicine, Department of General Dentistry, Henry M. Goldman School of Dental Medicine, Boston University, Boston, USA
6. Faculty of Dentistry, Te Kāpeka Pūniho, Ōtākou Whakaihū Waka – University of Otago, Dunedin, Aotearoa New Zealand
7. Department of Orthodontics, Paediatric and Special Care Dentistry, Faculty of Dentistry, Universiti Malaya, Kuala Lumpur, Malaysia
8. Oral Medicine Department, Faculty of Dentistry, Universitas Indonesia, Jakarta, Indonesia
9. Special Care Dentistry, Dublin Dental University Hospital, Trinity College, Dublin, Ireland

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Correspondence: Dorothy Koh, Dorothy.koh@sydney.edu.au

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ABSTRACT

Aim: To develop a consensus-based curriculum outline for Special Needs Dentistry (SND) tailored to Oral Health Therapists (OHTs), ensuring relevance and applicability across undergraduate and postgraduate education in Australia.

Methods: A four-round online modified Delphi study was conducted. The first three rounds involved both Australian and international experts, while the final consensus round was limited to Australian experts. Experts were selected using purposive sampling based on their experience in SND education, clinical practice, or curriculum development. Participants completed semi-structured surveys derived from publicly accessible learning outcomes (LOs) in student handbooks of undergraduate oral health programs and postgraduate SND specialist programs. Additional insights were drawn from the International Association for Disability & Oral Health (iADH) and the Australian Dental Council (ADC) competency guidelines. Across the rounds, experts rated the importance of proposed LOs, identified their appropriate educational level (undergraduate/postgraduate), and provided qualitative feedback. Consensus was defined a priori as $\geq 70\%$ agreement. Modifications were made between rounds based on expert feedback.

Results: In Round 1, 24 experts completed with 66 of 67 LOs reaching consensus. In Round 2, 20 experts assessed 98 LOs (including new and revised items, categorised into undergraduate and postgraduate), with 96 (97.9%) reaching consensus. Round 3 involved 16 experts reviewing unresolved and newly added items; two items did not reach consensus. The final round resulted in consensus on all outstanding LOs and confirmed the overall framework's relevance to the OHT scope and context. Key refinements across rounds included improved clarity in applying Bloom's Taxonomy, clearer undergraduate/postgraduate differentiation, and increased specificity to SND.

Conclusion: This Delphi study established expert consensus on a comprehensive set of learning outcomes, along with suggested learning activities and assessment tasks. The proposed curriculum framework supports integration of evidence-informed SND education into OHT programs, which has the potential to enhance workforce preparedness to deliver equitable care to people with disability and additional health care needs.

Keywords: special needs dentistry, dental care, people with disability, dental education, oral health therapy, curriculum, learning outcomes

INTRODUCTION

In 2022, approximately 5.5 million Australians, representing 21.4% of the population, were living with a disability, marking a significant increase from 17.7% in 2018.¹ Despite this growing demographic, people with disability continue to face persistent challenges in accessing appropriate oral health care. According to the *Oral Health and Dental Care in Australia* report (2023), 12.5% of Australians under the age of 65 with a disability who required dental care were placed on public waiting lists. This figure increases to 19.5% for those with severe or profound disabilities.² Although Special Needs Dentistry (SND) has gained recognition as a specialty in recent years, access to dental practitioners adequately trained in this field remains limited.³ Consequently, people with disability experience significant inequities in accessing appropriate dental care, contributing to poor oral health outcomes.⁴ There are currently only 29 registered specialists in SND in Australia, up from just 15 in 2013.⁵ Given the slow increase in specialist numbers, the need to address service gaps for this priority population has become increasingly urgent. Importantly, not all individuals with disability require specialist treatment; many can be treated within general dental care setting, provided that dental practitioners receive adequate education and training in SND.⁶

Reluctance among dental practitioners to treat patients with disability is often attributed to insufficient undergraduate education and limited clinical experience in this area.⁷⁻⁹ Nevertheless, many practitioners express a strong interest in further postgraduate training to upskill their ability and confidence in managing patients with additional healthcare needs.^{10, 11} Increased knowledge and experience in SND are associated with greater confidence and willingness to provide care for people with disability.^{12, 13} Expanding dental education focused on SND is vital, not only for dentists but also for the other dental counterparts, particularly oral health therapists (OHTs) – registered dental practitioners who provide preventive and restorative care primarily for children and adolescents, with scope potentially extending to adults depending on their training and local regulations. OHTs play a crucial role in oral health promotion, prevention, and education, which can reduce the need for complex treatment in the long term and support better overall health outcomes for people with disability. Equipping OHTs with appropriate knowledge and clinical exposure may help

to increase inclusive care and alleviate the reliance on the limited number of specialists, improving access to care for this priority population.¹⁴

Curriculum outlines for undergraduate and postgraduate dental students were published by the International Association for Disability and Oral Health (iADH) in October 2012 and November 2014, respectively.^{15, 16} These frameworks, however, were designed primarily for dental students and do not adequately account for the roles and scope of practice of the other members of the oral healthcare team. OHTs, in particular, provide preventive, restorative, and therapeutic care across diverse community and primary care settings, often serving as the first point of contact for patients with disability. Despite their critical role, no tailored curriculum framework currently exists to guide OHT training in SND. Establishing well-defined learning outcomes (LOs) for OHTs is therefore needed to ensure they are equipped with the competencies required to address the complex needs of this population and to foster a consistent, team-based approach to care.

Although current oral health programs include some SND components, this is often limited to a basic overview due to the constraints of an already crowded curriculum.¹⁷ Consequently, OHTs may graduate with varying levels of exposure and preparedness, leaving a critical gap in their ability to provide safe, effective, and inclusive care. Addressing this gap justifies the use of the Delphi technique to develop a comprehensive curriculum outline. This study aims to explore and define the key educational components necessary for integrating SND training into both undergraduate and postgraduate curricula of oral health programs. By drawing on the collective expertise of professionals in the field, we seek to establish a robust and standardised curriculum framework that ensures the oral health workforce is adequately prepared to address the dental needs of people with disability.

MATERIALS AND METHODS

Ethical approval was granted by the Human Research Ethics Committee at the University of Sydney (HREC Approval No.: 2024/HE001481). We conducted a modified Delphi study to achieve consensus among a diverse panel of experts while addressing the complexities of curriculum development in SND education, answering our research question: *What are the essential components that should be included in undergraduate and*

postgraduate SND curricula for Oral Health Therapists? This study was guided by the methodological principles outlined by Nasa et al. in their stepwise quality assessment of Delphi studies.¹⁸ A summary of the Delphi process is presented in **Figure 1**.

Development of Baseline Information

The foundation for the Delphi study's baseline information was established through an examination of publicly accessible student handbooks from both undergraduate oral health programs (e.g., Bachelor of Oral Health/Therapy) and postgraduate SND specialist programs (e.g., Doctor of Clinical Dentistry). Additional insights were drawn from undergraduate and postgraduate guidelines for SND provided by the iADH and Australian Dental Council (ADC) competency guidelines. These were collated into an initial list of potential learning outcomes. The research team then conducted a thematic analysis to group similar items, eliminate redundancies, and ensure alignment with the scope of practice of OHTs. The final draft list was reviewed collaboratively within the team to ensure clarity, relevance, and coverage of key domains before being presented to the Delphi panel for Round 1. Experts were invited to review, refine, and build upon this baseline information with their feedback and suggestions.

Selection of the Delphi Panel

Following ethical approval, potential experts were identified and contacted through professional networks such as LinkedIn and institutions' email contacts. Prospective panel members expressed their interest via a dedicated link, and the research team evaluated each applicant based on predetermined selection criteria. To be considered for the panel, experts were required to meet at least one of the following criteria:

- Experience teaching SND at an undergraduate level in an academic environment
- Experience delivering SND training programs within community or hospital settings
- Experience developing and delivering educational programs or curricula within academic settings
- Specialisation in SND
- A role as an oral health therapy educator in SND

- A consumer representative from organisations such as the Australian Society of Special Care in Dentistry (ASSCID)

To ensure the validity of the results and capture comprehensive experts' perspectives, we achieved our initial aim of establishing an expert panel of 29 members, providing rigorous and diverse representation across different professional roles and geographical locations.

Design of Survey Instrument

We utilised a university-licensed online survey platform, Research Electronic Data Capture (REDCap), for the first three rounds of the Delphi study. Two reminders were sent out after the initial email. The final round was conducted via Zoom online meeting to facilitate real-time discussion.

Round 1

Round 1 was tasked to be completed in 50 minutes. Experts were asked to provide demographic data, including their name, email address, and country of origin. Experts were also given the baseline information, containing 67 LOs. They were required to rate the importance of each LO on a 5-point Likert scale (1 = Not at all important to 5 = Extremely important), based on its relevance to the OHT context. They were then asked to classify each outcome as appropriate for either the undergraduate or postgraduate level, or to be excluded completely. Experts were given the option to suggest additional LOs they felt should be included in the curriculum. In the last part, they were encouraged to share any learning activities and assessment tasks for each domain.

Round 2

Based on feedback from Round 1, the Round 2 survey was constructed. LOs were presented, where participants were asked to indicate the appropriate level for each LO and provide justifications if they selected not important or recommended exclusion. Unlike Round 1, the LOs were now clearly segmented into undergraduate and postgraduate sections, allowing for more structured decision-making and clearer categorisation.

Round 3

The same processes were carried out for Round 3. LOs that had reached consensus were banked and excluded. This round focused on refining the clarity of the remaining LOs and validating their appropriateness for either undergraduate or postgraduate levels.

Final Round

The final round was conducted via an online Zoom session, involving only Australian experts. Availability was collected through a short survey, and the session was scheduled based on the date and time that accommodated the most participants. International participants were not included in this round to ensure that the final curriculum was specifically aligned with the Australian context, accreditation requirements, and scope of practice for OHTs. Experts were asked to review and finalise the curriculum outline for its relevance and adaptability within the Australian OHT curriculum and practice. Participants were provided with the meeting agenda and relevant materials one week in advance to allow for thorough review and preparation.

Survey Analysis

Demographic information and consensus percentages have been reported in tabular summaries. A predetermined threshold of 70% agreement was established for each reporting item to indicate consensus among the expert panel, consistent with commonly accepted criteria in Delphi studies.¹⁹ This means that at least 70% agreed on values of 4 or 5 on the Likert scale (4 = Very Important, 5 = Extremely Important), with the inclusion of the items in the curriculum list. If agreement was less than 70%, items were considered to be discrepant. After each round, the responses were compiled and reviewed by three researchers. The data was refined and duplicate entries were merged, rephrasing items with similar meanings, and consolidating less frequent or smaller responses into broader categories. A response rate of 70% between rounds was deemed appropriate.

RESULTS

A summary and flow of the overall Delphi results is presented in **Figure 2**.

Panel Demographics

A total of 24 experts completed the first round, representing a diverse range of geographic locations and professional backgrounds. The majority of participants were based in Australia (33.3%). Most participants held multiple roles within SND, with 79.2% having experience in developing and delivering educational programs or curricula within academic environments, and 75.0% with experience in teaching SND in academic settings. Nearly half of the participants (45.8%) were specialists in SND and 33.3% were oral health therapy educators in SND. The majority (62.5%) had more than 10 years of experience (**Table 1**).

Round 1

In the first round of the Delphi study, 24 experts evaluated a total of 67 LOs items across the proposed curriculum domains. 66 LOs (98.5%) met the predefined consensus threshold (**Table 2**). Feedback from the panel highlighted concerns regarding the application of Bloom's Taxonomy. Bloom's Taxonomy is a widely recognised hierarchical framework used to classify and structure learning objectives according to their complexity, guiding the use of action verbs that reflect the intended outcomes such as remembering, understanding, applying, or evaluating.²⁰ Several experts also noted that certain LOs could be suitable for both undergraduate and postgraduate levels if they were adjusted for depth and complexity. The feedback suggested some LOs lacked the appropriate pedagogical structuring expected at different levels of education. A summary of expert recommendations and corresponding researcher responses was sent to them in the subsequent round, which included clarifications of terminology, refinement of Bloom's verbs, and suggested re-categorisation of learning outcomes by educational level.

Based on expert suggestions, specific LOs were revised. New LOs were introduced to address gaps identified in Round 1 and were brought forward to Round 2 for expert assessment. Learning activities and assessment tasks collected from this round were thematically analysed to form part of the final curriculum recommendations. These

components did not require further rounds for consensus, as they were intended as supplementary guidance rather than core LOs.

Round 2

In Round 2, 20 experts from the initial panel participated (83.3% retention rate). A total of 98 LOs were evaluated (**Table 3**), with 96 (97.9%) reaching consensus. The increase in the number of LOs resulted from expert feedback in Round 1, which led to the addition of new learning outcomes and the restructuring of several existing items to distinguish between undergraduate and postgraduate level. Undergraduate LO: *Describe the International Classification of Functioning, Disability and Health (ICF) framework and its application* reached 65% consensus. Following expert feedback, it was excluded from the undergraduate curriculum as participants agreed that this content would be more suitably addressed at the postgraduate level. LOs which were identified as overlapping with others were merged, while certain LOs were rephrased with more inclusive language. LOs that focused on the *understanding and application of the BDA Case Mix Tool*, were removed entirely as experts expressed concerns that these tools might become outdated and that specifying particular tools was unnecessary.

Other key expert suggestions included refining specific Bloom's Taxonomy verbs, improving clarity and specifying the application of concepts to SND. Responses to expert comments were consolidated and addressed in a summary document. Newly added, or LOs that did not meet the agreement threshold were carried forward to Round 3 for further evaluation.

Round 3

Sixteen experts completed the third round, achieving a response rate of 80%. LOs that were modified based on expert recommendations were presented for review, though they did not require consensus, as this had been previously achieved. Of the three LOs presented for re-evaluation, one achieved the consensus threshold, with the majority agreeing that they should remain at their allocated educational level. The remaining two LOs, both from Domain Two undergraduate and postgraduate, which focused on government

funding and advocacy, did not reach consensus (**Table 4**). Experts noted that the intended learning objectives lacked clarity and appeared unachievable at either level. Several comments indicated a misunderstanding of the LOs as being related to the application process for government grants. As a result, both LOs were carried forward to the final discussion round for clarification and further deliberation.

External Review

Following completion of Round 3, the consolidated list of LOs was shared with four experienced clinicians (3 OHTs and 1 dentist), who have extensive experience and active involvement in SND at present, for informal validation. This step served as a practical check to ensure the proposed curriculum resonated with those delivering care directly to people with disability. Overall, the feedback was positive, with reviewers describing the curriculum as “appropriate and comprehensive,” and noting that such content was “missing in both my undergraduate and postgraduate studies.” However, one reviewer raised a practical concern regarding the potential difficulty in securing special care placements within Oral Health Therapy programs.

Final Round

Of the four Australian experts, three attended the online videoconferencing, which lasted 50 minutes. The session focused on resolving two remaining LOs related to funding and advocacy. Following clarification of intent and group discussion, the experts acknowledged the importance of these learning outcomes and contributed to refining their wording. As a result, both the undergraduate and postgraduate versions of the funding and advocacy learning outcomes achieved 100% consensus among those in attendance. Domain 2 UG LO5: *Identify different types and sources of disability support funding and advocacy*; PG LO5: *Explore opportunities and application processes for funding aimed at supporting people with disability*.

DISCUSSION

A major focus of Australia's National Roadmap for improving the health of people with disability is the integration of disability health capability frameworks into undergraduate education. It advocates for the inclusion of disability-related training across all stages of health practitioner education, including entry-level programs, postgraduate training, in-service education, and continuing professional development (CPD).²¹ In alignment with this national priority, the ADC highlights the importance of ensuring that graduates demonstrate professional competencies in caring for priority populations at greater risk of poor oral health – particularly those who experience significant barriers to accessing care, such as people with disability.²² More recently, the Intellectual Disability Health Capability Framework (2024) addressed persistent gaps in equipping future health professionals with the core capabilities required to deliver safe, equitable, and quality health care to people with intellectual disability. The framework provides tailored guidance for accreditation authorities and self-regulating professions, supporting integration into accreditation standards. It also outlines associated learning outcomes, suggested methods of assessment, and practical resources to aid implementation.²³

Our study complements these national directions. We propose that, in order to remove barriers to oral health care, OHTs must first graduate with the knowledge, clinical experience, and sufficient confidence to provide mainstream oral healthcare to people with disability.⁸ This Delphi study sought to explore exactly that, to develop a consensus-based curriculum framework, addressing a significant gap in our current oral health education in Australia. Over three iterative survey rounds and a final panel discussion, strong agreement was reached on the majority of proposed LOs across both undergraduate and postgraduate levels. The expert panel agreed on the value of introducing foundational disability knowledge at the undergraduate level, while more advanced competencies, such as care coordination and policy-related applications, were considered more appropriate for postgraduate training. Introducing these competencies during undergraduate training may offer the greatest long-term impact by ensuring all graduates are adequately prepared, not just those who pursue further study. This aligns with the principle that access to equitable care should not depend on the availability of a limited number of specialists or postgraduate-trained clinicians.

A notable observation in the first Delphi round was the repeated expert comments indicating that many learning outcomes could be applicable to both undergraduate and postgraduate levels. However, the survey design required participants to choose one level, which may have constrained their ability to fully express the flexibility of certain competencies. This limitation was acknowledged and addressed in subsequent rounds by introducing separate categorisation options. Another illustrative example of this complexity was seen in the fluctuating responses to learning outcomes related to funding and advocacy. Although these items initially received moderate consensus, expert feedback revealed differing interpretations of the intent and potential misinterpretation of the LOs, which were later clarified during the final discussion. After revisions, these outcomes reached full consensus, emphasising the importance of clear wording and shared understanding in curriculum design. Experts also expressed interest in adopting the final curriculum, with a Dental Hygiene educator noting its adaptability to their scope of practice, suggesting potential broader applicability.

This study has several strengths. First, the modified Delphi method enabled systematic collection of expert opinions across multiple rounds, encouraging thoughtful reflection and iterative refinement of learning outcomes. The inclusion of experts from diverse international backgrounds in the early rounds enriched the breadth of perspectives, and high retention rates across rounds further enhanced the credibility and consistency of the findings. The study also adhered to a priori consensus thresholds and incorporated feedback using a summary-and-response approach, which helped maintain participant engagement and trust in the process.

However, some limitations should be acknowledged. Despite international representation in the early rounds, the final round included only Australian experts, which may limit the broader global applicability of the final curriculum framework. Nonetheless, the inclusion of Australian experts in the final round was essential to ensure that the framework was contextually relevant and applicable to the Australian oral health programs, aligning with local workforce needs and scope of practice. While efforts were made to recruit experts with diverse expertise, participation was still limited by the availability and self-selection of individuals, which may introduce bias. Additionally, the modified Delphi process, although

rigorous, is inherently dependent on subjective expert judgment and may not fully capture the views of all relevant stakeholders, such as students or patients with disability. Participant fatigue was also evident, particularly during the first round of the Delphi study. The large number of learning outcomes spread across multiple domains, along with the repetitive nature of some items, may have contributed to cognitive fatigue or disengagement.

This consensus-based curriculum framework was designed for OHTs in the Australian context. The dual scope of practice in hygiene and therapy within OHT training informed the inclusion of both preventive and restorative care competencies, as well as their broader role in oral health promotion and community-based care. While this framework may also be applicable to standalone dental hygiene or dental therapy programs, adaptations would be necessary to ensure alignment with the distinct scopes of practice in those disciplines, particularly in international contexts where scopes of practice may differ. To further validate the proposed curriculum framework, future research could involve pilot testing the learning outcomes in selected oral health programs. This would allow for practical evaluation of how well the framework guides teaching and learning, and whether the proposed undergraduate and postgraduate delineations align with student capabilities and institutional needs. Such implementation studies can provide valuable feedback on the usability and impact of the framework in educational settings.¹⁷

CONCLUSION

By strengthening educational frameworks in SND, future OHTs may be better prepared to meet the complex oral health needs of people with disability. This consensus-based curriculum outline could enhance the confidence, knowledge, and clinical capabilities of OHTs, equipping them to deliver inclusive, person-centred care.

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Prof June H Nunn, Republic of Ireland

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Assistant Prof Clive Friedman, Canada

Dr Kadambari Rawal, United States

Dr Jessica Francis, Malaysia

Dr Ann Spolarich, United States

Prof Emma Bingham, United Kingdom

Ms Ceara Cleary, Republic of Ireland

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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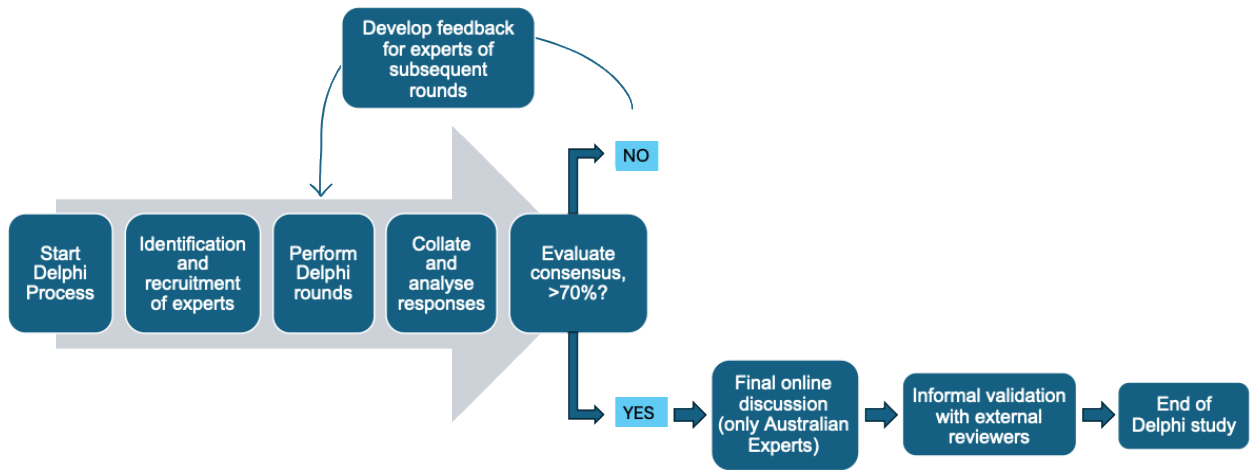


Figure 1: Summary of Delphi Process

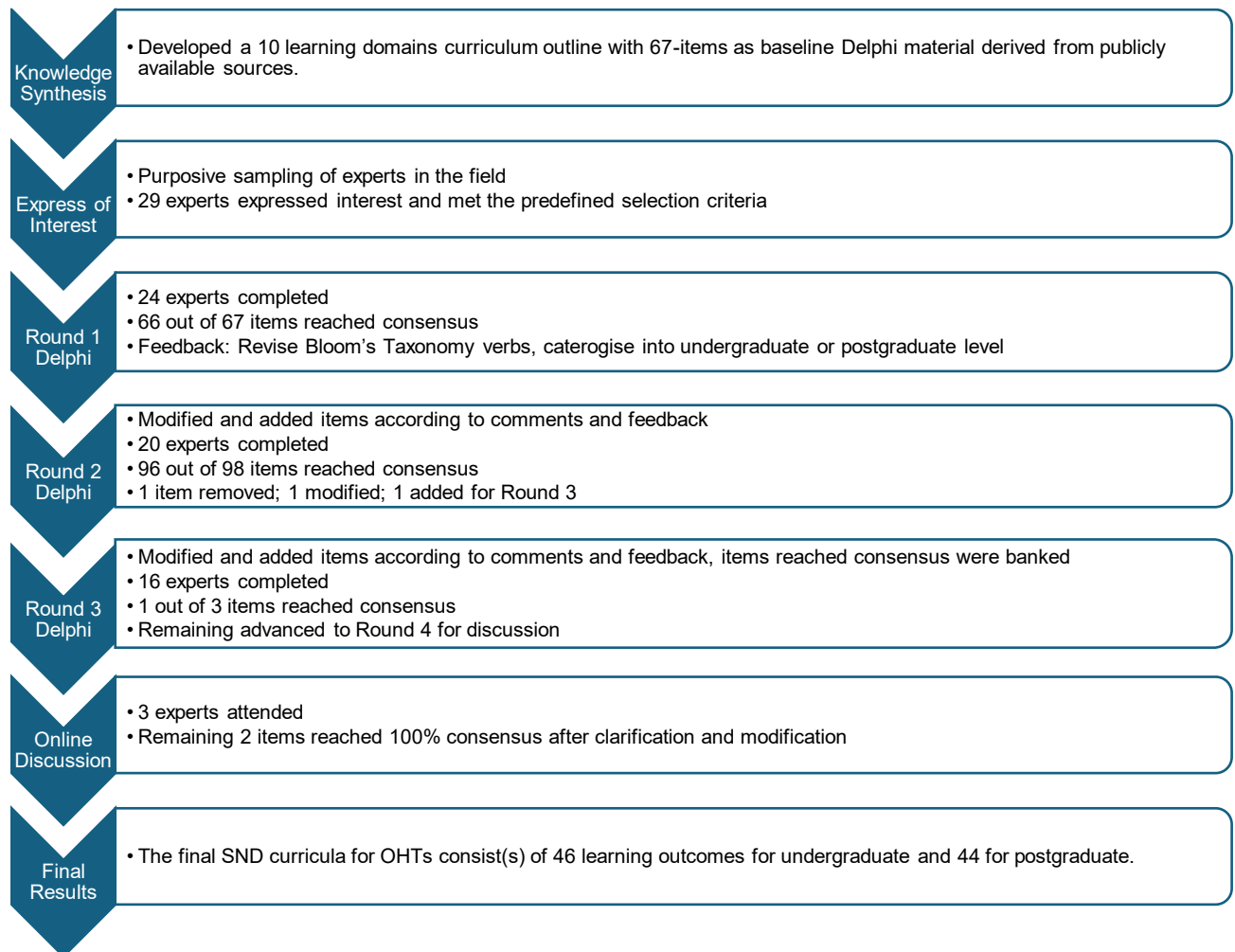


Figure 2: Summary and Flow of Delphi Results

Table 1: Panel Demographic Characteristics

	Count (n=24)	%
Country		
Australia	8	33.3
Aotearoa New Zealand	3	12.5
United States	3	12.5
United Kingdom	1	4.2
Republic of Ireland	3	12.5
France	1	4.2
Canada	1	4.2
Singapore	1	4.2
Indonesia	1	4.2
Malaysia	2	8.2
Roles (Participants can select more than one role)		
Have experience in teaching SND in an academic environment	18	75.0
Have experience delivering SND training programs within community/hospital settings	15	62.5
Have experience developing and delivering educational programs/curricula within academic environments	19	79.2
SND specialist	11	45.8
Oral health therapy educator in SND	8	33.3
A consumer representative	1	4.2
Years of Experiences in SND		
Less than 5	5	20.8
6 to 10	4	16.7
More than 10	15	62.5

SND = Special Needs Dentistry

Table 2: Round 1 Summary – Discrepant Item(s) and Examples of Qualitative Comments

Learning outcome	Round 1 consensus (%)	Examples of qualitative comments	Modifications made
Domain 1 UG LO: Gain an advanced understanding of the international context and sensitivities of SND.	54.1	UG and PG learning outcomes should be separated.	Revised: Domain 1 UG LO: Demonstrate an understanding of life course approach to oral health and disability. Domain 1 PG LO: Demonstrate an advanced understanding of the international context and sensitivities of SND.

SND = Special Needs Dentistry; UG = Undergraduate, PG = Postgraduate, LO = Learning Outcome

Table 3: Round 2 Summary – Discrepant Item(s) and Examples of Qualitative Comments

Learning outcome	Round 2 consensus (%)	Examples of qualitative comments	Modifications/Decision made
Domain 1 UG LO: Describe the International Classification of Functioning, Disability and Health (ICF) framework and its application.	65	Not required at UG level.	Retained PG version; UG learning outcome removed.
Domain 2 UG LO: Explain approaches to government funding and advocacy efforts.	55	Unsure about the intention. Including one on the PG level is reasonable. Revised Bloom's Taxonomy action verbs for clarity.	Revised: Domain 2 UG LO3: Understand approaches to government funding and advocacy efforts. Domain 2 PG LO3: Explore opportunities and apply for government funding.
Domain 8 UG LO: Demonstrate an understanding of the BDA Case Mix Tool and its application in assessing patient complexity and determine the need for specialist referral.	80	Unnecessary to use a specific tool, as it may become outdated in the future.	Removed both UG and PG learning outcomes. Core intent addressed through other learning outcomes in the same domain.
Domain 8 PG LO: Utilise the British Dental Association (BDA) Case Mix Tool to assess patient complexity and facilitate interdisciplinary referrals for optimal patient outcomes.	80	Unfamiliarity with using this specific tool.	
Domain 10 PG LO: Understand the importance of continuing professional development, lifelong learning, self-appraisal, peer review and competency.	95	Should be included in both UG and PG level.	Revised: Domain 10 UG LO: Understand the importance of continuing professional development, lifelong learning, self-appraisal, peer review and

			<p>competency in special needs dentistry.</p> <p>Domain 10 PG LO: Plan and evaluate one's own continuing professional development, lifelong learning, self-appraisal, peer review and competency.</p>
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SND = Special Needs Dentistry; UG = Undergraduate, PG = Postgraduate, LO = Learning Outcome

Table 4: Round 3 Summary – Discrepant Item(s) and Examples of Qualitative Comments

Learning outcome	Round 2 consensus (%)	Examples of qualitative comments	Modifications/Decision made
Domain 2 UG LO: Understand approaches to government funding and advocacy efforts.	68.8	Unsure if this is implying if students will be applying for funding.	Discussion and clarification in Round 4.
Domain 2 PG LO: Explore opportunities and apply for government funding.	62.5	Seems not possible to achieve on both levels. Unsure the intention is to obtain funding for research programs.	

SND = Special Needs Dentistry; UG = Undergraduate, PG = Postgraduate, LO = Learning Outcome

Undergraduate and Postgraduate Special Needs Dentistry Curricula for Oral Health Therapists



THE UNIVERSITY OF
SYDNEY

Statement of Intent

With the global increase in the number of people living with disability, there is a growing and largely unmet demand for oral health care within this population. The Oral Health Therapy workforce is well-positioned to address this need, given their knowledge and expertise in dental disease prevention and oral health promotion.¹

Research shows that dental practitioners who reported positive experiences with their Special Needs Dentistry (SND) training are more confident and more willing to provide dental care to patients with disability.² Evidence also indicates a strong correlation between adequate clinical exposure during undergraduate training and practitioners' likelihood to provide care to people with disability in their future practice.³ Despite this, the current literature highlights both insufficient educational opportunities and significant variation in SND educational training within undergraduate dental curricula.⁴

“Education is a gateway to improved equality in dental care for people with disability” - O’Rourke et al.⁵

A key focus of Australia’s National Roadmap for Improving the Health of People with Disability is the integration of disability health capability frameworks into education. This includes embedding disability health training across all levels of health practitioner education, from entry-level to postgraduate programs.⁶ It is therefore critical that SND content, both theoretical and clinical, be sufficiently integrated into oral health curricula to ensure graduates are equipped to provide inclusive, equitable care for people with disability.

In response, we initiated the development of this curriculum guidance document through a Delphi process involving expert panellists from multiple countries. This document outlines learning domains and outcomes, along with examples of learning activities and assessment tasks. In alignment with the *Convention on the Rights of Persons with Disabilities (CRPD)*, which asserts the right of people with disability to “the enjoyment of the highest attainable standard of health without discrimination on the basis of disability,” this document aims to establish a standardised and comprehensive curriculum framework as an essential educational strategy to enhance the competence and confidence of the OHT workforce in SND—thereby helping reduce inequities in the oral health care of people with disability.

Dorothy Koh, A/Prof Archana Pradhan, A/Prof Melanie Aley, A/Prof Delyse Leadbeatter, Prof Woosung Sohn

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The authors would like to thank the Delphi panel members for their valuable contribution to the creation of this document:

Dr Mathew AWT Lim, Australia

Dr Keng Soon Yeoh, Australia

Dr Troy Longbottom, Australia

Prof Hanny Calache, Australia

Ms Karen L Lansdown, New Zealand

Dr Denise Faulks, France

A/Prof Masita Mandasari, Indonesia

Mr Samuel D Carrington, New Zealand

Prof June H Nunn, Republic of Ireland

Dr Caoimhin Mac Giolla Phadraig, Republic of Ireland

Assistant Prof Clive Friedman, Canada

Dr Kadambari Rawal, United States

Dr Jessica Francis, Malaysia

Dr Ann Spolarich, United States

Prof Emma Bingham, United Kingdom

Ms Ceara Cleary, Republic of Ireland

Glossary

Terms	Definition
Special Needs Dentistry (SND)	<p>The Royal Australasian College of Dental Surgeons (RACDS) defines SND as "the branch of dentistry that is concerned with the oral health care of people with an intellectual disability or medical, physical, and/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."⁷</p> <p>In line with the Australian Government's inclusive language guidelines, this document adopts more inclusive terminology by replacing the term "special needs" with "disability", and including person-first language when referring to people with disability.⁸</p>
Interprofessional	<p>According to the World Health Organisation (WHO), interprofessional education (IPE) occurs when students from two or more professions learn about, from, and with each other to enable effective collaboration and improve health outcomes.⁹</p> <p>The Australian Dental Council (ADC) defines interprofessional collaborative practice as multiple health workers from different backgrounds working together with patients, families, and communities to deliver high-quality care.¹⁰</p>
Intersectoral	<p>A broader approach that goes beyond healthcare, involving collaboration between different sectors.¹¹</p>

Learning Domains in Special Needs Dentistry

Domain	Title
1	The Scope of Special Needs Dentistry
2	Access and Barriers to Oral Health for People with Disability and Other Underserved Populations
3	Professional, Legal And Ethical Context Of Special Needs Dentistry (including consent matters)
4	Cultural Awareness and Sensitivities of Special Needs Dentistry Including Aboriginal and Torres Strait Islander Cultural Competency
5	Communication Skills in Special Needs Dentistry
6	Impact of Impairments, Disabilities and Systemic Conditions on Oral Health and Oral Function
7	Clinical Management of Patients Requiring Special Needs Dentistry
8	Clinical Pathways and Team Approach to Care
9	Dental Public Health and Oral Health Promotion
10	Clinical Research and Governance

1. The Scope of Special Needs Dentistry

Learning outcomes	Undergraduate	Postgraduate
	<ol style="list-style-type: none"> 1. Explain the need for and apply the use of appropriate terminology. 2. Understand the need and growth of the emerging specialty of SND. 3. Demonstrate an understanding of life course approach to oral health and disability. 4. Describe the key concepts, epidemiology, and classification related to human function, impairments, disability, and health. 	<ol style="list-style-type: none"> 1. Integrate appropriate terminology in clinical discussions and patient care. 2. Apply the International Classification of Functioning, Disability and Health (ICF) framework in clinical decision-making. 3. Apply an advanced understanding of life course approach of SND. 4. Interpret and apply key concepts, epidemiology, and classification systems in patient care planning.
Learning activities	<ul style="list-style-type: none"> • Case-based learning and simulated-based training using virtual reality (VR) and artificial intelligence (AI). • Group-based case studies and discussions with healthcare professionals from different fields. • Observation in specialty clinics (e.g., aged care, disability services, medical specialties). • Field visits to organisations supporting people with disability and aged-care facilities. • Real-time patient interviews in various settings (e.g., long-term care facilities, nursing homes, home care). • Panel discussions with people with disability sharing their experiences with access barriers. • Sensory walkthrough exercises – Simulating the experience of a patient with sensory processing issues in a dental clinic. • Role-playing as people with disability (e.g., using ankle weights, sunglasses, noise-cancelling headphones) to simulate physical and cognitive impairments. • Developing new online learning materials in collaboration with people with lived experiences. • Reflective journals after clinical exposure or patient interactions. 	

	<ul style="list-style-type: none"> • Critical appraisal of healthcare models through structured reflection exercises.
Assessment tasks	<ul style="list-style-type: none"> • Case-based oral and written assessments focusing on roles, responsibilities, and scope of practice. • Reflective essays/journals on student experiences in SND, including personal learning reflections, how experiences influence future care provision. • Essay topics exploring aspects of SND, ethical considerations, and patient management strategies. • Written exams testing core theoretical understanding of SND principles. • Clinical case presentations where students present a case they have managed, requiring detailed documentation, pattern recognition in clinical care, and potential publication in peer-reviewed journals. • Student-led seminars and case presentations on SND topics, with peer discussions and Q&A sessions.

2. Access and Barriers to Oral Health for People with Disability and Other Underserved Populations

Learning outcomes	Undergraduate	Postgraduate
	<ol style="list-style-type: none"> 1. Identify social, environmental and attitudinal barriers and facilitators to oral healthcare services. 2. Apply knowledge of the social determinants of health to identify health inequalities and their implications on oral health. 3. Apply an understanding of barriers and facilitators to oral health in patient assessment, prevention, treatment planning, and the provision of oral health care. 4. Identify external key stakeholders to overcome access barriers. 5. Identify different types and sources of disability support funding and advocacy. 	<ol style="list-style-type: none"> 1. Critically assess social, environmental, and attitudinal barriers and facilitators to oral healthcare services, incorporating real-world case studies. 2. Analyse the impact of social determinants of health on oral health inequalities and develop strategies to address them in clinical practice. 3. Implement and justify tailored strategies to address barriers and improve oral health outcomes, considering ethical and practical implications. 4. Explore external key stakeholders to collaborate with in order to improve access to oral health care. 5. Explore opportunities and application processes for funding aimed at supporting people with disability.
Learning activities	<ul style="list-style-type: none"> • Collaborating with social workers to understand and address access barriers • Mapping barriers and facilitators to identify social, environmental, and attitudinal factors affecting dental care access for people with disability • Disability equality and inclusion training to enhance student understanding of challenges faced by people with disability 	

	<ul style="list-style-type: none"> • Field visits to NGOs, nursing homes, or disability associations to observe real-world care settings • Home visits to engage directly with families and understand the lived experiences of people with disability • Workshops with people with lived experience, focusing on discriminatory behaviours and how oral health therapists can remove barriers • Case studies analysing social determinants of health, examining health inequalities and their impact on dental care access • Advocacy campaign projects, where students develop campaigns (e.g., policy briefs, blog posts, social media initiatives) to raise awareness about oral health needs in disability care.
<p>Assessment tasks</p>	<ul style="list-style-type: none"> • Case scenarios on barriers faced by people with disability and strategies to overcome them. • Simulated patient record analysis, students identify inappropriate terminology, assess determinants of poor oral health, and develop an improved treatment plan with preventive strategies. • Reflective essays and journals, where students analyse their experiences related to disability access and care. • Portfolio-based assessments, documenting learning, experiences, and strategies for improving care. • Oral health needs assessment project, requiring students to assess a high-disability-prevalence community and propose public health initiatives. • Written exams testing theoretical understanding of disability barriers and solutions.

3. Professional, Legal And Ethical Context Of Special Needs Dentistry (including consent matters)

Learning outcomes	Undergraduate	Postgraduate
	<ol style="list-style-type: none"> 1. Explain the social, legal, and ethical considerations related to supported decision-making. 2. Demonstrate proficiency in evaluating an individual’s capacity to provide consent. 3. Recognise the role of the family members, carers and the relevant government agencies in assisting decision-making processes. 4. Facilitate the process of obtaining informed consent for individuals who are unable to consent on their own behalf, ensuring it adheres to legal and ethical standards. 	<ol style="list-style-type: none"> 1. Evaluate the role of family members, carers, and relevant government agencies in assisted decision-making, integrating ethical frameworks. 2. Describe the scope of a public fiduciary, a medical power of attorney, and a legal guardian and their roles in providing consent on behalf of another individual. 3. Obtain informed consent for patients who are unable to consent on their own behalf, ensuring compliance with legal and ethical standards.
Learning activities	<ul style="list-style-type: none"> • Guest lectures and webinars with legal professionals (lawyers, Civil Administrative Tribunal, Office of Public Advocate, ADA representatives) discussing consent laws, guardianship, and decision-making complexities. • Review of the Mental Capacity Act and Mental Health Treatment Orders to understand legal obligations in dental care. • Critique of the Dental Practice Act with discussions on supervision requirements in alternative care settings. 	

	<ul style="list-style-type: none"> • Case-based problem-based learning (PBL) discussions to explore complex consent issues and ethical dilemmas. • Case scenario discussions on informed consent, guardianship disputes, and decision-making in complex situations. • Role-playing exercises on assisted decision-making processes, motivational interviewing techniques, and ensuring patient comprehension of consent. • SND clinics and domiciliary care to practice real-world consent processes in different care settings. • Morbidity & Mortality (M&M) grand rounds exercises discussing real-life cases, treatment failures, and improvements. • Interviews with caregivers and families who have made significant healthcare decisions to understand their perspectives. • Lectures from social service professionals on supporting people with disability in healthcare decision-making.
<p>Assessment tasks</p>	<ul style="list-style-type: none"> • MCQs and computer-based tests evaluating students' understanding of consent laws and guardianship. • Written exams and legislative research papers exploring the legal system and ethical considerations in obtaining consent for dental treatment. • Case scenarios requiring students to identify and apply legislation to different consent situations. • Simulated patient records and consent scenarios requiring students to assess cognition, apply legal principles, and document consent procedures. • Reflective essays and portfolio submissions where students describe their interactions with people with disability and the legal challenges they faced.

4. Cultural Awareness and Sensitivities of Special Needs Dentistry Including Aboriginal and Torres Straits Islander Cultural Competency

Learning outcomes	Undergraduate	Postgraduate
	<ol style="list-style-type: none"> 1. Demonstrate awareness of one’s own cultural values and how they relate to other communities, families and individuals. 2. Understand principles of cultural safety, which involves creating a respectful and inclusive environment that acknowledges health beliefs and lifestyles, and respects cultural diversity. 3. Demonstrate an understanding of, and respect for, Australian Aboriginal and Torres Strait Islander values, culture and knowledge. 4. Engage in a respectful and reflective manner, employing culturally relevant, safe, and sensitive communication strategies to facilitate relationships. 	<ol style="list-style-type: none"> 1. Critically reflect on their own cultural identity and applying this awareness to interactions with diverse communities, families, and individuals. 2. Advocate for inclusive oral healthcare by fostering culturally responsive attitudes and promoting equity in healthcare delivery. 3. Demonstrate leadership in fostering culturally safe clinical environments by implementing best practices in Aboriginal and Torres Strait Islander healthcare. 4. Implement culturally tailored health promotion activities and community engagement initiatives that incorporate the traditional practices of Aboriginal and Torres Strait Islanders, to improve oral health literacy, inequalities and outcomes.
Learning activities	<ul style="list-style-type: none"> • Yarning circles with Aboriginal and Torres Strait Islander communities to discuss oral health challenges and build relationships. • Service-learning in SND clinics and culturally diverse communities, providing care and deliver health education and services. • Guest lectures from advocacy groups, Indigenous elders, and community leaders to provide firsthand insights into cultural values, traditions, and health barriers. 	

	<ul style="list-style-type: none"> • Collaboration with medical interpreters to address communication barriers in healthcare. • Cultural safety training modules and interdisciplinary case discussions to explore patient-centred care in diverse settings. • Reflective journals to encourage self-awareness and critical thinking about cultural competence and patient interactions. • Student presentations on health inequalities faced by Aboriginal and Torres Strait Islander and other minority communities, analysing root causes and proposing solutions. • Workshops exploring lived experiences of marginalised groups, highlighting barriers to healthcare access and strategies for inclusive care.
<p>Assessment tasks</p>	<ul style="list-style-type: none"> • Cultural awareness training followed by an exam to reinforce key concepts. • Essay exploring challenges in dental care for Aboriginal and Torres Strait Islander communities, addressing barriers, cultural considerations, and specific management strategies. • Oral presentation where students propose oral health promotion strategies for an Aboriginal and Torres Strait Islander health centre. • Health promotion campaign development, such as posters, brochures, or social media initiatives, tailored to ATSI communities.

5. Communication Skills in Special Needs Dentistry

Learning outcomes	Undergraduate	Postgraduate
	<ol style="list-style-type: none"> 1. Use and reflect on culturally sensitive and inclusive language with patients, colleagues and carers with lived experience, to obtain an adequate medical and social history. 2. Develop adequate communication skills and use appropriate methods of communication, including supportive decision-making strategies, to engage in meaningful interaction based on patients' specific needs. 3. Identify and describe assistive communication technologies, including augmentative and alternative communication (AAC) methods. 	<ol style="list-style-type: none"> 1. Evaluate and reflect on culturally sensitive and inclusive communication strategies to enhance patient engagement and intersectoral collaboration. 2. Integrate and assess the effectiveness of augmented communication methods and shared decision-making approaches in clinical practice. 3. Critically reflect on patient narratives and lived experiences to shape communication strategies that promote patient autonomy and person-centred care.
Learning activities	<ul style="list-style-type: none"> • Clinical placement in SND units for observation and hands-on experience. • Observational visits with specialists in SND and discussions with caregivers about effective communication strategies. • Role-play exercises, including using cue cards to guide communication in simulated patient interactions. Students acting as people with disability (e.g., mute, deaf, visually impaired) to develop empathy and problem-solving skills. • Workshops on augmentative and alternative communication (AAC) tools, including picture boards and apps (e.g., Proloquo2Go). 	

	<ul style="list-style-type: none"> • Basic sign language training to improve interactions with non-verbal and hearing-impaired patients. • Analysis of real-world patient narratives, identifying effective and ineffective communication strategies. • Lived experience sessions with individuals who have disability, allowing students to gain firsthand perspectives.
Assessment tasks	<ul style="list-style-type: none"> • Direct observation of patient-clinician interaction and clinical staff's feedback on student communication. • Case-based scenarios and clinical practice to assess practical knowledge and communication strategies. • Reflection papers on student experiences with disabilities to develop empathy and self-awareness. • Oral presentations on communication technologies and patient-centred strategies.

6. Impact of Impairments, Disabilities and Systemic Conditions on Oral Health and Oral Function

Learning outcomes	Undergraduate	Postgraduate
	<ol style="list-style-type: none"> 1. Describe key concepts of health, disabilities and systemic conditions. 2. Explain the relationship between systemic and oral health, oral health related quality of life and their implications in the dental management. 3. Recognise the complexities of managing patients with a range of disability, social and medical issues, and understand the connection between general health and oral health. 4. Identify the different available behavioural support strategies and justify their use within the scope of practice. 5. Differentiate the characteristic oral manifestations of specific conditions. 6. Identify the impact of risk factors, systemic disease and medications on oral health and treatment planning. 	<ol style="list-style-type: none"> 1. Analyse key concepts of health, disabilities, and systemic conditions, applying them to advanced clinical contexts. 2. Evaluate the relationship between systemic and oral health, demonstrating its impact on oral health-related quality of life and clinical decision-making. 3. Apply knowledge of complex medical, social, and psychological factors to optimise patient-centred oral health care. 4. Implement evidence-based behavioural support strategies to enhance patient cooperation and improve oral health outcomes in clinical settings. 5. Manage the oral manifestations of specific conditions, incorporating clinical reasoning and interprofessional collaboration. 6. Develop tailored, risk-based oral health management plans, considering long-term outcomes in various clinical, aged care and home settings.
Learning activities	<ul style="list-style-type: none"> • Shadowing families and professionals in paediatrics, gerontology, and other specialist clinics. 	

	<ul style="list-style-type: none"> • Problem-based learning with case scenarios to develop research and management skills. • Detailed case studies of patients with systemic conditions to assess oral health impacts. • Case study analysis and OHRQoL survey administration to evaluate the impact of disabilities on oral health. • Writing care plans for selected medical conditions or disabilities, sharing findings as clinical guidance.
Assessment tasks	<ul style="list-style-type: none"> • Medical history-taking assessments, focusing on accuracy and potential oral manifestations. • Student-made treatment plans based on standardised patient scenarios. • Risk assessment and care plan writing based on medical conditions or disabilities. • Oral examinations requiring modifications to treatment plans based on patient scenarios. • Oral presentations where students share a patient’s story and how impairments affected their dental care access and treatment, and investigate service delivery models for people with disability and aged-care residents through online research and interviews.

7. Clinical Management of Patients Requiring Special Needs Dentistry

Learning outcomes	Undergraduate	Postgraduate
	<ol style="list-style-type: none"> 1. Demonstrate basic life support skills and management of medical emergencies including gerodontics. according to local protocols and guidelines. 2. Describe the factors (medical, social, cultural and environmental) that impact on risk assessment and treatment planning. 3. Describe basic pharmacology, principal interactions, including the implications of polypharmacy on oral health and overall health. 4. Perform safe transfer techniques and appropriate positioning aids where necessary. 5. Recognise and manage both verbal and non-verbal signs relating to pain, anxiety and phobia. 6. Provide preventive-focused dental treatment using behavioural, psychological and other non-pharmacological approaches in clinical practice. 7. Recognise the importance of prevention-led approaches in SND, including the use of Atraumatic Restorative Treatment 	<ol style="list-style-type: none"> 1. Manage medical emergencies, including palliative dental care, following local protocols and guidelines. 2. Integrate and evaluate medical, social, cultural, and environmental factors to develop comprehensive, patient-specific risk assessments and treatment plans. 3. Evaluate the implications for dental treatment and oral health care which arise from the effects of pharmacology and their impact on patient management. 4. Provide clinical care using behavioural, psychological and other non-pharmacological approaches. 5. Develop and justify individualised, risk-based dental care plans using clinical reasoning to provide evidence-based patient-centred care in diverse settings. 6. Apply mandatory reporting protocols in compliance with legal and ethical frameworks for abuse, demonstrating professional responsibility in safeguarding patients.

	<p>(ART), Silver Fluoride, and other minimally invasive technique.</p> <p>8. Recognise the signs of abuse and understand the legal and ethical responsibilities of mandatory reporting in the context of patient care.</p>	
<p>Learning activities</p>	<ul style="list-style-type: none"> • Joint lectures with BDS and Medicine students on chemistry, physiology, pharmacology, and medicine. • Use of "Delivering Better Oral Health" guidelines as a practical resource. • Watching videos on medical emergency scenarios and learning appropriate responses. • Pharmacology software exercises to understand drug interactions in patients with complex medical histories. • Shadowing in SND clinic and domiciliary care for real-world patient interactions. • Practice recognising verbal and non-verbal pain signs in patients. • Demonstrations of medical and dental emergency management by St John Ambulance. • Patient scenarios requiring students to interpret complex medical information, ensure patient safety, and understand the effects of medications and conditions on oral health. • Reflective journals to document and analyse experiences and learning. 	
<p>Assessment tasks</p>	<ul style="list-style-type: none"> • Case study discussions on various scenarios, including DBS selection, ART placement, and SDF application. • Students are given a case scenario and must determine special needs-related considerations for treatment planning, requiring interpretation of medical information, risk assessments, and appropriate treatment planning, and identifying differences in treatment approach compared to a patient without disability. • Demonstrating safe transfer techniques using positioning aids in the presence of a clinical assessor. 	

8. Clinical Pathways and Team Approach to Care

Learning outcomes	Undergraduate	Postgraduate
	<ol style="list-style-type: none"> 1. Explain the role of the carer and the importance of lived experience. 2. Explain the importance of the intra-interprofessional liaison in addressing patients' unique needs. 3. Demonstrate the ability to build interprofessional networks locally, providing guidance and group training to carers and other practitioners to support the delivery of appropriate oral healthcare. 4. Identify the value of teamwork, work collaboratively with dental specialties to advocate for relevant treatment options outside of individual scope of practice (knowing how, when and where to refer). 5. Practice responsibility for referring or arranging care. 	<ol style="list-style-type: none"> 1. Demonstrate understanding of the perspectives and lived experiences of patients and their carers or parents. 2. Adopt an interprofessional team approach to provide comprehensive, patient-centred care to optimise oral health outcomes. 3. Demonstrate leadership in care coordination, ensuring integrated and seamless patient management across healthcare providers. 4. Demonstrate understanding of the perspective of other service providers, managers of services and the voluntary sector.
Learning activities	<ul style="list-style-type: none"> • Attend interdisciplinary clinics and observe patient interactions across various disciplines. • Participate in interprofessional education and collaborative research projects. • Students present their own cases, discussing the management from an interprofessional approach. • Role-play situations involving seeking support for complex treatment needs. • Focus group discussions with carers, guided interviews on challenges in managing oral health care. 	

	<ul style="list-style-type: none"> • Write a referral document detailing a patient’s needs and rationale for referrals to other professionals. • Students create an advocacy plan for both individual patients and larger groups, working in teams to design and implement the plan. • Reflective essays on interprofessional collaboration experiences.
Assessment tasks	<ul style="list-style-type: none"> • Evaluate student’s patient management plan and referral rationale through clinical assessment or oral presentation. • Team dental students with pharmacy/nursing/medical students to create and assess a treatment plan for a hypothetical patient, considering overall healthcare provision. • Team dental residents with public health graduates to create a program addressing the oral healthcare needs of special needs/geriatric populations, evaluating the understanding of clinical and public health barriers. • Oral examination, where students propose strategies for interprofessional advocacy in a standardised patient scenario.

9. Dental Public Health and Oral Health Promotion

Learning outcomes	Undergraduate	Postgraduate
	<ol style="list-style-type: none"> 1. Describe the principles of oral health promotion and common risk factor approach. 2. Explain the connection between health promotion and health policy development. 3. Demonstrate the capability to formulate individualised oral health education and prevention strategy for patients and their carers. 4. Describe the role of professional advocacy in promoting public policies, services and systems that respect diversity, equality and human rights. 	<ol style="list-style-type: none"> 1. Apply the theories and principles of oral health promotion to improve general health through oral health. 2. Develop, co-design and implement evidence-based oral health promotion strategies and programs in diverse community settings. 3. Apply social and environmental facilitators to enhance accessibility and effectiveness of oral health promotion programs. 4. Critically analyse and evaluate the effectiveness of current oral health policies and promotion campaigns for their inclusivity, effectiveness, and impact on different populations.
Learning activities	<ul style="list-style-type: none"> • Involvement in events supporting disability organisations to promote oral health. • Field trip/community engagement programs related to public health promotion. • Participation in oral health day, where students can meet with lawmakers and advocate for public health policies supporting vulnerable populations. • Campaign design workshops, policy development simulation, and interdisciplinary seminars focused on oral health advocacy. • Workshops with professionals in health promotion, focusing on interdisciplinary collaborations, e.g., kidney health and oral care. 	
Assessment tasks	<ul style="list-style-type: none"> • Create an oral health promotional pamphlet or video targeting a specific group of patients with disability. 	

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| | <ul style="list-style-type: none">• Produce a poster for oral health using "Easy Read" pictures for better accessibility.• Write a project activity report to evaluate the success and impact of a public health initiative.• Develop individualised educational interventions for a patient with a disability, presented as a case study, class discussion, or written paper.• Evaluate the success of a public health project and the student's ability to communicate this success to peers and supervisors.• Postgraduate students could write a theory paper based on health promotion or conduct an evidence review (scoping or systematic review) on current oral health interventions and their impact on health promotion.• Attend a governmental advocacy event and write a reflective essay about the experience, including thoughts on current legislation and its impact on health promotion for people with disability. |
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10. Clinical Research and Governance

Learning outcomes	Undergraduate	Postgraduate
	<ol style="list-style-type: none"> 1. Critically review relevant literature in order to practice evidence based special needs dentistry. 2. Demonstrate an understanding of scientific methodology and the ability to critically analyse published research and where appropriate, integrate this to the clinical situation. 3. Understand the importance of continuing professional development, lifelong learning, self-appraisal, peer review and competency in special needs dentistry. 	<ol style="list-style-type: none"> 1. Develop skills in undertaking and evaluating special needs dentistry and public health research. 2. Apply and interpret scientific methodology, critically appraising research for its clinical relevance and practical application. 3. Demonstrate an ability to critically evaluate all forms of information. 4. Apply contemporary research findings and scientific method in evidence-based dental practice. 5. Plan and evaluate one's own continuing professional development, lifelong learning, self-appraisal, peer review and competency.
Learning activities	<ul style="list-style-type: none"> • Applying the Sackett model of Evidence-Based Dentistry. • Conducting critical appraisals of peer-reviewed journal articles. • Research proposal workshops, literature review assignments, and poster presentations. • Group assignments involving literature searches to answer clinical questions. • Lectures on biostatistics and training in search engines. • Research seminars covering study design and methodology. • Write reviews of current literature and identification of alternative care approaches. • Recognising the use of Artificial Intelligence (AI) in research and guiding students on its best practices to evaluate evidence-based protocols. 	

	<ul style="list-style-type: none"> • Case studies to integrate research with clinical practice. Eg. A patient with Down syndrome who refuses treatment—students develop a communication strategy, outline diagnostics, and form a complete treatment plan. • Developing clinical questions, conducting literature searches, applying critique tools, and synthesising information into decision-making.
Assessment tasks	<ul style="list-style-type: none"> • Research project assessed via a written thesis, presentations, and posters at university research groups/conferences. • Systematic reviews, clinical audits, and capstone projects addressing patient care questions. • Presentation of a completed research project for peer review and expert evaluation. • Critical appraisal of research papers through written assignments or reflective journals. • Journal article critique assignments, with students required to interpret and synthesise findings into clinical decision-making. • Project-based work to assess EBD skills, including literature searches and application of critique tools.

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CHAPTER 7

Discussions and Conclusions

Chapter Overview

This multi-study thesis includes five interrelated studies that collectively address the research aims and objectives:

1. To analyse the oral health demands and underlying factors contributing to unmet needs among people with disability.
2. To identify and evaluate the barriers and facilitators that influence dental practitioners' willingness to provide dental services for people with disability.
3. To explore the current depth and scope of Special Needs Dentistry (SND) training in undergraduate oral health programs.
4. To identify curriculum gaps and challenges within undergraduate oral health programs related to SND and discuss future agenda to enhance the skills and preparedness of the oral health workforce in this field.
5. To investigate the perceptions and attitudes of final-year oral health students and practitioners in Australia toward providing dental care to people with disability.
6. To evaluate the acceptance of additional SND training opportunities among the Australian oral health workforce, considering their potential impact on professional practice.
7. To develop and propose a comprehensive curriculum framework in SND for integration into Australian oral health programs, addressing identified educational gaps.
8. To justify the need for future research to determine whether additional SND training can help reduce oral health disparities between people with disability and the general population.

This chapter provides a comprehensive synthesis and critical discussion of the key findings of this thesis. It highlights the contributions of this research to the field, discusses practical implications, and reflects on the study's strengths and limitations. Additionally, it offers directions for future research and presents recommendations for the development, implementation, and evaluation of the SND curriculum. This chapter highlights the critical link between the lack of willingness to provide dental care for people with disability and the

gaps in SND education in oral health programs. Addressing these deficiencies through targeted training is essential for improving practitioner confidence and advancing care for this underserved population.

Summary of Key Findings

The findings of this thesis collectively contribute to a deeper understanding of the gaps, challenges, and opportunities in Special Needs Dentistry (SND) education for oral health practitioners. The research was conducted through multiple integrated studies guided by several core questions: *What are the barriers and facilitators to providing dental care for people with disability? How is SND integrated into undergraduate oral health programs? What are the perceptions and clinical experiences of students and oral health practitioners in SND? Critically, what components should be included in undergraduate and postgraduate SND curricula to adequately prepare OHTs to manage the dental needs of this population?* Understanding practitioners' perspectives and involving experts and consumer representatives in the curriculum development process proved invaluable to shaping this research.

The scoping review titled '*Barriers and Facilitators Influencing Dental Practitioners' Willingness to Treat People with Disability: A Scoping Review*' identified multiple barriers to providing dental care for people with disability, including limited professional training, lack of clinical exposure, time constraints, communication challenges, and insufficient institutional support.¹ Conversely, enablers included improving clinical experiences in SND, supportive practice environments, and continuing education. These factors intersect, highlighting the gaps in knowledge and limited clinical exposure that contribute to practitioners' lack of confidence.¹ The findings point to the clear need for enhanced educational opportunities within dental programs to build practitioners' competence and willingness to treat this population.

To better understand the extent of educational shortcomings, a curriculum content analysis of publicly available information from Australian oral health programs was conducted to assess the depth of training in SND. The analysis was guided by the established domains and learning outcomes outlined by the International Association for Disability and Oral Health (iADH).² By benchmarking Australian oral health programs against iADH standards, significant variability in the depth of educational content was uncovered, showing a lack of consistency in SND training across institutions. This finding strongly

supports the need for a standardised curriculum and prioritisation of SND to address the significant variance at present.

The curriculum content analysis highlighted a methodological limitation: reliance on publicly available course handbooks and learning outcomes did not capture the full scope of SND education, particularly hands-on clinical experiences. To address this, a survey of program directors was conducted, which confirmed that while SND is included in oral health curricula, there is considerable inconsistency in its comprehensiveness and delivery. Program directors also acknowledged the importance of SND but cited challenges such as limited curriculum space, faculty expertise, and lack of external clinical placements.³ This variability further supports the call for standardised training and more robust clinical exposure in SND.

Building on these findings, a further study explored oral health practitioners' perceptions of SND education, their confidence and comfortability in treating people with disability, and their acceptance of future training opportunities in SND. Survey results indicated that confidence in clinical preparedness remains low, with poor patient cooperation and limited undergraduate clinical exposure identified as major barriers to treating people with disability. A significant proportion of respondents reported that their education was insufficient, and there was strong agreement and a high level of interest in pursuing further training in this area. These findings emphasise the importance of enhancing SND curricula through structured clinical training and accessible learning opportunities.

In response to the overarching aim, the final part of the study sought to answer the research question through a multi-round Delphi process involving both international and Australian experts in SND. On completion of this study, a consensus-based curriculum framework was developed. The resulting model represents the first known curriculum framework specifically designed for the OHTs profession to be highly trained in SND.

Interpretation of Findings

The findings reflect a multi-faceted examination that goes beyond previous research by incorporating diverse stakeholder perspectives – students, practitioners, academic leaders, and subject experts, and culminating in a concrete, consensus-informed curriculum framework through the Delphi method. This multi-perspective approach validates long-standing concerns and lends credibility and urgency to the development of a comprehensive curriculum in SND. In relation to the research aims, the findings indicate that current undergraduate curricula are inadequately equipping OHTs with the necessary competencies to provide inclusive, competent, and confident care to people with disability. This reinforces the premise of this research: decreased willingness to treat people with disability is closely linked to insufficient exposure to SND during training.

Theme One: Social Model of Disability in Dentistry

Understanding disability through the lens of the social model is particularly important for dental education and practice, as it emphasises the need to address systemic barriers rather than viewing disability solely as an individual or their medical problem. The social model of disability shifts the focus away from individual impairments towards the societal, attitudinal, and environmental barriers that limit the participation of people with disability.⁴ As Buder and Rose note, “a disability is only disabling when it prevents someone from doing what they want or need to do”.⁵ The social model reframes disability as a product of exclusion rather than inherent limitations (**Figure 1**).⁶

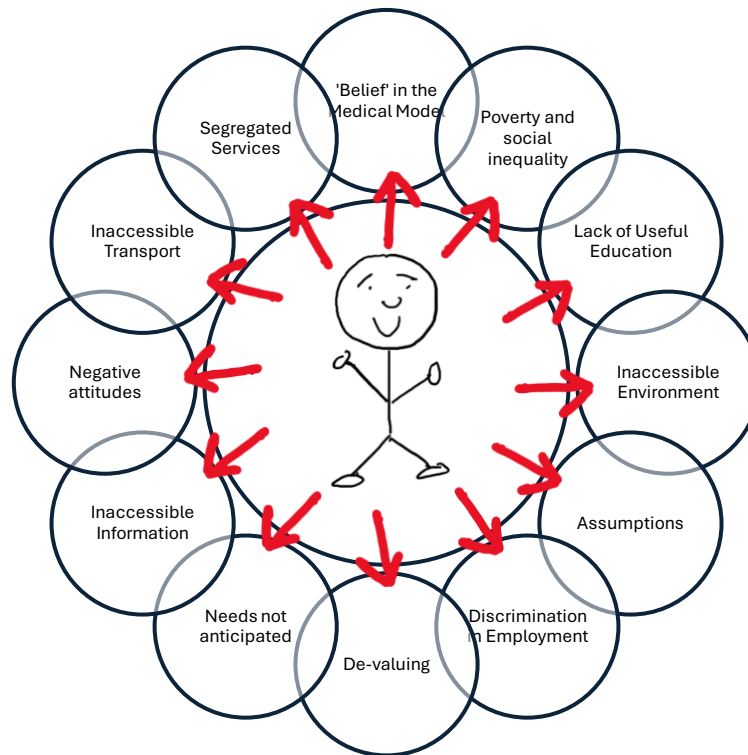


Figure 1. Example of social model of disability: Barriers experienced by people with disability⁶

Source: Adapted from Unclassified Document. Introduction to the Social and Medical Models of Disability.

Applying the social model within dentistry highlights several systemic issues that contribute to ongoing disparities. The many oral health challenges faced by people with disability are not inevitable but are the result of external factors. These include insufficient training among dental practitioners to meet the evolving needs of people with disability,⁷ limited availability of accessible treatment information or equipment,⁸ attitudes of exclusion and communication barriers due to the use of non-inclusive language.^{9, 10} This perspective contrasts with the medical model of disability, which focuses primarily on the impairment itself. The social model instead emphasises shared responsibility among dental practitioners to adopt inclusive practices, value diversity, and uphold equality under frameworks such as the Disability Discrimination Act 1992.¹¹ This prevents disability discrimination, where everyone, regardless of disability, should be treated fairly and given the same opportunities, including utilising dental services.¹²

In practice, the barriers influencing dental practitioners' willingness to provide care and patients' ability to access are not isolated, they are interconnected and mutually reinforced. This is demonstrated in a summary table below (**Table 1**).

Table 1. Barriers to accessing or providing oral healthcare experienced by patients and practitioners

Barriers		
	Patient – Barriers to accessing oral healthcare	Practitioners – Barriers to treating people with disability
Environmental	<ul style="list-style-type: none"> • Accessibility and transport barriers^{10, 13-19} • Architectural or equipment limitations^{9, 16, 18} 	<ul style="list-style-type: none"> • Inaccessibility issues^{7, 20-28} • Lack of suitable equipment^{7, 20, 21, 23, 25-32}
Institutional	<ul style="list-style-type: none"> • Lack of accessible, timely information about dental care needs and recommended procedures^{8, 33, 34} • Lack of access to supported decision making and opportunities for providing informed consent^{33, 35} • Lack of ongoing, accessible information and education about preventative oral health^{33, 34} • Lack of sedation options³³ • Cost of dental care^{13, 15-17, 19, 34, 36} • Exclusion of dental from Medicare or absence of dental insurance^{13, 17, 36} • Long wait times for appointments^{15, 16, 19} • Time constraint^{13, 18} • Lack of dentists practicing in the public sector³³ 	<ul style="list-style-type: none"> • Staff lack of training^{22, 37-39} • Time consuming^{7, 20-22, 25-28, 30, 31, 37, 38, 40-42} • Lack of support from clinic and staff^{7, 21, 23, 25, 26, 30, 38} • Lack of financial benefits / reimbursement^{22, 26-28, 30, 32, 39, 42, 43} • Inadequate undergraduate training in SND^{7, 18, 21-29, 31, 32, 37, 39-41}

<p>Attitudinal / Personal</p>	<ul style="list-style-type: none"> • Patient not able to cooperate^{10, 13, 36} • Medical conditions complicates dental treatment^{10, 13, 17, 18} • Dental fear and anxiety^{13, 14, 17} • Communication problems^{9, 10} • Anxious carers or parents¹³ • Dental care not priority¹³ • Lack of perceived needs^{9, 17} • Lack of dentists trained in SND or inability to find a clinic that caters to their needs, leading to subsequent dismissal or referral^{9, 13-17, 19, 44} • Negative attitudes and assumptions about disability,⁴⁵ or feeling of rejection¹³ 	<ul style="list-style-type: none"> • Complex medical history^{7, 21, 22, 24, 27, 29, 30, 38-40} • Communication and interaction issue^{7, 20, 22, 23, 26-28, 30, 31, 38, 41, 42} • Behavioural compliance^{7, 21-23, 25-32, 38-40, 42} • Physical challenges^{7, 20, 27, 29, 38} • Level of disability / disease^{7, 24, 27, 29-31, 39, 40} • Disturbance to other patients^{22, 30, 40} • Patient and carer not motivated to maintain^{7, 20, 23, 28, 30, 37} • High incidence of failed appointments^{21, 25, 32} • Lack of confidence and feeling underprepared^{7, 23, 29, 37, 40, 41} • Not comfortable treating^{21, 25, 29, 32, 41} • Not interested^{7, 18, 21, 22, 25, 31, 32, 37, 39, 40} • Previous bad experience^{22, 37, 42} • Prefers to refer for specialist management^{21-23, 25, 29, 31} • Refused to compromise on quality of work⁷
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This interplay highlights that improving access to dental care for people with disability requires a dual approach (**Figure 2**). This involves removing systemic and environmental barriers for patients while simultaneously addressing educational and attitudinal barriers for practitioners. In doing so, interventions can create a positive cycle where practitioner readiness fuels patient access, and patient engagement sustains practitioner willingness.

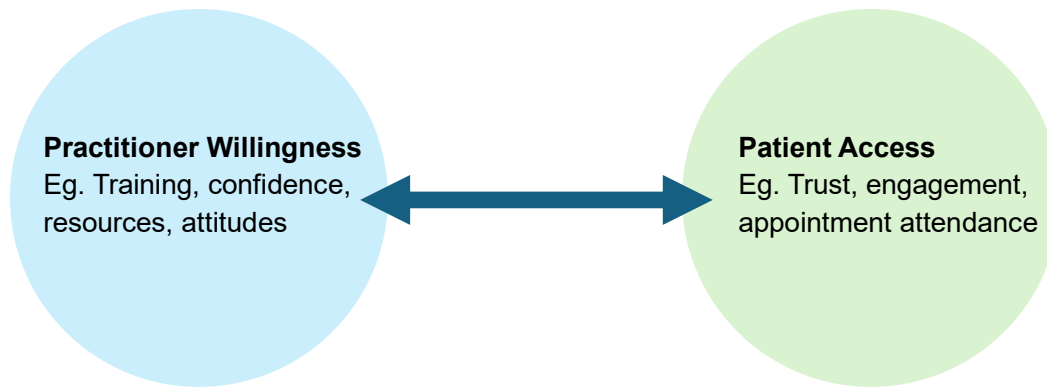


Figure 2. Interconnection between practitioner willingness and patient access

The social model of disability recognises that barriers are the primary factors restricting participation, rather than the disability itself. Accepting diversity, acknowledging and valuing individual differences, and understanding how these differences can influence a person’s oral health and oral health-related quality of life form the foundation of this thesis.¹² As People with Disability Australia aptly states, “People with disability aren’t the problem – we’re the solution”,⁴ a reminder that reducing barriers and improving inclusivity in oral health care are essential steps toward bridging disparities in oral health outcomes.

Theme Two: Current Preparedness and Barriers

Perceived Education and Preparedness

A critical outcome of insufficient education and training in SND is the inadequate number of dental practitioners – including general dentists, dental specialists, dental hygienists, dental therapists and oral health therapists, with the skills and willingness to treat people with disability.⁴⁶ Evidence on the depth of SND training in oral health programs is limited. One U.S. study of dental hygiene programs found that fewer than half (42%) required students to provide clinical care for patients with disability, and the number of dedicated teaching hours varied greatly, from as little as 2 hours to over 420 hours across classroom and clinical settings.⁴⁷ Similarly, our study *Oral Health Care for People with Disability: Curriculum Content in Oral Health Programs* found that only 27% of Australian institutions offered a specific SND module, with most incorporating the content into other subjects,

providing only a limited overview. Both findings highlight the wide variability in how SND is taught.

Dental schools show similar patterns. In a 2009 study, more than half of respondents reported that their graduates received less than five hours of clinical training in SND, while about 30% reported offering no dedicated training at all, reflecting a lack of prioritisation of disability care in the curriculum.⁴⁸ Another study demonstrated only around 4-5% of total didactic and clinical training time was allocated to disability-related topics, and expectedly, most students (83%) rated their training as poor.⁴⁹ A comparative study between Malaysian and Australian dental schools found that 10% of Malaysian versus 75% of Australian schools offered a dedicated SND module, though the amount of teaching in Australia ranged from only 2 to 34 hours. While Australia fared better in comparison, the overall teaching time remained limited.⁵⁰

Across different settings, research consistently shows that students graduate feeling unprepared to manage patients with disability.^{51, 52} Students report poor knowledge, low confidence, and discomfort in treating medically complex patients, with many highlighting clinical experience as the most critical factor in building preparedness.^{50, 51} A global review of current initiatives in preparing students reinforced these trends, revealing that dental students are insufficiently trained to manage the oral health needs of people with disability, contributing to poor confidence and reluctance to treat this population.⁵¹ Importantly, the shortage of trained dentists was identified as a primary barrier to adequate access, a challenge also highlighted in our own scoping review.¹

The findings of this thesis align strongly with international literature demonstrating the impact of undergraduate education on the confidence and preparedness of dental practitioners in managing patients with disability. Limited curricular content and minimal clinical exposure consistently correlate with low self-reported confidence, whereas graduates who received meaningful training, including hands-on opportunities, were more confident and willing to provide care for patients with diverse and complex needs.^{39, 53-57} Clinical exposure has been shown to reduce perceived challenges in future practice.^{58, 59} Despite these, most students in previous studies rated their training in SND as insufficient,^{23, 49, 60, 61} expressing a clear preference for clinical training over purely didactic teaching, and

viewed hands-on experience as essential for building competence and positive attitudes.^{62, 63}

Integrating Theory and Practice: Miller's Pyramid

The lack of robust pre-clinical preparation creates challenges when integrating academic learning into clinical practice in dental education.⁶⁴ The relationship between theory and practice is increasingly recognised as essential, each continuously informs and strengthens the other. Practitioners who received both theoretical and practical SND education were significantly more likely to treat patients with disability, demonstrating a strong correlation between education and clinical confidence.^{25, 65-67}

While students may not immediately appreciate the relevance of theoretical learning, experiential clinical contexts help them understand its value and apply it effectively.⁶⁴ Leadbeatter and Bell (2018) found that Australian dental students' experiences of the curriculum evolve from "surviving the education system" to an "understanding of the complexities of dental practice", an evolution dependent on the integration of theoretical frameworks with clinical realities.⁶⁸ Broader literature similarly emphasises that clinical experience 'consolidates and contextualises' theoretical knowledge.^{64, 69}

In SND, this interplay of theory and practice is particularly vital, as practitioners must navigate complex patient needs, ethical considerations, and care strategies, considering that every patient is unique. Models such as Miller's Pyramid of Clinical Competence (1990)⁷⁰ and competency-based education frameworks explicitly structure this integration, moving learners from knowledge ("knows") to action ("does"). Learners should begin with foundational theoretical knowledge and progressively advance through competence to clinical performance, demonstrating the hierarchy and translation of theory into practice (**Figure 3**). In addition, **Table 2** illustrates an example on how each level of Miller's Pyramid can be integrated into SND education and evaluated through appropriate assessment methods.

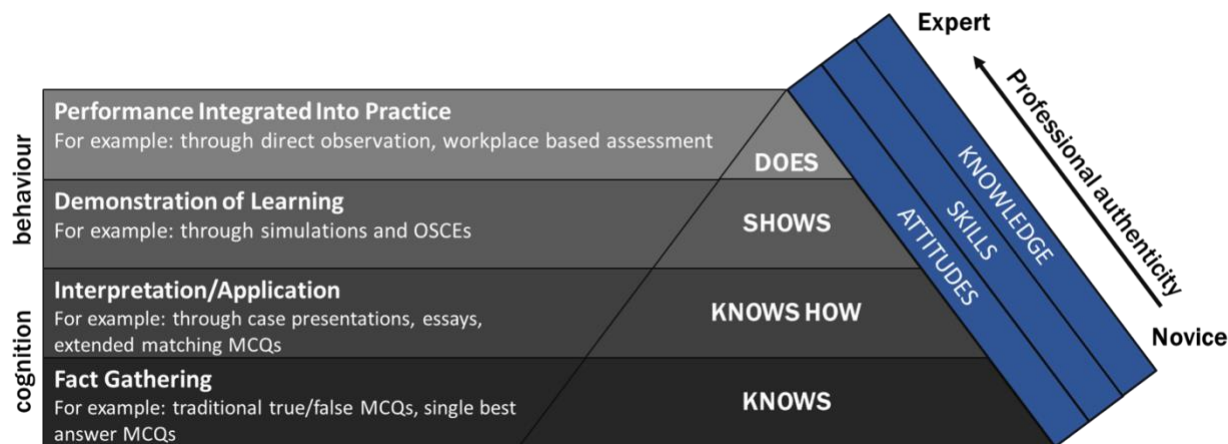


Figure 3. An example of Miller's Pyramid of clinical competence⁷¹

Source: Clinical skills development: Using controlled condition assessment to develop behavioural competence aligned to Miller's Pyramid. Reproduced with permission.

Table 2. Examples of application of Miller's Pyramid to SND education

Levels (Miller's pyramid)	Examples in SND context	Assessment examples
Knows	Understands foundational SND concepts	Written exams, MCQs, short-answer questions
Knows how	Applies knowledge to clinical decision-making in SND contexts	Case studies, clinical simulations, and extended multiple-choice questions.
Shows how	Demonstrates SND skills in a simulated environment	OSCEs and simulated patient encounters
Does	Provides competent SND care in real clinical settings	Direct observation in clinical settings, workplace-based assessments, and performance-based evaluations.

An example of a lack of foundational knowledge in SND is the misinterpretation of patient behaviour. For example, neuromotor manifestations seen in individuals with cerebral palsy may be incorrectly perceived as behavioural non-compliance, despite being distinct from behaviours typically associated with intellectual or developmental conditions.⁷² This emphasises the importance of strong theoretical knowledge alongside clinical experience in SND. Without adequate theoretical preparation, clinical exposure alone may perpetuate inaccurate assumptions rather than improve competency. Evidence from an endodontics

study found that theoretical understanding significantly impacts clinical performance.⁷³ Incorporating didactic teaching alongside hands-on training is essential to ensure students can accurately assess patient needs and implement appropriate management strategies,⁶³ ultimately improving their ability to provide care.

Barriers faced by Dental Schools

Barriers to teaching SND have been documented for decades. As early as 1985, Moshman et al. identified significant challenges,⁷⁴ and Ettinger's 2010 review confirmed that these barriers had largely remained unchanged.⁷⁵ Commonly reported issues include limited curriculum time (overcrowded curriculum), competition among clinical disciplines for curricula time, inadequate funding, lack of disabled-friendly facilities and patients, insufficient educational resources, and a shortage of trained faculty to deliver both didactic and clinical teaching.⁷⁵

More studies continue to highlight similar barriers. In Australia, the main barriers were an already overloaded curriculum and limited faculty expertise.⁵⁰ In Malaysia, lack of faculty expertise and inadequate disabled-friendly facilities were emphasised,⁵⁰ while in the United States, curriculum overload was the predominant concern.^{47, 76} In Latin America and the Caribbean, schools reported that the greatest limitation to expanding predoctoral training was the absence of faculty experienced in caring for this patient population.⁴⁸ Likewise, a study in Saudi Arabia noted that dental students perceived some supervisors as not sufficiently qualified to manage patients with disability.⁷⁷ Although many of these studies were conducted years ago, their findings remain consistent, highlighting the same recurring barriers, and our study echoes these findings. The majority of participants agreed that oral health programs face an overly crowded curriculum, and many disagreed that financial resources and clinical facilities were adequate.³

A further barrier, particularly relevant to our focus, is the lack of educational resources.⁵⁰ While some guidance exists for dentistry, to date, there is no evidence of an SND curriculum framework specifically for oral health therapy. This gap served as a reminder of the need for structured educational resources to support training in this field.

Theme Three: Opportunities for Change

Interest in Future Training Opportunities

Inadequate training opportunities have left many dental practitioners lacking the confidence to adequately care for people with disability in their practices, even if they are motivated to do so.⁷⁸ An Australian study conducted in 2018 reported that the majority of students felt postgraduate education should exist for oral health therapists and specifically in SND (66.7–92.9%), with a substantial proportion indicating they would pursue such training if available.⁶¹ Findings from our survey showed similar results, that over 90% of respondents rated future training opportunities as very important, with more than half (53.3%) expressing strong interest in participating. Similar patterns are evident internationally, where, despite dissatisfaction with their current curriculum, students remained motivated to learn about managing patients with disability.^{29, 60, 79}

Interest is not limited to formal postgraduate programs. Continuous professional development (CPD) opportunities are also highly valued. A study conducted in Western Australia found that 66.8% of respondents were interested in CPD training in SND, though only 21.8% expressed interest in specialty postgraduate training.²⁵ Similarly, a study from Indonesia reported that 89.6% of students were willing to attend continuing education programs in SND, with 79.6% considering postgraduate training.²¹

Taken together, these findings highlight a consistent message. Despite limited exposure and insufficient curricula, there is a strong interest among students and practitioners to pursue further training in SND. This suggests that the lack of engagement is not due to disinterest, but rather to structural barriers in education and training pathways. It is therefore reassuring to see that the motivation and intention to support the oral health of people with disability already exists. What is required now is institutional and organisational effort to cultivate this interest by making education opportunities accessible and embedding disability-related training as both a didactic and clinical competency. Moving forward, the challenge lies not in stimulating motivation but in translating this willingness into action through structured, sustainable educational frameworks.

New Curriculum Framework for Oral Health Therapists

Beyond preparedness, this research also contributes to ongoing global discussion on improving educational opportunities in SND. To date, curriculum guides or frameworks in SND have largely been developed for dentistry, and none exist for oral health therapy. One of the most widely recognised contributions comes from the iADH, which produced undergraduate and postgraduate learning outcomes in SND for dentistry.

In the United States, the Commission on Dental Accreditation (CODA) has adapted its requirements to ensure that all US dental schools train students to manage patients with disability. CODA Standard 2–25 mandates that “graduates must be competent in assessing and managing the treatment of patients with special needs,” which includes instruction in respectful communication, assessing treatment needs, and either providing services or appropriate referral.⁸⁰ Despite such standards, evidence indicates that many dental graduates complete their predoctoral education without the confidence or requisite skills to provide effective care to patients with disability.⁵⁹ More specifically related to oral health therapy, the CODA standards for dental hygiene and therapy programs require that dental content encompass the provision and management of care for patients with disability. However, very few dental programs provide substantial education and clinical experiences collaborating with other health professionals.³ This is concerning and should be reflected in the curriculum, given that multidisciplinary care is especially critical when addressing the complex needs of people with disability.

In Australia, the Australian Dental Council (ADC) outlines in the *Professional Competencies of the Newly Qualified Dental Practitioner*, which specify the competencies required for registration. Separate documentation also details the Competencies specific to OHTs. The Competencies serve as benchmarks for our curriculum guide to ensure that graduates possess the necessary professional qualities, knowledge, judgment, and clinical skills. These include:⁸¹

- Social responsibility and professionalism
- Communication and leadership
- Critical thinking
- Health promotion
- Scientific and clinical knowledge
- Person-centred care

Importantly, the ADC emphasises that demonstration of these competencies must account for populations at greater risk of harm or poorer oral health outcomes.⁸¹ These include people who are socially disadvantaged, Aboriginal and Torres Strait Islander peoples, individuals living in rural and remote areas, and those with additional or specialised health care needs.⁸² The ADC further requires that programs show how their design, delivery, and resources enable students to achieve these competencies. To meet these standards, education providers are encouraged to include the following:⁸³

- Highlight socio-economic structures that influence oral health and prioritise public health alongside clinical competence
- Provide education on barriers that at-risk populations face in accessing dental care
- Develop specific curricula to prepare practitioners for the care of disadvantaged groups
- Incorporate cultural competence training
- Facilitate opportunities to engage with at-risk populations
- Include assessments to ensure students develop skills required to be a culturally safe practitioner.

The recently published Intellectual Disability Health Capability Framework, although not dental-specific, does provide capability domains that are directly relevant to educating health practitioners to work effectively with people with intellectual disability. The framework outlines six core capability domains, including intellectual disability awareness,

communication, quality evidence-informed health care, coordination and collaboration, decision-making and consent, and responsible, safe and ethical practice. The framework also highlighted principles that underpin the Capabilities, including social justice, person-centred care, partnerships, supported decision-making, cultural safety, and evidence-informed health care.⁸⁴ These domains relate closely to the goals of the thesis, reinforcing the importance of embedding disability competence and interprofessional collaboration into professional education.

This research builds upon these principles by proposing a consensus-based comprehensive curriculum framework in SND, designed specifically for OHTs (**Appendix D**). The framework consolidates the educational components identified as essential for preparing OHTs to manage the oral health needs of people with disability. It is structured into undergraduate and postgraduate levels and comprises ten key learning domains, each with level-appropriate learning outcomes. These were iteratively refined through multiple Delphi rounds and validated at a final expert consensus meeting. The framework serves as a guiding resource for program directors, educators, and policymakers aiming to strengthen SND education for the oral health workforce. It aims to support educators in standardising and strengthening disability-related dental education. It provides a structured and adaptable framework that institutions can use to incorporate core competencies in disability care and tailor to the evolving role of OHTs in providing inclusive oral healthcare.

To underpin the framework, Bruner's Spiral Curriculum Theory was adopted as the educational model (**Figure 4**). This model emphasises revisiting key topics at increasing levels of complexity over time, progressively deepening their understanding. This aligns with the progressive development of SND competencies that require theoretical knowledge, clinical exposure, and attitudinal growth.⁸⁵

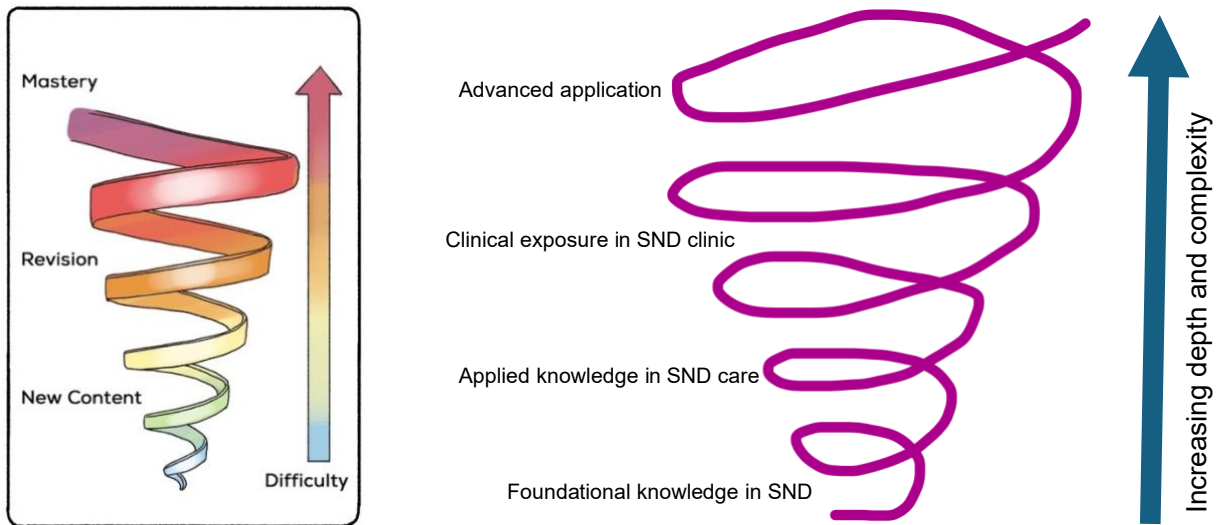


Figure 4. Conceptual model of spiral curriculum in SND (right), adapted from Spiral Curriculum model (left)⁸⁶, illustrating how SND knowledge and skills are progressively integrated and revisited with increasing depth and complexity.

Source: Adapted from *Developing a spiral curriculum* by Queen Mary University of London.

In application, the learning outcomes were mapped across levels of progression (Table 3):

Table 3. Examples of learning outcomes across different phases of learning

Perceived phases	Levels of learning	Examples of action verbs on learning outcomes
Early	Know about	Explain, understand, recognise, describe, define, identify, outline, discuss, describe key concepts, summarise
Mid	Know how	Explore, integrate, assess, facilitate, evaluate, differentiate, analyse, sort, compare, contrast, interpret, organise
Transition-to-practice	Shows how/does	Implement, obtain, engage, advocate, critically reflect, use, develop, manage, provide, practice, adopt, critically review, plan, perform, apply, diagnose, demonstrate, analyse, critique, create, design, debate

To support practical implementation, the framework also includes learning activities and assessment tasks suggested by the Delphi expert panels. This includes simulation activities, reflective tasks, and community-based placements, ensuring that students not only understand but also apply principles of inclusive care in real-world settings. This curriculum framework encourages continual reinforcement and extension of learning, and aims to foster confident, competent, and compassionate OHTs ready to meet the complex needs of patients with disability.

Theme Four: System-Level Considerations

Systemic Change

Our results, together with previous studies, demonstrated persistent deficiencies in the representation of SND within dental education globally, despite its formal recognition as a specialty in Australia in 2005.⁸⁷ These deficiencies are evident both at the entry-to-practice level, where SND content remains limited, and at the advanced training level, where specialist and postgraduate programs are scarce. Yet these programs are crucial to ensuring the future of education and clinical expertise. Given that SND remains a relatively young discipline, a reformed dental education system that integrates theoretical knowledge with authentic clinical practice is essential.⁸⁸ Findings were mirrored in this thesis, reflecting broader patterns: oral health students and practitioners reported low levels of preparedness and confidence, frequently citing lack of behavioural management skills and limited clinical training as key barriers.⁶⁰ In short, insufficient training continues to translate into low confidence and reluctance to treat.

While the literature supports the findings of this thesis, it is important to acknowledge that most existing studies have focused on dentists and dental students, with limited attention given to the oral health therapy profession. This thesis responds to the need for updated, profession-specific research that addresses the educational needs of the evolving oral health workforce, particularly in roles such as oral health therapy. The low confidence observed among oral health practitioners does not reflect a personal deficit, but rather a systemic shortcoming in training and support – an insight that aligns with the social model of disability.

Justification of Scope: Focus on Oral Health Therapists (OHTs)

But why only oral health therapy and not dental therapy or dental hygiene? A possible concern that may arise is the focus of this curriculum framework specifically on OHTs, rather than on dental therapists or dental hygienists as separate professional groups. This focus is deliberate and reflective of the evolving structure of the oral health workforce in Australia, where the dual qualification of Dental Therapy and Dental Hygiene is now most commonly conferred under the unified title of OHT.⁸⁹ In Australia, eight of the institutions offer oral health therapy programs and the other two offer dental hygiene programs.⁹⁰ The inclusion of OHT as the primary focus is also consistent with international trends. For instance, New Zealand and Singapore have both adopted the oral health therapy model. In the United Kingdom, while the titles of “dental hygienist” and “dental therapist” remain in use, dual-qualified hygienist-therapists are increasingly being trained. As such, developing a curriculum that aligns with the current education model ensures that the framework remains relevant and implementable across the majority of accredited programs.

The scope of practice of OHTs, depending on qualifications as per the institution’s scope of practice, particularly provides preventive and restorative care for children and adolescents, and increasingly for adults.⁹¹ This positions them as key providers of care for people with disability, especially in public and community settings. Therefore, the decision to focus this framework on OHTs not only aligns with the existing workforce structure but also supports the goal of equipping the profession with the necessary competencies to meet the diverse needs of this population. Nonetheless, the framework and its learning outcomes may still be adaptable and useful for curriculum enhancement in standalone dental therapy or dental hygiene programs, both within Australia and internationally. The principles underpinning the curriculum – such as inclusivity, preparedness, and competence, are universally applicable and can serve as a foundation for broader interdisciplinary development in SND. Institutions adopting this curriculum framework may also modify or improve the proposed list to adapt it better for their students.

The thesis not only extends the current literature but also bridges the gap between theory and application. This involves better utilisation of the existing workforce and resources, with a stronger focus on preventive care. This aligns well with the role of OHTs, who are extensively trained in preventive dentistry. Through optimising the capabilities of OHTs, the dental system can more effectively resolve current challenges and progress towards a more sustainable model of care.

Inclusion of Postgraduate-Level Curriculum

Dental Therapy, Dental Hygiene and Oral Health Therapy graduates currently have access to a range of postgraduate study pathways in Australia, including Graduate Certificate, Master's degrees, Honours, and Research Higher Degrees. The University of Melbourne offers a Graduate Certificate in Dental Therapy (Advanced Clinical Practice) as a postgraduate clinical program tailored for oral health practitioners.⁹² This program enhances clinical competencies, including effective communication in managing complex patients, understanding pharmacological interactions, and managing individuals with physical, intellectual, and sensory disabilities or medical complexities. Similarly, the University of Adelaide offers a Graduate Certificate in Oral Health Science.⁹³ However, both programs were focused on the adult restorative scope of practice, for oral health practitioners who were trained with an age-limited scope. Internationally, curriculum development is also underway. In Singapore, the *Training Roadmap for Oral Health Therapists in Special Care* outlines a future upskilling initiative designed to address the challenges posed by a rapidly ageing population and the unmet oral health needs of geriatric population and people with disability. Although these training programs are still under development, they signal a growing global awareness of the need for specialised training in this field.⁹⁴ While postgraduate programs for the oral health workforce are beginning to emerge in Australia and beyond, none currently offer a dedicated focus on SND. The inclusion of a postgraduate-level curriculum component in the proposed framework was therefore both intentional and strategic.

The Delphi process conducted as part of this thesis identified a substantial number of advanced learning outcomes relevant to the professional development of OHTs. Many of these outcomes were extracted from publicly available competency documents and educational frameworks used internationally. Rather than disregarding these outcomes, the decision was made to “park” them on our curriculum framework, within a postgraduate-level category, to preserve their relevance and in preparation for future directions on educational development in the oral health therapy profession. Although structured postgraduate clinical programs in oral health therapy remain limited in Australia, the profession is evolving, and there is increasing recognition of the need for career progression opportunities. Including postgraduate-level content anticipates future possibilities and provides a foundation that educational institutions or policymakers may choose to build upon should postgraduate training be introduced. This approach ensured high-value, advanced competencies learning outcomes were kept for the framework to evolve with the profession. It also aligns with emerging interests from the oral health workforce in further education and upskilling, as shown in the findings of this thesis, where participants expressed willingness to pursue additional training in SND if opportunities became available. The inclusion of a postgraduate section does not imply an existing pathway but rather provides a model of future readiness to ensure that no relevant educational content is lost and that the framework remains adaptable and progressive in the current educational landscape.

Strengths and Limitations

The development of this thesis is grounded in consistent findings across the literature, further validated by surveys that revealed oral health practitioners’ lack of knowledge and experience in undergraduate training in SND. A key strength lies in its systematic structure, where each study builds upon the findings of the previous one, resulting in the development of a comprehensive curriculum outline that collectively addresses the research question.

The scoping review, conducted in accordance with the Joanna Briggs Institute (JBI) framework, incorporated a broad range of study designs and sources, including both peer-reviewed and grey literature.⁹⁵ This enabled a comprehensive mapping of global evidence on barriers and facilitators influencing dental practitioners’ willingness to provide care for

people with disability. However, the review did not include a formal critical appraisal of study quality and the broad inclusion criteria may have led to variability in synthesis depth. As with most scoping reviews, findings provide an overview rather than definitive conclusions and should be interpreted with caution.⁹⁶ Nevertheless, it identified key knowledge gaps and captured perspectives across different regions and professional groups, which is particularly valuable in an area with limited research.

The content analysis offered a systematic and transparent way to examine curriculum documents across multiple institutions. Relying on publicly available course handbooks and institutional websites enabled direct comparison against established standards such as the iADH learning domains and outcomes. This approach did not require participant recruitment, making it efficient for assessing multiple programs simultaneously, at the same time offering a broad overview of the current educational status. However, its reliance on stated learning outcomes and descriptions meant insights were limited to surface-level curriculum information, which may not accurately reflect the depth, quality, or delivery of teaching and clinical exposure. The analysis reflects only a snapshot of curricula at the time of data collection, as online information is subject to change. More importantly, content analysis does not assess student competence, skill acquisition, or graduates' readiness for practice.⁹⁷ However, this methodology did provide valuable insights that guided the next phase of research.

The online survey of program directors had several strengths, including its international scope and targeted recruitment of academic staff responsible for curriculum delivery. It captured a broad range of data on content, teaching methods, clinical training, and resources, directly addressing the limitations identified in the content analysis. Nonetheless, the relatively low response rate (28%) limits generalisability, and reliance on self-reported institutional data may have introduced bias.⁹⁸ As a cross-sectional study, it provides only a perspective at that point in time, without capturing curricula changes. However, this approach offered a valuable snapshot of the educational trends and gaps that can inform future investigations.

The survey of final-year oral health students and practising oral health practitioners ensured findings were directly relevant to curriculum development and workforce readiness. Including both groups allowed perspectives across different experience levels, while the mixed-methods design enriched the data collection. Limitations include the relatively small, self-selected sample, which may overrepresent those with a stronger interest in SND. As the survey relied on self-reported data, participants may have over- or underestimated their preparedness or perceptions of SND training, and responses may have been influenced by recall or social desirability bias.⁹⁸

Finally, the Delphi study is known for its structured, iterative design, which allowed systematic refinement of curriculum learning outcomes through multiple rounds of feedback.⁹⁹ The inclusion of national and international experts, as well as consumer representatives, ensured that the perspectives were evidence-informed, contextually relevant and grounded in practice. Anonymised responses and predefined consensus thresholds minimised bias and supported open participation. However, the length and repetition of the first survey may have contributed to fatigue, with some attrition across later rounds reducing the breadth of perspectives. Additionally, the standard 70% consensus threshold, while commonly used, may have masked nuanced disagreements among experts. The final validation relied only on Australian experts, which may limit the transferability of the framework to countries with different educational and regulatory contexts;¹⁰⁰ however, this approach ensures the framework is highly relevant and able to be implemented in the context it was initially designed for.

Collectively, the multi-perspective approach, incorporating insights from academic directors, students, practitioners, and experts, provides a robust and holistic view of the current and the possible future state of SND education. Importantly, this is the first Delphi-developed SND curriculum outline tailored to oral health therapy, produced with high participant retention and strong engagement. Despite limitations relating to sampling, self-reporting, and generalisability beyond Australia, the thesis provides valuable understanding of previously under-investigated areas and makes a significant contribution by offering evidence-based insights to and new directions for curriculum development.

Identifying the limitations of our studies, it is important to note that the generalisability of the findings across the broader oral health practitioner population and beyond the Australian context is limited. Variations in oral health workforce composition, healthcare systems, educational structures, and cultural contexts globally may influence the feasibility and effectiveness of implementing similar curriculum reforms. Further consideration for future research is needed to validate and expand on these findings.

Consideration for Future Research

SND is a broad and evolving field within dentistry, with so much to be explored and integrated into oral health education. While this thesis has developed a comprehensive curriculum framework for SND, the evidence generated from this thesis alone is not sufficient to drive significant changes across the profession. Future research is essential to validate and refine this framework based on evolving evidence-based guidelines and emerging best practices. Several areas of further research are needed to advance the field and promote stronger inclusion of SND content in oral health therapy education.

These recommendations are informed by the findings and the acknowledged limitations of the current study, where they offer pathways for future directions.

- **Evaluating the impact of structured educational interventions**

Future studies should assess the effectiveness of the proposed curriculum framework in improving practitioner confidence, clinical competence, and patient satisfaction. Pilot programs could be implemented in selected institutions to measure outcomes and validate the curriculum design. This evidence would support broader integration of the framework across oral health education programs. The successful adoption of enhanced SND curricula will also require an understanding of the institutional, regulatory, and logistical challenges that may influence implementation. Future research should explore barriers such as faculty readiness, resource limitations, accreditation requirements, and organisational support. Insights from program directors, educators, and policymakers could be included to inform strategies for implementation and long-term sustainability.

- **Conducting longitudinal studies on competency and patient outcomes**

Longitudinal research that follows oral health graduates into their professional practice would provide important insights into how SND education translates into real-world competence and patient care quality. This could reveal how well graduates adapt to managing patients with disability and identify specific curriculum areas requiring further development.

- **Including the views of people with disability**

Future research should include the perspectives of people with disability and their carers. Drawing on the continuum of community engagement, designing SND curriculum components with their perspectives would ensure that training reflects their lived experiences and supports patient-centred care.¹⁰¹ Such approaches can lead to more meaningful, sustainable changes in education, dental health outcomes and overall experiences.

- **Expanding the scope of research beyond Australia**

While this thesis focused primarily on Australian oral health programs, future research could consider international comparisons of SND education frameworks. When comparing countries where oral health therapy is a relatively new profession with those where it is well-established, researchers may gain insights into how the maturity of the oral health profession influences the integration and delivery of SND education.

Future investigations should build on the findings of this thesis to drive meaningful changes in oral health education and practice for dental care for people with disability.

Conclusion

Guided by the principles of the social model of disability, this thesis challenges the notion that ‘disability is an individual impairment requiring specialised care’. Instead, it reframes disability as the result of many other factors, which were embedded within the dental healthcare system itself.⁴ This perspective is particularly relevant to SND, where

inaccessible environments, limited provider preparedness, and gaps in undergraduate education contribute more significantly to care inequities than the disabilities themselves. This research calls for changes in the system – starting with the education of oral health practitioners. By identifying current curriculum gaps, understanding workforce perceptions, and developing a consensus-based curriculum framework, this thesis contributes a practical step toward preparing oral health therapists to deliver inclusive and competent care, one better equipped to meet the complex needs of people with disability and to advance oral health equity in Australia and beyond.

Ultimately, better education is a vital step towards better care, and people with disability deserve nothing less.

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Appendices

Appendix A: Supplementary material for Chapter 2

- Barriers and Facilitators Influencing Dental Practitioners' Willingness to Treat People with Disability: A Scoping Review Protocol

Barriers and Facilitators Influencing Dental Practitioners' Willingness to Treat People with Disability: A Scoping Review Protocol

D Koh¹; J Wallace², D Leadbeatter¹, W Sohn¹

1. The University of Sydney, Sydney Dental School
2. The University of Newcastle, Health, Medicine and Wellbeing

Correspondence: Dorothy Koh, Dorothy.koh@sydney.edu.au

ABSTRACT

Objectives: To identify the barriers and facilitators experienced by dental practitioners that influence their willingness and intention to provide dental services to people with disability.

Introduction: In Australia, the disability prevalence is approximately one in six with an additional 22 percent of the population experiencing chronic health conditions. The oral health of people with disability is often neglected, leading to poor access to dental care and a higher risk of dental problems. There is a worldwide shortage of dental professionals willing or able to provide dental treatment to people with disability. Most patients with disability are manageable within the general dental community, especially if the dental practitioners are prepared to accommodate the patients' specific needs. This review aims to identify the barriers and facilitators dental practitioners face when treating people with disability. This could facilitate a pathway for future research to enhance willingness to treat and reduce oral health disparities of this patient population.

Inclusion criteria: All dental practitioners including dental specialists, dentists, oral health therapists, dental hygienists, dental therapists, dental nurses, dental prosthetists, dental technicians, dental students, and oral health therapy students will be eligible for inclusion in this review. Studies that discuss barriers and/or facilitators identified by dental practitioners when providing dental services to people with disability will be included in this review. No language, time period or age limitations will be applied.

Methods: Searches will be conducted in the Cochrane Systematic Review Database, CINAHL, EMBASE, MEDLINE via Ovid, and Scopus. Grey literature searches will be performed using Google and handsearching references for additional studies. This review will include both published and unpublished articles.

INTRODUCTION

The Royal Australasian College of Dental Surgeons defines Special Needs Dentistry (SND) as the branch that “supports the oral health care needs of people ... that require special methods or techniques to prevent or treat oral health problems, or where their conditions necessitate special dental treatment plans”. This includes physical disabilities, mental impairment, intellectual and cognitive disorders, developmental disability, sensory and behavioural, geriatric, the underserved or a combination.¹

Studies have shown that people with disability have generally poorer overall health and dental health as compared to people without disabilities.^{2, 3} Their dental health is reported to be largely neglected and they face a lowered incidence of access to regular dental care.^{4, 5} This often results in a higher risk of dental problems, such as dental caries and periodontal diseases, and other contributing factors such as the detrimental impacts and adverse outcomes of their general health, polypharmacy and reduced capability to self-care with oral hygiene care.^{2-4, 6, 7} Maximum dental care is almost impossible to achieve in the presence of difficult behavioural compliance.⁴

The disability prevalence in Australia is approximately one in six (18%) with an additional 22 per cent of the population experiencing chronic health conditions.⁸ The World Health Organisation (WHO) has published a disability fact sheet that reports over one billion people, an estimated 15 per cent of the world population have some kind of disability.⁹ As medical technology continues to improve, people with disability are expected to have a longer life expectancy and as this population grows, there is a surge in the dental demands of people with disability.¹⁰⁻¹³ This has inevitably resulted in an

increase in the number of people on public dental waiting lists. The increase in waiting time for dental appointments has led to poorer treatment outcomes for some patients.¹⁴

In Australia, only 29 dental specialists in SND are registered with the Australian Health Practitioner Regulation Agency (AHPRA).¹⁵ A shortage of dental practitioners willing to provide dental treatment to people with disability is not a problem unique to Australia but has become a considerable concern in recent years, globally.¹⁶⁻¹⁹ Not all people with disability require a dental specialist to manage their dental needs; most are manageable within the general dental community. However, this is dependent on whether the dental practitioners are prepared and willing to provide treatment to these patients based on their health history.²⁰ With the disability prevalence on the rise, we should be advocating for all dental practitioners to work in harmony to overcome this challenge.^{21, 22}

One of the most commonly reported yet significant barriers to treating people with disability is the lack of clinical exposure and inadequate training in dental schools.²³⁻²⁵ This has unfortunately led to low confidence levels, poor attitudes and low levels of willingness to treat this particular patient cohort.^{10, 16, 24, 26, 27} The dearth of practitioners wanting to treat people with disability has led to an increased number of patients being referred to the SND departments within the public dental services, which already maintain a lengthy and increasing waiting list.^{14, 28}

This scoping review aims to identify both the barriers and facilitators that influence a dental practitioner's willingness and intention to treat people with disability. Findings may outline how dental practitioners can be supported and encouraged to be part of the SND workforce. A preliminary search for existing scoping reviews and a systematic

review of this topic has been conducted on the Cochrane Database of Systematic Reviews via Ovid, Medline via Ovid (1946 - present) and Scopus in May 2022. No scoping reviews or systematic reviews were identified that are similar to this review. This scoping review will be conducted as an investigative process,²⁹ to explore the existing research on the barriers and facilitators that influence the dental practitioners' intention to provide dental services to people with disability. This review will adhere to the methodology suggested by the Joanna Briggs Institute.³⁰ Reporting will be carried out in accordance with the PRISMA-ScR guidelines.³¹ The objective of this scoping review is to identify the barriers and facilitators experienced by dental practitioners that influence their willingness and intention to provide dental services to people with disability.

REVIEW QUESTION

What are the barriers and facilitators that influence dental practitioners' intention to provide dental treatment to people with disability?

KEYWORDS

Challenges; dental practitioners; enablers; perceptions; special needs dentistry.

ELIGIBILITY CRITERIA

Participants: Dental practitioners, including dental specialists, dentists, oral health therapists, dental hygienists, dental therapists, dental nurses, dental prosthetists, dental technicians, dental students, and oral health therapy students who provide or consider providing dental services to people with disability will be eligible for inclusion in this review. No limitations applied. Authors will be contacted for confirmation if it is unclear whether participants meet the eligibility criteria.

Concept: In this review, a 'barrier' refers to anything that obstructs or reduces the willingness or the intention of a dental practitioner to treat people with disability. 'Facilitator' is defined as factors that promote or enhance the experience of treating this patient cohort. All research instruments that aim to identify barriers and facilitators experienced by dental practitioners will be considered in this review.

Data to be extracted:

1. Barriers and facilitators relating to dental practitioners' ability when providing dental treatment to people with disability.
2. Barriers and facilitators relating to the patient's ability to have dental treatment.
3. Barriers and facilitators relating to the external environment when providing treatment to people with disability.

Context: Literature that is inclusive of a range of special needs conditions will be accepted. People with disability are defined as individuals who require specialised or additional accommodations to treat or prevent dental diseases. This includes physical disabilities, mental impairment, intellectual and cognitive disorders, developmental disability, sensory and behavioural, geriatric, the underserved or a combination.¹ Literature that focuses on managing a specific disability is out of the scope of this review and will not be included. No age limit is applied to people with disability, the type of impairment or the type of dental facility involved.

Types of sources

This scoping review will consider all published, unpublished and forthcoming studies that meet the inclusion criteria.

METHODS

The scoping review will be conducted in accordance with the Joanna Briggs Institute methodology for scoping reviews.³⁰

Search strategy

This scoping review will utilise the three-step search strategy recommended by the Joanna Briggs Institute.³⁰ The search terms that will be included are: 'dental practitioner', 'oral health practitioner', 'dental specialist', dentist, 'oral health therapist', 'dental therapist', 'dental hygienist', 'dental prosthetist', 'dental technician', 'dental student', 'oral health therapy student', 'special care dentistry', 'special needs dentistry', 'special needs population', disability, children, adolescent, adult, attitude, perception, knowledge, 'clinical competence', confidence.

The search will be conducted in the following electronic databases:

1. Cochrane Database of Systematic Reviews via Ovid
2. Cinahl Complete
3. Embase via OvidSP (1947 - present)
4. Medline via Ovid (1946 - present)
5. Scopus

The search strategy for Medline via Ovid is in *Appendix I*. The same strategy will be applied to other databases. Their combinations will be used with Boolean operators to improve search parameters. A grey literature search will be performed using the Google search engine in addition to handsearching from reference lists for additional studies. The first authors of the included studies will be contacted via email to ask if they are aware of any published or unpublished studies in this field. There will be no language or publication restrictions.

Study/Source of Evidence Selection

Following the search, all identified citations will be collated and uploaded into Zotero v6.0.10 and duplicates will be removed. One author (DK) will independently screen the titles and abstracts for assessment against the inclusion criteria. The full text of selected citations will be obtained and reviewed carefully according to the inclusion criteria. If required, authors of potentially relevant papers will be contacted for additional information prior to the paper being excluded. Full texts that are not accepted in this review will be recorded and the reason for exclusion will be reported. Should any uncertainty arise during the selection process, DK will consult with the other authors. The results of the search will be reported in full and presented in a Preferred Reporting Items for Systematic Reviews and Meta-analyses extension for scoping review (PRISMA-ScR) flow diagram.³¹

Data extraction

Data will be extracted from papers included in the scoping review using a data extraction tool form recommended by the Joanna Briggs Institute.³⁰ Details about

participants, concept and context (PCC), and the key findings relevant to the review questions will be recorded. A draft extraction form can be found in *Appendix II* and any modifications made will be documented in the scoping review.

Data analysis and presentation

Data will be presented in tabular form and analysed in different subthemes. Depending on the availability of data, further subgroup analysis may be performed to identify if there are barriers and/or facilitators specific to different types of dental practitioners.

ACKNOWLEDGMENT

We would like to thank Dr Leanne Smith, University of Sydney, for her kind guidance and suggestions during the process. The views expressed are those of the Authors. The Authors declare that there is no conflict of interest. This research has received no external fundings.

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APPENDIX I

- 1 oral health practitioner*.mp.
- 2 dental practitioner*.mp.
- 3 dental students.mp.
- 4 dental specialist*.mp.
- 5 dentists.mp.
- 6 oral health therapist*.mp.
- 7 Dental Auxiliaries/ or Dental Hygienists/ or dental therapist*.mp.
- 8 dental hygienist*.mp.
- 9 dental prosthetist*.mp. or Dental Technicians/
- 10 Dental Hygienists/ or Students, Dental/ or Dental Auxiliaries/ or oral health therapy student*.mp. or Students/
- 11 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10
- 12 Dental Care/ or Dental Care for Disabled/ or Geriatric Dentistry/ or special needs dentistry.mp. or Dental Care for Aged/ or Education, Dental/
- 13 Education, Dental/ or Adult/ or special care dentistry.mp. or Disabled Persons/
- 14 Child/ or special needs patient*.mp. or Adolescent/ or Adult/
- 15 Disabled Children/ or Child, Preschool/ or Child/ or Adult/ or special needs.mp. or Adolescent/
- 16 12 or 13 or 14 or 15
- 17 "Attitude of Health Personnel"/ or attitude.mp.
- 18 Education, Dental/ or education.mp. or Education, Graduate/ or Health Education, Dental/ or Education, Dental, Continuing/

- 19 perception*.mp.
- 20 Curriculum/ or Schools, Dental/ or Education, Dental/ or Students, Dental/ or "Attitude of Health Personnel"/ or dental curriculum.mp. or Clinical Competence/
- 21 Health Education, Dental/ or dental knowledge.mp. or Health Knowledge, Attitudes, Practice/
- 22 confidence.mp.
- 23 training.mp.
- 24 17 or 19 or 21 or 22
- 25 18 or 20 or 21 or 23
- 26 11 and 16 and 24 and 25
- 27 Dentistry.mp.
- 28 dental.mp.
- 29 27 or 28
- 30 26 and 29

APPENDIX II

Scoping Review Details	
Scoping review title	
Review Objectives	
Review Question	
Inclusion / Exclusion Criteria	
Population – dental practitioners (Y/N)	
Concept – barriers and facilitators identified (Y/N)	
Context – providing dental services for people with disability (Y/N)	
Evidence Source details and characteristics	
Citation Details (Author/s, date, title, journal, volume, issue, pages)	
Country of origin	
Context	
Participants – which dental practitioners?	
Details / Results extracted from the source of evidence	
Barriers	
Facilitators	

Appendix B: Supplementary material for Chapter 4

- Human Research Ethics Committee approval letters
- Participant consent form
- Participant information statement
- Survey Instrument

Research Integrity & Ethics Administration
Human Research Ethics Committee

Friday, 7 July 2023

Prof Woosung Sohn
Sydney Dental School; Faculty of Medicine and Health
Email: woosung.sohn@sydney.edu.au

Dear Woosung,

The University of Sydney Human Research Ethics Committee (HREC) has considered your application.

After consideration of your response to the comments raised your project has been approved.

Approval is granted for a period of four years from **7/72023** to **7/72027**

Project No.: 2023/315

Project Title: **Enhancing Oral Health Care for Patients with Special Needs: A Survey of Curricula in Australian and New Zealand Oral Health Institutions**

Authorised Personnel: Sohn Woosung; Koh Dorothy; Leadbeatter Delyse;

First Annual Report due: 7/72024

Documents Approved:

Date Uploaded	Version number	Document Name
10/04/2023	Version 1	Participant consent form
10/04/2023	Version 1	Email to institution's Dean
12/06/2023	Version 2	Participant info statement (clean copy)
12/06/2023	Version 2	Survey (clean copy)

Condition/s of Approval

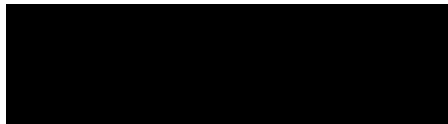
- Research must be conducted according to the approved proposal.
- An annual progress report must be submitted to the Ethics Office on or before the anniversary of approval and on completion of the project.
- You must report as soon as practicable anything that might warrant review of ethical approval of the project including:
 - Serious or unexpected adverse events (which should be reported within 72 hours).
 - Unforeseen events that might affect continued ethical acceptability of the project.
- Any changes to the proposal must be approved prior to their implementation (except where an amendment is undertaken to eliminate *immediate* risk to participants).

- Personnel working on this project must be sufficiently qualified by education, training and experience for their role, or adequately supervised. Changes to personnel must be reported and approved.
- Personnel must disclose any actual or potential conflicts of interest, including any financial or other interest or affiliation, as relevant to this project.
- Data and primary materials must be retained and stored in accordance with the relevant legislation and University guidelines.
- Ethics approval is dependent upon ongoing compliance of the research with the *National Statement on Ethical Conduct in Human Research*, the *Australian Code for the Responsible Conduct of Research*, applicable legal requirements, and with University policies, procedures and governance requirements.
- The Ethics Office may conduct audits on approved projects.
- The Chief Investigator has ultimate responsibility for the conduct of the research and is responsible for ensuring all others involved will conduct the research in accordance with the above.
- The Clinical Trials Support Office has been notified as outlined in the University's Clinical Trials Policy where a clinical trial is being undertaken.

This letter constitutes ethical approval only.

Please contact the Ethics Office should you require further information or clarification.

Sincerely,



Associate Professor Stephen Fuller
Chair
Human Research Ethics Committee (HREC 2)

The University of Sydney HRECs are constituted and operate in accordance with the National Health and Medical Research Council's (NHMRC) current National Statement on Ethical Conduct in Human Research (2018) and the NHMRC's current Australian Code for the Responsible Conduct of Research (2018).

Prof Woosung Sohn
Sydney Dental School; Faculty of Medicine and Health
Email: woosung.sohn@sydney.edu.au

Dear Woosung,

Your request to modify this project, which was submitted on 23/11/2023 has been considered.

Protocol Number: 2023/315

Protocol Title: Enhancing Oral Health Care for Patients with Special Needs: A Survey of Curricula in Oral Health Institutions

**Addition of Authorised Persons: A/Professor Archana Pradhan
A/Professor Melanie Aley**

Documents Approved:

Date Uploaded	Version Number	Document Name
23/11/2023	Recruitment Letter/Email	email/letter of introduction
23/11/2023	Participant Consent Form	Participant consent form
23/11/2023	Participant Info Statement	Participant info statement
23/11/2023	Questionnaires/Surveys	Questionnaire

Special Condition/s of Approval

The Committee approved this modification in the absence of ethical objections and on the basis of satisfactory scientific merit. The special conditions of approval are as follows:

1. Currently the approved recruitment process involves identifying oral health institutions via AHPRA and distributing the survey to the Dean of each institution. Please confirm if the recruitment strategies will remain the same for the other overseas countries. If not, please elaborate via a Special Conditions of approval form in IRMA.

Please contact the ethics office should you require further information.

Sincerely,



Dr Marinda Taha
Chair
Modification Review Committee Chair (MRC 1)

The University of Sydney of Sydney HRECs are constituted and operate in accordance with the National Health and Medical Research Council's (NHMRC) [National Statement on Ethical Conduct in Human Research \(2018\)](#) and the NHMRC's [Australian Code for the Responsible Conduct of Research \(2018\)](#)

From: [Sarah Ambrose](#) on behalf of [Human Ethics](#)
To: [Woosung Sohn](#); [Melanie Aley](#); "dkoh7353@uni.sydney.edu.au"; [Delyse Leadbeatter](#); [Archana Pradhan](#)
Subject: [2023/315] Human Ethics: Compliance with special conditions outcome
Date: Thursday, 22 February 2024 5:11:00 PM

Dear Prof Sohn

Project Title: Enhancing Oral Health Care for Patients with Special Needs: A Survey of Curricula in Oral Health Institutions
Project number: 2023/315

Compliance with Special Conditions Outcome

Thank you for providing documentation addressing the following special condition(s) of approval:

We are pleased to advise that the above condition(s) have now been met.

1. Currently the approved recruitment process involves identifying oral health institutions via AHPRA and distributing the survey to the Dean of each institution. Please confirm if the recruitment strategies will remain the same for the other overseas countries. If not, please elaborate via a Special Conditions of approval form in IRMA.

You should retain a copy of this email with your study records.

Please contact us if you have any queries.

Regards,
The Ethics Office

Research Integrity and Ethics Administration | Research Portfolio
THE UNIVERSITY OF SYDNEY
Level 3, Administration Building (F23) | The University of Sydney | NSW | 2006
T +61 2 9036 9161 | E human.ethics@sydney.edu.au | W <http://sydney.edu.au/ethics>

Participant Consent Form



Research Study: Enhancing Oral Health Care for Patients with Special Needs: A Survey of Curricula in Oral Health Institutions

Professor Woosung Sohn (Responsible Researcher)

Chair of Population Oral Health

Phone: +61 439 063 770 | Email: woosung.sohn@sydney.edu.au

Dorothy Koh (PhD student) | Email: dorothy.koh@sydney.edu.au

Participant Name

I agree to take part in this research study. In giving my consent, I confirm that:

- The details of my involvement have been explained to me, and I have been provided with a written Participant Information Statement to keep.
- I understand the purpose of the study is to understand the special needs dentistry content within the oral health curriculum of the institution I am representing.
- I acknowledge that the risks and benefits of participating in this study have been explained to me to my satisfaction.
- I understand that in this study I will be required to complete a 27-items questionnaire.
- I understand that being in this study is completely voluntary.
- I am assured that my decision to participate will not have any impact on my relationship with the research team or the University of Sydney.
- I understand that I am free to withdraw from this study at any time and that I can choose to withdraw any information I have already provided (unless the data has already been published).
- I have been informed that the confidentiality of the information I provide will be protected and will only be used for purposes that I have agreed to. I understand that information identifying me will only be told to others with my permission, except as required by law.
- I understand that the results of this study may be published, and that publications will not contain my name or any identifiable information about me or the institutions I am representing.
- I confirm the following:

I would like feedback on the overall results of this study Yes No

If you answered **yes**, please provide your preferred contact details (email/telephone/postal address):

- I understand that after I sign and return this consent form it will be retained by the researcher, and that I may request a copy at any time.

Participant Name

Signature

Date

Participant Information Statement



Enhancing Oral Health Care for Patients with Special Needs: A Survey of Curricula in Oral Health Institutions

Professor Woosung Sohn (Responsible Researcher)

Chair of Population Oral Health

Phone: +61 439 063 770 | Email: woosung.sohn@sydney.edu.au

Dorothy Koh (PhD student) | Email: dorothy.koh@sydney.edu.au

1. What is this study about?

We are conducting a research study to allow better understanding of the special needs dentistry content within the oral health curriculum. The oral health workforce comprises of the oral health therapists, dental therapists and dental hygienists. They play a pivotal role in preventive dentistry and thus could be utilized to their full potential to contribute to the special needs department, by managing the increasing unmet dental demands of this patient population. This research will contribute to the necessity for special needs dentistry to be further explored on an international level, understanding the preparation process of the oral health graduates.

Your completion of this questionnaire plays a crucial role in facilitating a pathway for future research which will be beneficial in closing the gap of oral health disparity between special needs and the general population. Although participation is encouraged and valued, participation in this study is completely voluntary.

Please read this sheet carefully and ask questions about anything that you don't understand or want to know more about.

2. Who is running the study?

The study is being carried out by the following researchers:

- Professor Woosung Sohn, Chair of Population Oral Health, School of Dentistry, University of Sydney
- A/Professor Delyse Leadbeatter, Director of Academic Education, Sydney Dental School Dentistry Administration, Faculty of Medicine and Health, University of Sydney
- A/Professor Archana Pradhan, Stream Leader of Special Needs Dentistry, Sydney Dental school, Faculty of Medicine and Health, University of Sydney
- A/Professor Melanie Aley, Bachelor of Oral Health Program Director, Sydney Dental School, Faculty of Medicine and Health, University of Sydney

- Dorothy Koh, Student of Doctor of Philosophy, Faculty of Medicine and Health, University of Sydney

Dorothy Koh is conducting this study as the basis for the Doctor of Philosophy at The University of Sydney.

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

All authors declare that they have no conflicts of interest.

3. Who can take part in the study?

We are seeking for any one representative from each institution to complete this survey. The best suited person to complete this questionnaire could be an educator who deliver special needs dentistry education, a course coordinator, or anyone familiar with the special needs subject in the oral health program.

4. What will the study involve for me?

If you decide to take part in this study, you will be asked to complete the consent form, followed by a short questionnaire.

The questionnaire consists of 7 parts. There will be 27 short questions in total. The types of questions are mainly multiple-choice, matrix table, and open-ended questions. The participation is estimated to take around 25 to 35 minutes to complete. To view the questionnaire, you will be given a REDCap link which you can access anywhere with a device connected to the internet, at your convenience. REDCap is a secure web-based application, where your responses are designed to be kept confidential. No individual participant will be identified in the reporting. You may save your answers at any part of the survey and continue later.

5. Can I withdraw once I've started?

Being in this study is completely voluntary and you do not have to take part.

We do not anticipate your decision will affect your current or future relationship with the researchers or anyone else at The University of Sydney. There will be no consequence of withdrawal from this research.

If you decide to take part in the study and then change your mind you can withdraw by just terminating the questionnaire. By submitting your survey, you consent to take part in the study.

6. Are there any risks or costs?

Aside from giving up your time, we do not expect that there will be any risks or costs associated with taking part in this study.

7. Are there any benefits?

You will not receive any direct benefits from being in the study.

8. What will happen to information that is collected?

This survey is anonymous. You and the institution you represent will not be individually identifiable. By providing your consent, you are agreeing to us collecting information about the institution you represented for the purposes of this study. Any information you provide us will be stored securely.

The type of information collected includes general information about the institution's oral health program, special needs dentistry content, teaching methods and resources used, assessment of the educational outcomes, content evaluation and the anticipated future improvement for the program. The results will be used for analysis purposes and also in publication and presentations. All these electronic data information will be stored in University-licensed REDCap and eNotebook platform during and after the project. The secured information will only be accessible by the researchers of this project.

After the retention period of 5 years, all information collected from the questionnaire will be destroyed permanently.

9. Will I be told the results of the study?

You have a right to receive feedback about the overall results of this study. This feedback will be in the form of a brief lay summary and send to the contact you provided in the consent section of the online questionnaire, should you wish to receive the feedback.

10. What if I would like further information?

When you have read this information, the following researcher/s will be available to discuss it with you further and answer any questions you may have:

- Prof Woosung Sohn
Chair of Population Oral Health
School of Dentistry, University of Sydney
+61 439 063 770
woosung.sohn@sydney.edu.au

- Miss Dorothy Koh
Student of Doctor of Philosophy
Faculty of Medicine and Health, University of Sydney
Dorothy.koh@sydney.edu.au

11. What if I have a complaint or any concerns?

The ethical aspects of this study have been approved by the Human Research Ethics Committee (HREC) of The University of Sydney 2023/315 according to the *National Statement on Ethical Conduct in Human Research (2007)*.

If you are concerned about the way this study is being conducted or you wish to make a complaint to someone independent from the study, please contact the University:

Human Ethics Manager
human.ethics@sydney.edu.au
+61 2 8627 8176

This information sheet is for you to keep

Enhancing Oral Health Care for Patients with Special Needs: A Survey of Curricula in Oral Health Institutions

Participants consent form

This study focuses on the dental hygiene, dental therapy and oral health therapy program. The main part of this study aims to allow better understanding of the special needs dentistry content within the oral health curriculum.

There are seven parts to this survey and a total of 27-items. It will take around 25-35 mins to complete. You may save your answers at any part of the survey and continue later. Your responses will be analysed for our research on the special need dentistry curriculum of oral health institutions. Your completion of this survey plays a crucial role in facilitating a pathway for future research which could be beneficial in closing the gap of oral health disparity between special needs and the general population.

We truly appreciate your response and time. For further information or feedback, please contact Miss Dorothy Koh at Dorothy.koh@sydney.edu.au.

Participant information statement

[Attachment: "Participant Information Statement_V3.pdf"]

I agree to take part in this research study. In giving my consent, I confirm that:

- The details of my involvement have been explained to me, and I have been provided with a written Participant Information Statement to keep.
 - I understand the purpose of the study is to understand the special needs dentistry content within the oral health curriculum of the institution I am representing.
 - I acknowledge that the risks and benefits of participating in this study have been explained to me to my satisfaction.
 - I understand that in this study I will be required to complete a 27-items questionnaire.
 - I understand that being in this study is completely voluntary.
 - I am assured that my decision to participate will not have any impact on my relationship with the research team or the University of Sydney.
 - I understand that I am free to withdraw from this study at any time and that I can choose to withdraw any information I have already provided (unless the data has already been published).
 - I have been informed that the confidentiality of the information I provide will be protected and will only be used for purposes that I have agreed to. I understand that information identifying me will only be told to others with my permission, except as required by law.
 - I understand that the results of this study may be published, and that publications will not contain my name or any identifiable information about me or the institutions I am representing.
-

Which institution are you representing?
(Please note: The institution's name will NOT be identified. This question is only for tracking purposes.)

I would like feedback on the overall results of this study

- Yes
 No
-

If you answered yes, please provide your email address:

By selecting "I agree", you are consenting to proceed with this survey:

- I agree
- I do not agree

Enhancing Oral Health Care for Patients with Special Needs: A Survey of Curricula in Oral Health Institutions

General information

The term "oral health course or program" includes dental hygiene, dental therapy and oral health therapy program.

Which country is the institution based in?

- Australia
- New Zealand
- United Kingdom
- Republic of Ireland
- United States
- Other

Please specify others:

Which role best describes you?

- Consultant
- Dean
- Course director
- Lecturer
- Clinical educator
- Administrator
- Others

Please specify others:

What is the institution course?

- Bachelor of Oral Health Therapy
- Bachelor of Oral Health Science
- Bachelor of Oral Health
- Bachelor of Science
- Bachelor of Dental Hygiene
- Advanced Diploma of Oral Health (Dental Hygiene)
- Diploma in Dental Hygiene and Therapy
- Others

Please specify others:

What is the total number of years for this course?

What is the average number of graduates per year?

What is the career pathway for the students upon graduation?

- Oral health therapist with adult restorative scope of practice
- Oral health therapist
- Dental therapist and dental hygienist
- Dental therapist
- Dental hygienist
- Other

Please specify other:

Enhancing Oral Health Care for Patients with Special Needs: A Survey of Curricula in Oral Health Institutions

Contents of the program

24% Progress

Which year of the course did the student receive the education on special needs? Select all that apply.

- First year
- Second year
- Third year
- Not applicable / no special needs content in our oral health course
- Others

Please specify others:

Which of the following special needs conditions does the course address? Select all that apply.

- Physical disability
- Intellectual and developmental disability
- Psychiatric conditions
- Complex medical conditions
- Aged Care
- Not applicable / no special needs content in our oral health course
- Others

Please specify others:

How is the special needs content delivered in the course? Select all that apply.

- A specific special needs module
- Special needs dentistry integrated with paediatric module
- Special needs dentistry integrated with clinical dentistry
- Special needs dentistry integrated with other department
- Not applicable / no special needs content in our oral health course
- Others

Please specify others:

Are there any modules that involve working with other disciplines in the special needs department or disability sector? Eg. Occupational therapists, speech pathologists, etc.

- Yes
- No
- Not applicable / no special needs content in our oral health course

Which specific issues were addressed in the subject about the treatment of patients with special needs? Select all that apply.

- Comprehensive understanding of special needs dentistry (eg. classification, aetiology, life span issues, oral biology, etc)
- Effective communication: Verbal and non-verbal communication associated with pain, anxiety and phobia among patients; cultural or unique background to patients, family or carers
- Non-pharmacological anxiety and behaviour support techniques
- Critical thinking and evidence-based dentistry revolving patient-centred care, clinical management and disease prevention
- Safe transfer technique
- Legal, ethical, guardianship, consent issues and social and advocacy programs
- Interprofessional care and collaborative practice
- Not applicable / no special needs content in our oral health course
- Others

Please specify others:

Are there any topics you felt should be covered in the special needs content which are currently not in the curriculum? List three top priority topics.

Enhancing Oral Health Care for Patients with Special Needs: A Survey of Curricula in Oral Health Institutions

Teaching methods and resources

48% Progress

Which teaching methods were involved in the delivery of special needs dentistry content in the course? Select all that apply.

Please provide your best estimate of the number of hours spent on each settings.

- Classroom-based settings: Lectures, seminars, problem-based learning, case study presentation
- Clinical settings: Demonstration, observation
- Clinical placements: Students were in the special needs clinic providing dental treatment to patients with special needs
- Community settings: Outreach, interactions with people with special needs in a social, non-clinical environment such as special schools, homes
- Not applicable / no special needs content in our oral health course

Classroom-based settings

Clinical settings

Clinical placement

Community settings

In what settings were the students exposed to gaining clinical experiences by treating patients with special needs? Select all that apply.

- Hospital-based setting
- University/college clinic
- Community-based or external rotation eg. Nursing home, special care facilities
- Not applicable / no special needs content in our oral health course
- Others

Please specify others:

Which teaching material or resources does the educator use? Select all that apply.

- References to different organisations and practitioners of varying levels of experience and specialty training
- Specific textbooks
- DVD
- Paediatric dentistry-related curriculum material
- Online training
- Interactive session with people with special needs
- Peer-reviewed journals
- Websites and audio-visual materials
- Not applicable / no special needs content in our oral health course
- Others

Please specify others:

Who instructs and teaches the students on the topic of special needs in the course (what are their professional level)? Select all that apply.

- Qualified dental hygienist, dental therapist or oral health therapist with training and experience in special needs dentistry
- General dental hygienist, dental therapist or oral health therapist
- Dentist with training in the treatment of patients with special needs
- General dentist
- Pediatric dentist
- Nurse
- Teacher
- Oral and maxillofacial surgeon
- Physician
- Not applicable / no special needs content in our oral health course
- Other qualifications

Please specify others:

Enhancing Oral Health Care for Patients with Special Needs: A Survey of Curricula in Oral Health Institutions

Students' level of competency

63% Progress

How are the students' educational outcomes and competencies assessed? Select all that apply.

- Written exam
- Report
- Essay
- Oral presentation
- Clinical assessment
- Simulation
- OSCE
- Oral examination
- Standardised patient scenarios
- Problem based learning performance
- Evaluation of the students' management of patients
- Portfolio
- Not applicable / no special needs content in our oral health course
- Others

Please specify others:

Enhancing Oral Health Care for Patients with Special Needs: A Survey of Curricula in Oral Health Institutions

Evaluation of the program

67% Progress						
	Very insufficient	Insufficient	Neither sufficient or insufficient	Sufficient	Very sufficient	Not applicable / no special needs content in our oral health course
How sufficient do you feel that the curriculum has prepared the students in providing dental services competently and confidently to patients with special needs in their future practice?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Under the context of special needs dentistry education, do you agree or disagree with the following statements:						
	Strongly disagree	Disagree	Neither disagree or agree	Agree	Strongly agree	Not applicable / no special needs content in our oral health course
The faculty/school has sufficient staff expertise to deliver education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The faculty/school has adequate financial resources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The program has allocated adequate clinical sites or special needs-friendly facilities for training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The clinic has enough patients with special needs for students' clinical placement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The program has ample educational resources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The program has structured learning objectives or coherent guidelines to adhere to when teaching special needs dentistry

The oral health program has an overly crowded curriculum

Enhancing Oral Health Care for Patients with Special Needs: A Survey of Curricula in Oral Health Institutions

Anticipating future improvement

93% Progress

Does the oral health course have future plans to reform the structure of special needs content? If you anticipated changes in the near future, briefly describe or summarise the potential changes:

Enhancing Oral Health Care for Patients with Special Needs: A Survey of Curricula in Oral Health Institutions

Conclusion

97% Progress

Are there any other comments you would like to include?

Appendix C: Supplementary material for Chapter 5

- Human Research Ethics Committee approval letters
- Participant consent form (Student/Workforce)
- Participant information statement (Student/Workforce)
- Survey Instruments (Student/Workforce)

HUMAN RESEARCH ETHICS APPROVAL

The University of Sydney confirms that this project meets the requirements of the National Statement on Ethical Conduct in Human Research.

Project identifier:	2024/HE000231
Project title:	Perception of special needs dentistry among final year oral health students and graduates: An online survey
Version:	0.01
Chief Investigator:	Woosung Sohn
Authorised project team:	Archana Pradhan Delyse Leadbeatter Dorothy Koh Melanie Aley
Date of approval:	Monday, 3 June, 2024
Project end date:	02 Jun 2028

Project summary

Previous research documented that one of the main reasons behind dental practitioners reluctance to provide dental treatment to patients with special needs is the lack of dental knowledge and clinical experiences in this population. This has unfortunately resulted in an upsurge of unmet dental treatment needs. Working closely with the dentists, the oral health workforce serves a crucial role in the multidisciplinary care of individuals with special needs where they assume a supportive role in the maintenance of oral health care within their scope of practice, to overcome the dental disease burden in patients with special needs. This project aims to understand the professional practices, educational experiences, perception of future training of special needs dentistry among Australia's final year oral health students and the oral health workforce.

Documents approved

Document type	File name	Document version	Application version
Application Clarification	2024HE000231 Ethics modification_200424 DK (Links to PCF, PIS, Recruitment material in this document)		
Other	20240204_Email script to program director of A		
Other	20240306_ADOHTA DHAA research assistanc		

Conditions of Approval

- Research must be conducted according to the approved proposal.
- An annual progress report must be submitted on or before the anniversary of approval and a final report on completion of the project.



- You must report as soon as practicable anything that might warrant review of ethical approval of the project including:
 - Serious or unexpected adverse events (which should be reported within 72 hours).
 - Unforeseen events that might affect continued ethical acceptability of the project.
- Any changes to the proposal must be approved prior to their implementation (except where an amendment is undertaken to eliminate *immediate* risk to participants).
- Researchers working on this project must be sufficiently qualified by education, training, and experience for their role, or adequately supervised. Changes to the project team must be reported and approved.
- Researchers must disclose any actual, potential or perceived conflicts of interest, including any financial or other interest or affiliation, as relevant to this project.
- Research data and primary materials must be retained and stored in accordance with relevant legislation and University guidelines.
- Ethics approval is dependent upon ongoing compliance of the research with the *National Statement on Ethical Conduct in Human Research*, the *Australian Code for the Responsible Conduct of Research*, applicable legal requirements, and with University policies, procedures, and governance requirements.
- If your research project is a clinical trial and is being sponsored by the University or is to be conducted on a University of Sydney site, you must comply with additional University governance requirements prior to commencing your Clinical Trial.
- The University may conduct audits on approved projects.
- The Chief Investigator has ultimate responsibility for the conduct of the research and is responsible for ensuring all others involved will conduct the research in accordance with the above.

Ethics Committee Representative

On behalf of the University of Sydney

The University of Sydney HRECs are constituted and operate in accordance with the National Statement on Ethical Conduct in Human Research and the Australian Code for the Responsible Conduct of Research (NHMRC). All personnel named on the project should be acquainted with these documents.

Research Integrity & Ethics Administration
Research Portfolio
Level 3, Michael Spence Building (F23)
The University of Sydney
NSW 2006 Australia

T +61 2 9036 9161
E human.ethics@sydney.edu.au
W intranet.sydney.edu.au/ethics

ABN 15 211 513 464
CRICOS 00026A

HUMAN RESEARCH ETHICS APPROVAL

The University of Sydney confirms that this project meets the requirements of the National Statement on Ethical Conduct in Human Research.

Project identifier:	2024/HE000231
Project title:	Perception of special needs dentistry among final year oral health students and graduates: An online survey
Application version:	1.02
Chief Investigator:	Professor Woosung Sohn
Project team:	Dr Archana Pradhan Associate Professor Delyse Leadbeatter Miss Dorothy Koh Associate Professor Melanie Aley
Project start date:	18 Mar 2024
Project end date:	18 Mar 2028
Date of issue:	Thursday, 19 December, 2024

Project summary

Previous research documented that one of the main reasons behind dental practitioners reluctance to provide dental treatment to patients with special needs is the lack of dental knowledge and clinical experiences in this population. This has unfortunately resulted in an upsurge of unmet dental treatment needs. Working closely with the dentists, the oral health workforce serves a crucial role in the multidisciplinary care of individuals with special needs where they assume a supportive role in the maintenance of oral health care within their scope of practice, to overcome the dental disease burden in patients with special needs. This project aims to understand the professional practices, educational experiences, perception of future training of special needs dentistry among Australias final year oral health students and the oral health workforce.

Summary of amendments

Due to the very low survey response rate, we would like to explore alternative recruitment methods to enhance participation. Specifically, we propose advertising the survey on social media platforms such as Facebook, LinkedIn, and Instagram. This approach will help us reach a broader audience, allowing us to capture a more diverse range of perspectives and insights.

Documents approved

Document type	File name	Document version	Application version
Application	Application Form.docx	2	1.02
Recruitment or advertising material	v2 Recruitment template_student & workforce_221124 DK .docx	2	1.02

Conditions of Approval

- Research must be conducted according to the approved proposal.
- An annual progress report must be submitted on or before the anniversary of approval and a final report on completion of the project.
- You must report as soon as practicable anything that might warrant review of ethical approval of the project including:
 - Serious or unexpected adverse events (which should be reported within 72 hours).
 - Unforeseen events that might affect continued ethical acceptability of the project.
- Any changes to the proposal must be approved prior to their implementation (except where an amendment is undertaken to eliminate *immediate* risk to participants).
- Researchers working on this project must be sufficiently qualified by education, training, and experience for their role, or adequately supervised. Changes to the project team must be reported and approved.
- Researchers must disclose any actual, potential or perceived conflicts of interest, including any financial or other interest or affiliation, as relevant to this project.
- Research data and primary materials must be retained and stored in accordance with relevant legislation and University guidelines.
- Ethics approval is dependent upon ongoing compliance of the research with the *National Statement on Ethical Conduct in Human Research*, the *Australian Code for the Responsible Conduct of Research*, applicable legal requirements, and with University policies, procedures, and governance requirements.
- If your research project is a clinical trial and is being sponsored by the University or is to be conducted on a University of Sydney site, you must comply with additional University governance requirements prior to commencing your Clinical Trial.
- The University may conduct audits on approved projects.
- The Chief Investigator has ultimate responsibility for the conduct of the research and is responsible for ensuring all others involved will conduct the research in accordance with the above.

Ethics Committee Representative

Chair

On behalf of the University of Sydney

The University of Sydney HRECs are constituted and operate in accordance with the National Statement on Ethical Conduct in Human Research and the Australian Code for the Responsible Conduct of Research (NHMRC). All personnel named on the project should be acquainted with these documents.

Research Integrity & Ethics Administration
Research Portfolio
Level 3, Michael Spence Building (F23)
The University of Sydney
NSW 2006 Australia

T +61 2 9036 9161
E human.ethics@sydney.edu.au
W intranet.sydney.edu.au/ethics

ABN 15 211 513 464
CRICOS 00026A

Participant Consent Form



Participant group –

Final Year Oral Health Therapy, Dental Therapy and Dental Hygiene students

Research Study: Perception of special needs dentistry among final year oral health students and graduates: An online survey

Professor Woosung Sohn (Responsible Researcher)

Chair of Population Oral Health

Phone: +61 439 063 770 | Email: woosung.sohn@sydney.edu.au

Dorothy Koh (PhD student) | Email: dorothy.koh@sydney.edu.au

I agree to take part in this research study. In giving my consent, I confirm that:

- The details of my involvement have been explained to me, and I have been provided with a written Participant Information Statement to keep.
- I understand the purpose of the study is to investigate the perception of special needs dentistry among the final year oral health students (oral health therapy, dental therapy, and dental hygiene) and the oral health therapy workforce (oral health therapists, dental therapists, dental hygienists) in Australia.
- The survey will include questions on the perceptions, educational experiences, professional practices on managing the dental needs of individuals with special needs, as well as understanding the acceptance of future training opportunity in special needs dentistry.
- I acknowledge that the risks and benefits of participating in this study have been explained to me to my satisfaction.
- I understand that in this study I will be required to complete an online survey (total of 17 questions).
- I understand that being in this study is completely voluntary.
- I am assured that my decision to participate will not have any impact on my relationship with the research team or the University of Sydney.
- I understand that I am free to withdraw from this study at any time and that I can choose to withdraw any information I have already provided (unless the data has already been de-identified or published).

- I have been informed that the confidentiality of the information I provide will be protected and will only be used for purposes that I have agreed to. I understand that information identifying me will only be told to others with my permission, except as required by law.
- I understand that the results of this study may be published, and that publications will not contain my name or any identifiable information about me.

- I confirm the following:

I would like feedback on the overall results of this study Yes No

If you answered **yes**, please provide your preferred contact details (email/telephone/postal address):

- I understand that by selecting “I agree” at the beginning of the online survey, I consented to participate in this study. Due to the nature of the study, any information collected is non-identifiable and thus cannot be withdrawn after submitting my response.

Participant Consent Form



Participant group –

Oral Health Therapists, Dental Therapists and Dental Hygienists

Research Study: Perception of special needs dentistry among final year oral health students and graduates: An online survey

Professor Woosung Sohn (Responsible Researcher)

Chair of Population Oral Health

Phone: +61 439 063 770 | Email: woosung.sohn@sydney.edu.au

Dorothy Koh (PhD student) | Email: dorothy.koh@sydney.edu.au

I agree to take part in this research study. In giving my consent, I confirm that:

- The details of my involvement have been explained to me, and I have been provided with a written Participant Information Statement to keep.
- I understand the purpose of the study is to investigate the perception of special needs dentistry among the final year oral health students (oral health therapy, dental therapy, and dental hygiene) and the oral health therapy workforce (oral health therapists, dental therapists, dental hygienists) in Australia.
- The survey will include questions on the perceptions, educational experiences, professional practices on managing the dental needs of individuals with special needs, as well as understanding the acceptance of future training opportunity in special needs dentistry.
- I acknowledge that the risks and benefits of participating in this study have been explained to me to my satisfaction.
- I understand that in this study I will be required to complete an online survey (total of 23 questions).
- I understand that being in this study is completely voluntary.
- I am assured that my decision to participate will not have any impact on my relationship with the research team or the University of Sydney.
- I understand that I am free to withdraw from this study at any time and that I can choose to withdraw any information I have already provided (unless the data has already been de-identified or published).
- I have been informed that the confidentiality of the information I provide will be protected and will only be used for purposes that I have agreed to. I understand that information identifying me will only be told to others with my permission, except as required by law.

- I understand that the results of this study may be published, and that publications will not contain my name or any identifiable information about me.

- I confirm the following:

I would like feedback on the overall results of this study Yes No

If you answered **yes**, please provide your preferred contact details (email/telephone/postal address):

- I understand that by selecting “I agree” at the beginning of the online survey, I consented to participate in this study. Due to the nature of the study, any information collected is non-identifiable and thus cannot be withdrawn after submitting my response.

Participant Information Statement



Participant group –

Final Year Oral Health Therapy, Dental Therapy and Dental Hygiene students

Perception of special needs dentistry among final year oral health students and graduates: An online survey

Professor Woosung Sohn (Responsible Researcher)

Chair of Population Oral Health

Phone: +61 439 063 770 | Email: woosung.sohn@sydney.edu.au

Dorothy Koh (PhD student) | Email: dorothy.koh@sydney.edu.au

1. What is this study about?

My name is Dorothy Koh and I am completing a Doctor of Philosophy (Medicine and Health) at The University of Sydney under the supervision of Prof Woosung Sohn, A/Prof Delyse Leadbeatter, A/Prof Archana Pradhan and A/Prof Melanie Aley. We are conducting a research study to allow better understanding on the perception of special needs dentistry among final year students (oral health therapy, dental therapy and dental hygiene) and oral health therapy workforce in Australia. The oral health therapy workforce comprises of the oral health therapists, dental therapists and dental hygienists. This workforce plays a pivotal role in preventive dentistry, as well as a supportive role to the dentists and specialists. They could be utilized to their full potential to contribute to the special needs department, by managing the increasing unmet dental demands of this patient population, within their scope of practice.

The survey will include questions on the perceptions, educational experiences, professional practices on managing the dental needs of individuals with special needs, as well as understanding the acceptance of future training opportunity in special needs dentistry. The feedback received from this study will help to identify any opportunities to develop new curriculum or training programs which can impact positively to the curriculum development in this department of dentistry.

Your completion of this questionnaire plays a crucial role in facilitating a pathway for future research. This will be beneficial in improving the quality of dental services provided to patients with special needs, thus closing the gap of oral health disparity between special needs and the general population. Although participation is encouraged and valued due to the limited number of oral health practitioners in Australia, participation in this study is completely voluntary.

Please read this sheet carefully and ask questions about anything that you don't understand or want to know more about.

2. Who is running the study?

The study is being carried out by the following researchers:

- Professor Woosung Sohn, Chair of Population Oral Health, School of Dentistry, University of Sydney
- A/Professor Delyse Leadbeatter, Director of Academic Education, Sydney Dental School Dentistry Administration, Faculty of Medicine and Health, University of Sydney
- A/Prof Archana Pradhan, Stream Coordinator of Special Needs Dentistry, Sydney Dental School, Faculty of Medicine and Health
- A/Prof Melanie Aley, Director of Oral Health, Sydney Dental School, Faculty of Medicine and Health
- Dorothy Koh, Student of Doctor of Philosophy, Faculty of Medicine and Health, University of Sydney

Dorothy Koh is conducting this study as the basis for the Doctor of Philosophy at The University of Sydney.

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

All authors declare that they have no conflicts of interest.

3. Who can take part in the study?

We are seeking final year oral health students from Australian institutions including oral health therapy, dental therapy and dental hygiene students to participate in this online survey.

4. What will the study involve for me?

If you decide to take part in this study, you will be asked to read the participant information statement, complete the consent, followed by a short questionnaire. The questionnaire consists of five parts. There will be 17 questions in total. There will be questions about your demographic details, educational experiences, perceptions on dental management and future training opportunities in special needs dentistry.

The participation is estimated to take around 10-15 minutes to complete. To view the questionnaire, you will be given a REDCap link which you can access anywhere with a device connected to the internet, at your convenience. REDCap is a secure web-based application, where your responses are designed to be kept confidential. No individual participant will be identified in the reporting. You may save your answers at any part of the survey and continue later.

5. Can I withdraw once I've started?

Being in this study is completely voluntary and you do not have to take part. We do not anticipate your decision will affect your current or future relationship with the researchers or anyone else at The University of Sydney. There will be no consequence of withdrawal from this research.

If you decide to take part in the study and then change your mind you can withdraw by just terminating the questionnaire. By submitting your survey, you consent to take part in the study. You can withdraw any time before you submit however once your responses are submitted, they cannot be withdrawn. This is because they are anonymous, and we will not be able to tell which one is yours.

6. Are there any risks or costs?

Aside from giving up your time, we do not expect that there will be any risks or costs associated with taking part in this study.

7. Are there any benefits?

You will not receive any direct benefits from being in the study.

8. What will happen to information that is collected?

This survey is anonymous. You will not be individually identifiable. By providing your consent, you are agreeing to us collecting information about you for the purposes of this study. Any information you provide us will be stored securely. The results will be used for analysis purposes and also in publication and presentations. All these electronic data information will be stored in University-licensed REDCap and OneDrive platform during and after the project. The secured information will only be accessible by the researchers of this project. After the retention period of five years, all information collected from the questionnaire will be destroyed permanently.

9. Will I be told the results of the study?

You have the right to receive feedback on the overall results of this study. If you are interested, you can provide your email address through a second REDCap link included in the invitation email. The feedback will be provided as a brief lay summary.

10. What if I would like further information?

When you have read this information, the following researcher/s will be available to discuss it with you further and answer any questions you may have:

- Prof Woosung Sohn
Chair of Population Oral Health
School of Dentistry, University of Sydney
+61 439 063 770
woosung.sohn@sydney.edu.au
- Miss Dorothy Koh
Student of Doctor of Philosophy
Faculty of Medicine and Health, University of Sydney
Dorothy.koh@sydney.edu.au

11. What if I have a complaint or any concerns?

The ethical aspects of this study have been approved by the Human Research Ethics Committee (HREC) of The University of Sydney [2024/HE000231] according to the *National Statement on Ethical Conduct in Human Research (2007)*.

If you are concerned about the way this study is being conducted or you wish to make a complaint to someone independent from the study, please contact the University:

Human Ethics Manager
human.ethics@sydney.edu.au
+61 2 8627 8176

This information sheet is for you to keep

Participant Information Statement



Participant group –
Oral Health Therapists, Dental Therapists and Dental Hygienists

Perception of special needs dentistry among final year oral health students and graduates: An online survey

Professor Woosung Sohn (Responsible Researcher)
Chair of Population Oral Health
Phone: +61 439 063 770 | Email: woosung.sohn@sydney.edu.au
Dorothy Koh (PhD student) | Email: dorothy.koh@sydney.edu.au

1. What is this study about?

My name is Dorothy Koh and I am completing a Doctor of Philosophy (Medicine and Health) at The University of Sydney under the supervision of Prof Woosung Sohn, A/Prof Delyse Leadbeatter, A/Prof Archana Pradhan and A/Prof Melanie Aley. We are conducting a research study to allow better understanding on the perception of special needs dentistry among final year students (oral health therapy, dental therapy, and dental hygiene) and oral health therapy workforce in Australia. The oral health therapy workforce comprises of the oral health therapists, dental therapists and dental hygienists. This workforce plays a pivotal role in preventive dentistry, as well as a supportive role to the dentists and specialists. They could be utilized to their full potential to contribute to the special needs department, by managing the increasing unmet dental demands of this patient population, within their scope of practice.

The survey will include questions on the perceptions, educational experiences, professional practices on managing the dental needs of individuals with special needs, as well as understanding the acceptance of future training opportunity in special needs dentistry. The feedback received from this study will help to identify any opportunities to develop new curriculum or training programs which can impact positively to the curriculum development in this department of dentistry.

Your completion of this questionnaire plays a crucial role in facilitating a pathway for future research. This will be beneficial in improving the quality of dental services provided to patients with special needs, thus closing the gap of oral health disparity between special needs and the general population. Although participation is encouraged and valued due to the limited number of oral health practitioners in Australia, participation in this study is completely voluntary.

Please read this sheet carefully and ask questions about anything that you don't understand or want to know more about.

2. Who is running the study?

The study is being carried out by the following researchers:

- Professor Woosung Sohn, Chair of Population Oral Health, School of Dentistry, University of Sydney
- A/Professor Delyse Leadbeatter, Director of Academic Education, Sydney Dental School Dentistry Administration, Faculty of Medicine and Health, University of Sydney
- A/Prof Archana Pradhan, Stream Coordinator of Special Needs Dentistry, Sydney Dental School, Faculty of Medicine and Health
- A/Prof Melanie Aley, Director of Oral Health, Sydney Dental School, Faculty of Medicine and Health
- Dorothy Koh, Student of Doctor of Philosophy, Faculty of Medicine and Health, University of Sydney

Dorothy Koh is conducting this study as the basis for the Doctor of Philosophy at The University of Sydney.

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

All authors declare that they have no conflicts of interest.

3. Who can take part in the study?

We are seeking any dental therapists, dental hygienists and oral health therapists in Australia who are or were registered and practicing or teaching under the Australian Health Practitioner Regulation Agency (AHPRA), Dental Board of Australia to participate in this survey study. These include academics, administrative, leadership or management, not working temporarily and retired practitioners.

4. What will the study involve for me?

If you decide to take part in this study, you will be asked to read the participant information statement, complete the consent, followed by a short questionnaire. The questionnaire consists of five parts. There will be 23 questions in total. There will be questions about your demographic details, professional practices, educational experiences, perceptions on future training opportunities in special needs dentistry.

The participation is estimated to take around 10-15 minutes to complete. To view the questionnaire, you will be given a REDCap link which you can access anywhere with a device connected to the internet, at your convenience. REDCap is a secure web-based application, where your responses are designed to be kept confidential. No individual

participant will be identified in the reporting. You may save your answers at any part of the survey and continue later.

5. Can I withdraw once I've started?

Being in this study is completely voluntary and you do not have to take part. We do not anticipate your decision will affect your current or future relationship with the researchers or anyone else at The University of Sydney. There will be no consequence of withdrawal from this research.

If you decide to take part in the study and then change your mind you can withdraw by just terminating the questionnaire. By submitting your survey, you consent to take part in the study. You can withdraw any time before you submit however once your responses are submitted, they cannot be withdrawn. This is because they are anonymous, and we will not be able to tell which one is yours.

6. Are there any risks or costs?

Aside from giving up your time, we do not expect that there will be any risks or costs associated with taking part in this study.

7. Are there any benefits?

You will not receive any direct benefits from being in the study.

8. What will happen to information that is collected?

This survey is anonymous. You will not be individually identifiable. By providing your consent, you are agreeing to us collecting information about you for the purposes of this study. Any information you provide us will be stored securely. The results will be used for analysis purposes and also in publication and presentations. All these electronic data information will be stored in University-licensed REDCap and OneDrive platform during and after the project. The secured information will only be accessible by the researchers of this project. After the retention period of five years, all information collected from the questionnaire will be destroyed permanently.

9. Will I be told the results of the study?

You have the right to receive feedback on the overall results of this study. If you are interested, you can provide your email address through a second REDCap link included in the invitation email. The feedback will be provided as a brief lay summary.

10. What if I would like further information?

When you have read this information, the following researcher/s will be available to discuss it with you further and answer any questions you may have:

- Prof Woosung Sohn
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11. What if I have a complaint or any concerns?

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If you are concerned about the way this study is being conducted or you wish to make a complaint to someone independent from the study, please contact the University:

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This information sheet is for you to keep

Perception of Special Needs Dentistry among Final Year Oral Health Students and Graduates: An Online Survey (Students)

Participant consent

We are conducting this online survey study to allow better understanding on the perception of special needs dentistry among final year oral health students and oral health therapy workforce in Australia. This include oral health therapists, dental therapists, dental hygienists students and clinicians, who are or were registered, practicing or teaching, and those involve in academics, administrative, leadership or management, not working temporarily or retired practitioners.

There are five parts to this survey and a total of 17 questions. It will take around 10-15 mins to complete. You may save your answers at any part of the survey and continue later. The survey will include questions on your demographic details, perceptions, educational experiences, professional practices on managing the dental needs of individuals with special needs, as well as understanding the acceptance of future training opportunity in special needs dentistry.

Your completion of this questionnaire plays a crucial role in facilitating a pathway for future research which will be beneficial in improving the quality of dental services provided to individuals with special needs, thus closing the gap of oral health disparity between special needs and the general population.

We truly appreciate your response and time. For further information or feedback, please contact Miss Dorothy Koh at Dorothy.koh@sydney.edu.au.

Participant information statement

[Attachment: "PIS (STUDENTS)_v1.pdf"]

I agree to take part in this research study. In giving my consent, I confirm that:

- The details of my involvement have been explained to me, and I have been provided with a written Participant Information Statement to keep.
- I understand the purpose of the study is to investigate the perception of special needs dentistry among the final year oral health students (oral health therapy, dental therapy and dental hygiene) and the oral health therapy workforce (oral health therapists, dental therapists and dental hygienists) in Australia.
- The survey will include questions on the perceptions, educational experiences, professional practices on managing the dental needs of individuals with special needs, as well as understanding the acceptance of future training opportunity in special needs dentistry.
- I acknowledge that the risks and benefits of participating in this study have been explained to me to my satisfaction.
- I understand that in this study I will be required to complete an online survey (total of 17 questions).
- I understand that being in this study is completely voluntary.
- I am assured that my decision to participate will not have any impact on my relationship with the research team or the University of Sydney.
- I understand that I am free to withdraw from this study at any time and that I can choose to withdraw any information I have already provided (unless the data has already been de-identified or published).
- I have been informed that the confidentiality of the information I provide will be protected and will only be used for purposes that I have agreed to. I understand that information identifying me will only be told to others with my permission, except as required by law.
- I understand that the results of this study may be published, and that publications will not contain my name or any identifiable information about me.

I have read and understood the Participant Information Statement.

- Yes
 No

I understand that by selecting "I agree", I consented to participate in this study. Due to the nature of the study, any information collected is non-identifiable and thus cannot be withdrawn after submitting my response.

- I agree
 I do not agree

Perception of Special Needs Dentistry among Final Year Oral Health Students and Graduates: An Online Survey (Students)

General information

The term "oral health" in this survey refers to oral health therapy, dental therapy and dental hygiene.

The term "oral health practitioners" in this survey refers to oral health therapists, dental therapists and dental hygienists.

Which age group are you in?

- Age 20 to 30
- Age 31 to 40
- Age 41 to 50
- Age 51 to 60
- Age 61 and above

Which university are you from?

- Central Queensland University
- Charles Sturt University
- Curtin University
- Griffith University
- La Trobe University
- University of Adelaide
- University of Melbourne
- University of Newcastle
- University of Sydney
- Tafe SA
- Other

Please specify other:

Perception of Special Needs Dentistry among Final Year Oral Health Students and Graduates: An Online Survey (Students)

Perception of current education in special needs dentistry

6% Progress

Does your oral health program have these components on special needs dentistry? Select all that apply.

Examples of didactic teaching: An educator presenting lecture to students, classroom demonstration, workshop.

Examples of clinical learning: Students are given the opportunity to provide dental treatment to patients with special needs.

- Didactic teaching
 Clinical learning
 No, my oral health program does not have a component on special needs dentistry.

How COMFORTABLE are you to treat the following group of patients?

	Very uncomfortable	Uncomfortable	Neutral	Comfortable	Very comfortable
Physical disability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Intellectual and developmental disability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Psychiatric conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Complex medical conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aged care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How would you rate your CONFIDENCE in managing dental needs of patients with special needs?

	Not confident at all	Slightly confident	Somewhat confident	Fairly confident	Completely confident
Physical disability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Intellectual and developmental disability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Psychiatric conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Complex medical conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aged care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In your final year, on average, how many patients (with special needs) PER MONTH have you provided dental treatment to in your training clinic?

	0	1 to 5	6 to 10	11 to 15	More than 15
Physical disability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Intellectual and developmental disability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Psychiatric conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Complex medical conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aged care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Do you agree or disagree with the following statements:

	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
My classes prepared me well for managing the dental needs of patients with special needs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The curriculum should include more education on the dental problems and management of patients with special needs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe that my oral health program has an honest interest in delivering knowledge pertaining to patients with special needs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The dental education I received for managing the dental problems of patients with special needs is adequate/sufficient	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My clinical skills were adequate for me to be able to provide dental treatment to patients with special needs after graduating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Confidence

	Not at all confident	Slightly confident	Moderately confident	Very confident	Extremely confident
How confident do you feel in your overall ability to provide dental treatment to patients with special needs upon graduation?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Perception of Special Needs Dentistry among Final Year Oral Health Students and Graduates: An Online Survey (Students)

Perception of managing dental needs of patients with special needs (Professional practice)

71% Progress

Which are the perceived barriers encountered by you when providing dental care for patients with special needs? Select all that apply.

- Insufficient knowledge and experience in special needs dentistry during undergraduate training
- Inadequate trained staff in the clinic
- Physical barriers with clinic facilities
- Poor patient cooperation (behavioral issues)
- Complicated medical histories
- More time consuming
- Less financial benefits
- Other

Please specify other

What will enable you to provide dental care for patients with special needs? Select all that apply.

- Training opportunities in special needs dentistry
- Supportive work environment eg. less productivity pressure, access to timely advice
- Improve awareness and involvement of special needs in dental practitioners and community
- Improve undergraduate education and exposure in special needs dentistry
- Social and professional recognition
- Barrier-free facilities
- Increasing financial remuneration
- I am not interested in treating patients with special needs
- Other

Please specify other

What are the reasons for referring patients with special needs to a general dentist or specialist for management? Select all that apply.

- Out of scope
- Second opinion
- Uncomfortable performing the required dental procedures
- Patient not cooperative
- No appropriate facilities in clinic to accommodate needs of patients with disabilities
- I am not ready to treat patients with special needs
- Other

Please specify other

Perception of Special Needs Dentistry among Final Year Oral Health Students and Graduates: An Online Survey (Students)

Perception of training on special needs dentistry (Future opportunity)

79% Progress

In which year of the oral health program SHOULD the special needs dentistry component be introduced?

	1	2	3
Didactic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clinical	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Not at all important	Not so important	Somewhat important	Very important	Extremely important
How would you rate the importance of having an advanced training program for oral health practitioners to improve knowledge in dental management of patients with special needs?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Not at all interested	Not very interested	Unsure	Somewhat interested	Very interested
If there is an advanced training program for oral health practitioner to be highly trained in special needs dentistry, how interested are you?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Which are the foreseeable factors that prevent you from participating in the advanced training program for special needs dentistry? Select all that apply.

- Time barriers
- Cost of advance training program
- Cannot be present physically, can only do online
- Self doubt
- Not interested
- Other

Please specify other

Which of these could possibly make this advanced training program more appealing to you? Select all that apply.

- Options of enrolling as a part time student
- Subsidised cost of training
- Lectures and tutorials can be completed online, but in-person clinical training
- Training incentive
- Not interested
- Other

Please specify other

Perception of Special Needs Dentistry among Final Year Oral Health Students and Graduates: An Online Survey (Students)

Conclusion

97% Progress

Any other comments?

Perception of Special Needs Dentistry among Final Year Oral Health Students and Graduates: An Online Survey (Workforce)

Participant consent

We are conducting this online survey study to allow better understanding on the perception of special needs dentistry among final year oral health students and oral health therapy workforce in Australia. This include oral health therapists, dental therapists, dental hygienists students and clinicians, who are or were registered, practicing or teaching, and those involve in academics, administrative, leadership or management, not working temporarily or retired practitioners.

There are five parts to this survey and a total of 23 questions. It will take around 10-15 mins to complete. You may save your answers at any part of the survey and continue later. The survey will include questions on your demographic details, perceptions, educational experiences, professional practices on managing the dental needs of people with disability, as well as understanding the acceptance of future training opportunity in special needs dentistry.

Your completion of this questionnaire plays a crucial role in facilitating a pathway for future research which will be beneficial in improving the quality of dental services provided to people with disability, thus closing the gap of oral health disparity between special needs and the general population.

We truly appreciate your response and time. For further information or feedback, please contact Miss Dorothy Koh at Dorothy.koh@sydney.edu.au.

Participant information statement

[Attachment: "PIS (WORKFORCE)_v1.pdf"]

I agree to take part in this research study. In giving my consent, I confirm that:

- The details of my involvement have been explained to me, and I have been provided with a written Participant Information Statement to keep.
- I understand the purpose of the study is to investigate the perception of special needs dentistry among the final year oral health students (oral health therapy, dental therapy and dental hygiene) and the oral health therapy workforce (oral health therapists, dental therapists, dental hygienists) in Australia.
- The survey will include questions on the perceptions, educational experiences, professional practices on managing the dental needs of people with disability, as well as understanding the acceptance of future training opportunity in special needs dentistry.
- I acknowledge that the risks and benefits of participating in this study have been explained to me to my satisfaction.
- I understand that in this study I will be required to complete an online survey (total of 23 questions).
- I understand that being in this study is completely voluntary.
- I am assured that my decision to participate will not have any impact on my relationship with the research team or the University of Sydney.
- I understand that I am free to withdraw from this study at any time and that I can choose to withdraw any information I have already provided (unless the data has already been de-identified or published).
- I have been informed that the confidentiality of the information I provide will be protected and will only be used for purposes that I have agreed to. I understand that information identifying me will only be told to others with my permission, except as required by law.
- I understand that the results of this study may be published, and that publications will not contain my name or any identifiable information about me.

I have read and understood the Participant Information Statement.

- Yes
- No

I understand that by selecting "I agree", I consented to participate in this study. Due to the nature of the study, any information collected is non-identifiable and thus cannot be withdrawn after submitting my response.

- I agree
- I do not agree

Perception of Special Needs Dentistry among Final Year Oral Health Students and Graduates: An Online Survey (Workforce)

General information

The term "oral health" in this survey refers to oral health therapy, dental therapy and dental hygiene.

The term "oral health practitioners" in this survey refers to oral health therapists, dental therapists and dental hygienists.

Which age group are you in?

- Age 20 to 30
 Age 31 to 40
 Age 41 to 50
 Age 51 to 60
 Age 61 and above

Which of the following best describe you?

- Oral health therapist /dental therapist & dental hygienist
 Dental therapist
 Dental hygienist
 Other

Please specify other

What is your current role? Select all that apply.

- Clinical practice (providing patient clinical care)
 Teaching (academics)
 Administrative
 Leadership or management
 Not working temporarily
 Retired
 Other

Please specify other:

Where did you receive your primary qualifications in oral health?

- Australia
 New Zealand
 Republic of Ireland
 United Kingdom
 United States
 Other

Please specify other:

Which type of oral health institution did you graduate from?

- University (My university has oral health and dentistry course)
 University (My university only has oral health course)
 Colleges
 Junior colleges
 Non-degree vocational school/institute eg. TAFE in Australia
 Other

Please specify other:

How many years of professional experience do you have?

- 0 to 5 years
- 6 to 10 years
- 11 to 15 years
- 16 to 20 years
- Over 20 years

Where is your current practice location?

- Metropolitan
- Regional area
- Rural area
- I am currently not practicing
- Other

Please specify other:

What is your practice type? Select all that apply.

- Private practice
- Public - local health districts
- Indigenous community clinics
- Institutions - Universities, academia
- I am currently not practicing
- Other

Please specify other:

Perception of Special Needs Dentistry among Final Year Oral Health Students and Graduates: An Online Survey (Workforce)

Perception of managing dental needs of patients with special needs (Professional practice)

20% Progress

How COMFORTABLE are you to treat the following group of patients?

	Very uncomfortable	Uncomfortable	Neutral	Comfortable	Very comfortable
Physical disability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Intellectual and developmental disability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Psychiatric conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Complex medical conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aged care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How would you rate your CONFIDENCE in managing dental needs of patients with special needs?

	Not confident at all	Slightly confident	Somewhat confident	Fairly confident	Completely confident
Physical disability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Intellectual and developmental disability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Psychiatric conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Complex medical conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aged care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How often do you see these group of patients with special needs in your current practice?

	0 a month	1-5 a month	6-10 a month	11-15 a month	>15 a month	No, I am currently not working clinically.
Physical disability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Intellectual and developmental disability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Psychiatric conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Complex medical conditions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aged care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Which are the perceived barriers encountered by you when providing dental care for patients with special needs? Select all that apply.

- Insufficient knowledge and experience in special needs dentistry during undergraduate training
- Inadequate trained staff in the clinic
- Physical barriers with clinic facilities
- Poor patient cooperation (behavioural issues)
- Complicated medical histories
- More time consuming
- Less financial benefits
- Other

Please specify other:

What will enable you to provide dental care for patients with special needs? Select all that apply.

- Training opportunities in special needs dentistry
- Supportive work environment eg. less productivity pressure, access to timely advice
- Improve awareness and involvement of special needs in dental practitioners and community
- Improve undergraduate education and exposure in special needs dentistry
- Social and professional recognition
- Barrier-free facilities
- Increasing financial remuneration
- I am not interested in treating patients with special needs
- Other

Please specify other:

What are the reasons for referring patients with special needs to a general dentist or specialist for management? Select all that apply.

- Out of scope
- Second opinion
- Uncomfortable performing the required dental procedures
- Patient not cooperative
- No appropriate facilities in clinic to accommodate needs of patients with disabilities
- I am not ready to treat patients with special needs
- I don't see patients with special needs in my current practice
- Other

Please specify other:

What is the usual referral pathway in your practice? Select all that apply.

- The practice I work at has our own specialist or dentist (internal referral)
- The practice I work at has selected specialist clinic where we usually refer the patients to (external referral)
- Patients have to find another dentist who is able to manage their dental needs
- I am currently not working in a clinical practice
- Other

Please specify other:

Perception of Special Needs Dentistry among Final Year Oral Health Students and Graduates: An Online Survey (Workforce)

Perception of education in special needs dentistry (Past educational experience)

68% Progress

Did your oral health program have these components on special needs dentistry? Select all that apply.

Examples of didactic teaching: An educator presenting lecture to students, classroom demonstration, workshop.

Examples of clinical learning: Students are given the opportunity to provide dental treatment to patients with special needs.

- Didactic teaching
 Clinical learning
 No, my oral health program does not have a component on special needs dentistry.

In which year of the oral health program SHOULD the special needs dentistry component be introduced?

	1st year	2nd year	3rd year
Didactic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clinical	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Do you agree or disagree with the following statements:

	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
My classes prepared me well for managing the dental needs of patients with special needs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The curriculum should include more education on the dental problems and management of patients with special needs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe that my oral health program has an honest interest in delivering knowledge pertaining to patients with special needs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The dental education I received for managing the dental problems of patients with special needs is adequate/sufficient	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

My clinical skills were adequate for me to be able to provide dental treatment to patients with special needs after graduating

Perception of Special Needs Dentistry among Final Year Oral Health Students and Graduates: An Online Survey (Workforce)

Perception of training in special needs dentistry (Future opportunity)

88% Progress

	Not at all important	Not so important	Somewhat important	Very important	Extremely important
How would you rate the importance of having an advanced training program for oral health practitioners to improve knowledge in dental management of patients with special needs?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Not at all interested	Not very interested	Unsure	Somewhat interested	Very interested
If there is an advanced training program for oral health practitioner to be highly trained in special needs dentistry, how interested are you?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Which are the foreseeable factors that prevent you from participating in the advanced training program for special needs dentistry? Select all that apply.

- Time barriers
- Cost of advance training program
- Cannot be present physically, can only do online
- Self doubt
- Not interested
- Other

Please specify other

Which of these could possibly make this advanced training program more appealing to you? Select all that apply.

- Options of enrolling as a part time student
- Subsidies cost of training
- Lectures and tutorials can be completed online, but in-person clinical training
- Training incentive
- Not interested
- Other

Please specify other

Perception of Special Needs Dentistry among Final Year Oral Health Students and Graduates: An Online Survey (Workforce)

Conclusion

98% Progress

Any other comments?

Appendix D: Supplementary material for Chapter 6

- Human Research Ethics Committee approval letter
- Participant consent form (Experts Outside of/Within Australia)
- Participant information statement (Experts Outside of/Within Australia)
- Delphi Study Baseline Information
- Survey Instrument: Express of interest
- Round 1: Survey Instrument
- End of Round 1: Panel recommendations and researcher responses
- Round 2: Survey Instrument
- End of Round 2: Panel recommendations and researcher responses
- Round 3: Survey Instrument
- Round 4: Meeting agenda
- Round 4: Meeting presentation slides
- End of Round 4: Meeting minutes
- Undergraduate and Postgraduate Special Needs Dentistry Curriculum for Oral Health Therapists

HUMAN RESEARCH ETHICS APPROVAL

The University of Sydney confirms that this project meets the requirements of the National Statement on Ethical Conduct in Human Research.

Project identifier:	2024/HE001481
Project title:	Undergraduate and Postgraduate Special Needs Dentistry Curricula for Oral Health Therapists: An Online Delphi Study
Application version:	0.02
Chief Investigator:	Professor Woosung Sohn
Project team:	Associate Professor Archana Pradhan Associate Professor Delyse Leadbeatter Miss Dorothy Koh Associate Professor Melanie Aley
Project start date:	13 Dec 2024
Project end date:	12 Dec 2028
Date of issue:	Friday, 13 December, 2024

Project summary

Previous research has documented that one of the main reasons behind dental practitioners' reluctance to manage the dental needs of people with disability is the lack of dental knowledge and clinical experiences. Many studies also demonstrated that improving the dental knowledge through providing educational opportunities on special needs dentistry (SND) is positively correlated to the willingness to be involve in providing dental care for this patient population. The purpose of the study is to develop a comprehensive curriculum outline to improve both the theoretical and clinical knowledge for the oral health therapists (OHT) in SND. This includes both undergraduate and postgraduate level. Identifying the preliminary core curriculum domains through this study can enhance the preparation process of the workforce. Consequently, this will enhance the accessibility and improve oral health outcomes of the special needs population.

Documents approved

Document type	File name	Document version	Application version
Survey or questionnaire	Delphi baseline information_280824.docx	1	0.01
Survey or questionnaire	DelphiRoundOne-2.pdf	1	0.02
Other	OnlineDelphiStudyExpressOfInte.pdf	1	0.02
Participant Consent Form (PCF)	v2_2024_HE001481_v0_01 - PCF_Set 1 (AUS)_280824 (TRACKED)..docx	2	0.02
Participant Consent Form (PCF)	v2_2024_HE001481_v0_01 - PCF_Set 2 (NON-AUS)_280824 (TRACKED)..docx	2	0.02
Participant Information Statement (PIS)	v2_2024_HE001481_v0_01 - PIS_set 1 (AUS) 050924. (TRACKED).docx	2	0.02

Participant Information Statement (PIS)	v2_2024_HE001481_v0_01 - PIS_set 2 (NON-AUS)_050924 (TRACKED).docx	2	0.02
Application Attachment	Project description 280824 .docx	2	0.02
Recruitment or advertising material	Recruitment_Set 1 (AUS) 280824 .docx	1	0.01
Recruitment or advertising material	Recruitment_Set 2(NON-AUS) 280824 .docx	1	0.01
Procedure or other study tools	Template round 1_280824.docx	1	0.01
Procedure or other study tools	Template round 1 reminder_280824 .docx	1	0.01
Procedure or other study tools	Template round 2_280824.docx	1	0.01
Procedure or other study tools	Template round 2 reminder_280824 .docx	1	0.01
Procedure or other study tools	Template round 3_280824.docx	1	0.01
Procedure or other study tools	Template round 3 reminder_280824 .docx	1	0.01
Procedure or other study tools	Template round 4_280824.docx	1	0.01

Conditions of Approval

- Research must be conducted according to the approved proposal.
- An annual progress report must be submitted on or before the anniversary of approval and a final report on completion of the project.
- You must report as soon as practicable anything that might warrant review of ethical approval of the project including:
 - Serious or unexpected adverse events (which should be reported within 72 hours).
 - Unforeseen events that might affect continued ethical acceptability of the project.
- Any changes to the proposal must be approved prior to their implementation (except where an amendment is undertaken to eliminate *immediate* risk to participants).
- Researchers working on this project must be sufficiently qualified by education, training, and experience for their role, or adequately supervised. Changes to the project team must be reported and approved.
- Researchers must disclose any actual, potential or perceived conflicts of interest, including any financial or other interest or affiliation, as relevant to this project.
- Research data and primary materials must be retained and stored in accordance with relevant legislation and University guidelines.
- Ethics approval is dependent upon ongoing compliance of the research with the *National Statement on Ethical Conduct in Human Research*, the *Australian Code for the Responsible Conduct of Research*, applicable legal requirements, and with University policies, procedures, and governance requirements.
- If your research project is a clinical trial and is being sponsored by the University or is to be conducted on a University of Sydney site, you must comply with additional University governance requirements prior to commencing your Clinical Trial.
- The University may conduct audits on approved projects.
- The Chief Investigator has ultimate responsibility for the conduct of the research and is responsible for ensuring all others involved will conduct the research in accordance with the above.



Ethics Committee Representative

Chair

On behalf of the University of Sydney

The University of Sydney HRECs are constituted and operate in accordance with the National Statement on Ethical Conduct in Human Research and the Australian Code for the Responsible Conduct of Research (NHMRC). All personnel named on the project should be acquainted with these documents.

Research Integrity & Ethics Administration
Research Portfolio
Level 3, Michael Spence Building (F23)
The University of Sydney
NSW 2006 Australia

T +61 2 9036 9161
E human.ethics@sydney.edu.au
W intranet.sydney.edu.au/ethics

ABN 15 211 513 464
CRICOS 00026A

Participant Consent Form



Participant group – Experts from Australia

Research Study: Undergraduate and Postgraduate Special Needs Dentistry Curricula for Oral Health Therapists: An Online Delphi Study

A/Prof Archana Pradhan (Chief Investigator)

Stream Coordinator of Special Needs Dentistry

Email: archana.pradhan@sydney.edu.au

Dorothy Koh (PhD student) | Email: dorothy.koh@sydney.edu.au

Participant Name

I agree to take part in this research study. In giving my consent, I confirm that:

- The details of my involvement have been explained to me, and I have been provided with a written Participant Information Statement to keep.
- I understand the purpose of the study is to develop a curriculum outline to improve both the theoretical and clinical knowledge for the oral health therapists in special needs dentistry. Identifying the preliminary core curriculum domains can enhance the preparation process of the workforce. Consequently, this will enhance the accessibility and improve oral health outcomes of the special needs population.
- I understand the data collected in this Delphi study may be used for future research purposes related to special needs dentistry education, including follow-up studies or further analysis of the curriculum framework being developed.
- I acknowledge that the risks and benefits of participating in this study have been explained to me to my satisfaction.
- I understand that in this study I will be required to complete a three-round online survey (one round a month, for three months) and conclude with a final consensus online meeting at the end of the study.
- I understand that being in this study is completely voluntary.
- I am assured that my decision to participate will not have any impact on my relationship with the research team or the University of Sydney.
- I understand that I am free to withdraw from this study at any time and that I can choose to withdraw any information I have already provided (unless the data has already been de-identified or published).

- I have been informed that the confidentiality of the information I provide will be protected and will only be used for purposes that I have agreed to. I understand that information identifying me will only be told to others with my permission, except as required by law.
- I understand that the results of this study may be published and that publications will not contain my name or any identifiable information about me unless I have opted to be acknowledged after completion of the Delphi study.

I would like feedback on the overall results of this study Yes No

If you answered **yes**, please provide your preferred contact details (email/telephone/postal address):

I understand that by selecting “I agree” at the beginning of the online survey, I consented to participate in this study.

Participant Name

Signature

Date

Participant Consent Form



Participant group – Experts from outside Australia

Research Study: Undergraduate and Postgraduate Special Needs Dentistry Curricula for Oral Health Therapists: An Online Delphi Study

A/Prof Archana Pradhan (Chief Investigator)
Stream Coordinator of Special Needs Dentistry
Email: archana.pradhan@sydney.edu.au
Dorothy Koh (PhD student) | Email: dorothy.koh@sydney.edu.au

Participant Name _____

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Email: archana.pradhan@sydney.edu.au
Dorothy Koh (PhD student) | Email: dorothy.koh@sydney.edu.au

1. What is this study about?

This study aims to utilize an online Delphi technique to develop a curriculum outline for advanced training in Special Needs Dentistry (SND), specifically tailored for oral health therapists (OHT). Identifying the preliminary core curriculum domains through this study can enhance the preparation process of the workforce, both theoretically and clinically. Consequently, this will improve the accessibility and the quality of dental services provided to people with disability. Although participation is encouraged and valued due to the limited number of experts in SND, participation in this study is completely voluntary. Please read this sheet carefully and ask questions about anything that you don't understand or want to know more about.

2. Who is running the study?

The study is being carried out by the following researchers:

- A/Prof Archana Pradhan, Stream Coordinator of Special Needs Dentistry, Sydney Dental School, Faculty of Medicine and Health
- Professor Woosung Sohn, Chair of Population Oral Health, School of Dentistry, University of Sydney
- A/Professor Delyse Leadbeatter, Director of Academic Education, Sydney Dental School Dentistry Administration, Faculty of Medicine and Health, University of Sydney
- A/Prof Melanie Aley, Director of Oral Health, Sydney Dental School, Faculty of Medicine and Health
- Dorothy Koh, Student of Doctor of Philosophy, Faculty of Medicine and Health, University of Sydney. Dorothy Koh is conducting this study as the basis for the Doctor of Philosophy at The University of Sydney.

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors. All authors declare that they have no conflicts of interest.

3. Who can take part in the study?

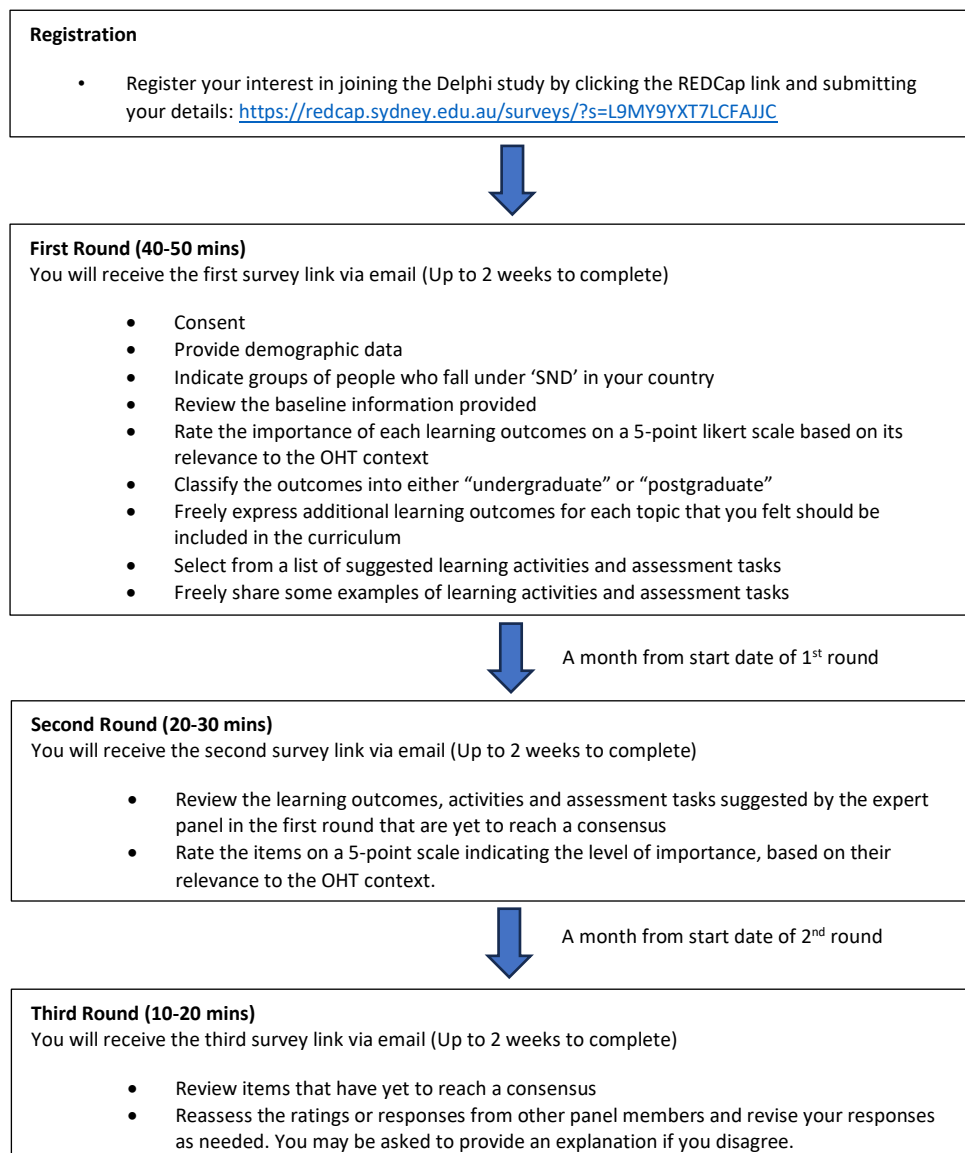
We are seeking experts in SND to be part of this Delphi study. To be considered an expert, the prospective panel members have to fulfill one or more of the following criteria:

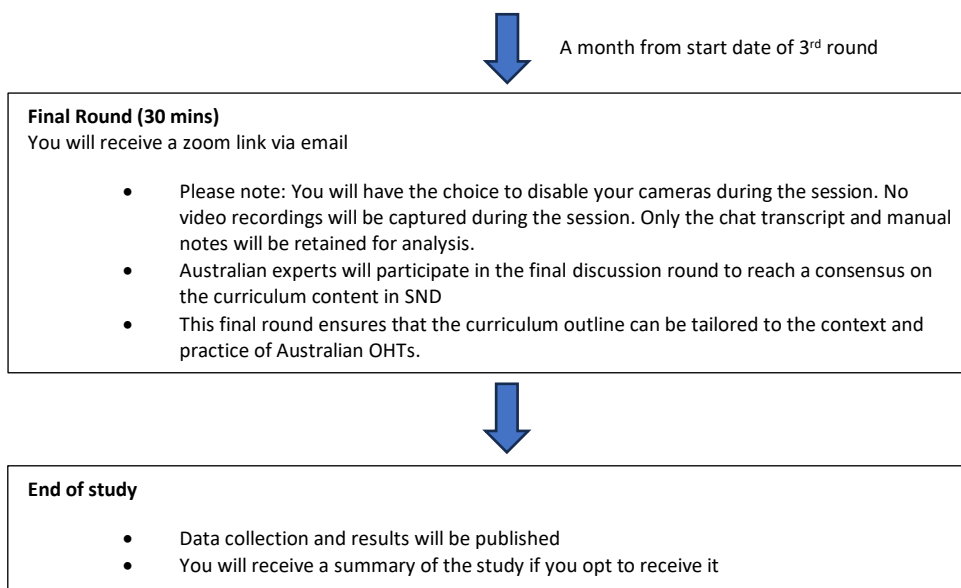
- Have experience in teaching SND in an academic environment,
- Have experience delivering SND training programs within community/hospital settings,

- Have experience developing and delivering educational programs/curricula within academic environments,
- Is a SND specialist,
- Is an oral health therapy educator in SND,
- Is a consumer representative from organizations like the Australian Society of Special Care in Dentistry (ASSCID).

4. What will the study involve for me?

You are invited to participate in a four-round online Delphi study, with one survey round scheduled per month over the course of three months, and the final consensus meeting to conclude the study. If you agree to participate in the study, we kindly request that you register your interest through a REDCap link provided below. In each round, you will be given a link which you can access anywhere with a device connected to the internet, at your convenience. You may save your answers at any part of the survey and continue later. With the final round, you will be provided with a Zoom link along with the details of the meeting. Please note that individual participants will not be identified in the reporting. The process of the Delphi study will be explained in the flow chart below:





5. Can I withdraw once I've started?

Being in this study is completely voluntary and you do not have to take part. We do not anticipate your decision will affect your current or future relationship with the researchers or anyone else at The University of Sydney. There will be no consequence of withdrawal from this research. If you withdraw by terminating the questionnaire, the data you have provided up to that point will still be included in the analysis, as it will be non-identifiable and integrated into subsequent rounds. By submitting your survey, you consent to take part in the study round.

6. Are there any risks or costs?

Aside from giving up your time, we do not expect that there will be any risks or costs associated with taking part in this study.

7. Are there any benefits?

You will not receive any direct benefits from being in the study. We hope the information learnt from this study will contribute to the development and implementation of a consensus-based curriculum structure for advanced training for the OHT in SND.

8. What will happen to information that is collected?

Although the Delphi study cannot be completely anonymous due to its nature, however, you will not be individually identifiable in the publications, unless you consented to be acknowledged for your contribution. By providing your consent, you are agreeing to us collecting information and opinions for the purposes of this study. Any information you provide us will be stored securely. The results will be used for analysis purposes and also in publication and presentations. All these electronic data information will be stored in University-licensed REDCap and OneDrive platform during and after the project, which will only be accessible by the researchers of this project. After the retention period of 5 years, all information collected from the questionnaire will be destroyed permanently.

9. Will I be told the results of the study?

You have a right to receive feedback about the overall results of this study. If you are interested to receive the results, upon completion of the study, please provide your email address. The feedback you receive will be in the form of a brief lay summary.

10. What if I would like further information?

When you have read this information, the following researcher/s will be available to discuss it with you further and answer any questions you may have:

- A/Prof Archana Pradhan
Stream Coordinator of Special Needs Dentistry
Faculty of Medicine and Health,
University of Sydney
archana.pradhan@sydney.edu.au
- Miss Dorothy Koh
Student of Doctor of Philosophy
Faculty of Medicine and Health,
University of Sydney
Dorothy.koh@sydney.edu.au

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The ethical aspects of this study have been approved by the Human Research Ethics Committee (HREC) of The University of Sydney 2024/HE001481 according to the *National Statement on Ethical Conduct in Human Research (2007)*.

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Participant Information Statement

Participant group – Experts from outside Australia

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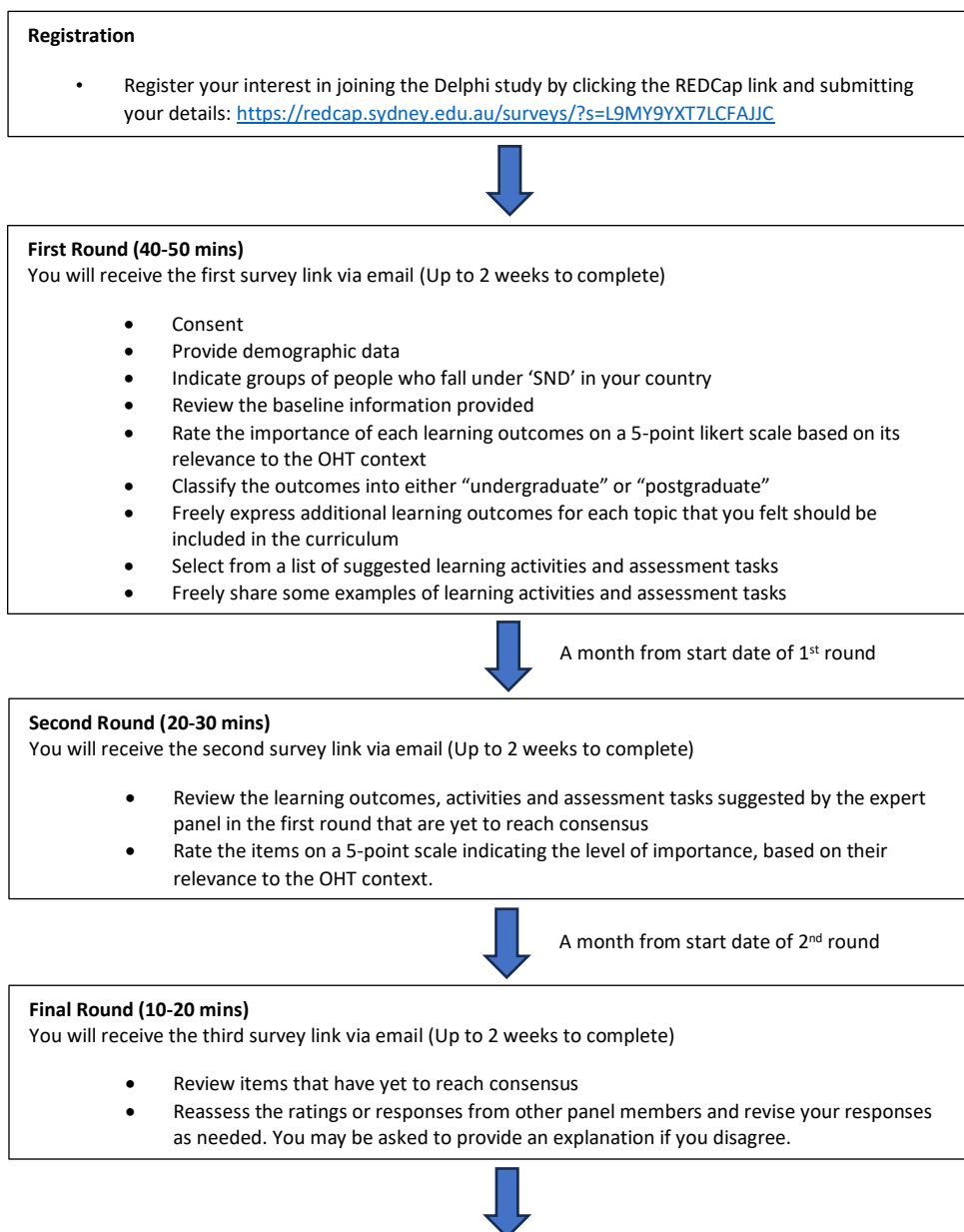
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End of study

- Data collection and results will be published
- You will receive a summary of the study if you opt to receive it.

5. Can I withdraw once I've started?

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Human Ethics Manager
human.ethics@sydney.edu.au
+61 2 8627 8176

This information is for you to keep

Delphi Study Baseline Information

The information was derived from:

- Publicly accessible student handbooks of undergraduate oral health programs that include learning outcomes for Special Needs Dentistry (SND) subjects in Bachelor of Oral Health/Therapy programs.
- Publicly accessible student handbooks of postgraduate SND specialist programs.
- Undergraduate and postgraduate guidelines for SND provided by the International Association for Disability and Oral Health (iADH).
<https://www.iadh.org/resource/>
- Australian Dental Council (ADC) competency guidelines.
https://adc.org.au/files/accreditation/competencies/ADC_Professional_Competencies_of_the_Newly_Qualified_Practitioner.pdf

The information was reviewed and thematically analysed. They were then grouped into domains and outcomes. The following is in the context of special needs dentistry:

Domains	Title	Learning outcomes
1	The Scope of Special Needs Dentistry (SND)	<p>On successful completion of this domain, the students should be able to:</p> <ul style="list-style-type: none"> • Understand and apply the use of appropriate terminology for the context of SND • Recognise the need and growth of the emerging specialty of SND • Describe the key concepts, epidemiology, and classification related to human function, impairments, disability, and health • Discover the complexities of SND, with a greater understanding of managing patients with diverse social and medical issues resulting from their special needs • Gain an advanced understanding of the international context and sensitivities of SND

2	Access and Barriers to oral health for people with disability and other marginalised groups	<p>On successful completion of this domain, the students should be able to:</p> <ul style="list-style-type: none"> • Identify social, environmental and attitudinal barriers and facilitators to oral healthcare services • Translate knowledge of the social determinants of health into understanding health inequalities and their implications on oral health • Understand the government funding and advocacy efforts aimed at supporting people with disability • Integrate the knowledge of barriers and facilitators to oral health into a considered approach to patient assessment, prevention, treatment planning, and provision of oral health care for patients with disability • Develop tailored strategies to overcome barriers and ensure optimal oral health outcomes for patients with disability
3	Professional, Legal And Ethical Context Of Special Care Dentistry (including consent matters)	<p>On successful completion of this domain, the students should be able to:</p> <ul style="list-style-type: none"> • Explain the social, legal, and ethical considerations of SND • Demonstrate proficiency in evaluating an individual's capacity to provide consent • Recognise the role of the family members, carers and the relevant government agencies in assisted decision-making processes • Apply knowledge to facilitate process of obtaining informed consent for patients who are unable to consent on their own behalf • Identify and describe concepts and legislation relevant to consent, and determine the appropriate frameworks for obtaining informed consent for patients with disability • Outline the appropriate consent process

<p>4</p>	<p>Cultural awareness and sensitivities of Special Needs Dentistry Including Aboriginal and Torres Straits Islander cultural competency</p>	<p>On successful completion of this domain, the students should be able to:</p> <ul style="list-style-type: none"> • Demonstrate awareness of their own culture and how they relate to other communities, families and individuals • Define principles of cultural safety, which involve creating a respectful and inclusive environment that acknowledges and respects cultural diversity • Demonstrate an understanding of, and respect for, Australian Aboriginal and Torres Strait Islander values, culture and knowledge • Develop an positive attitude in relation to diversity in health beliefs, lifestyles, ethnic and cultural background • Engage with and appreciate others in a respectful and reflective manner, employing culturally relevant, safe, and sensitive communication strategies to facilitate relationships and apply evidence-based and strengths-based best practices in Aboriginal and Torres Strait Islander healthcare. • Exhibit advanced knowledge of the moral and ethical responsibilities involved in the provision of care to individual patients, populations and communities • Apply key concepts in Indigenous perspectives of health and demonstrated application of these in promoting oral health and improving inequalities in health outcomes
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5	Communication skills in Special Needs Dentistry	<p>On successful completion of this domain, the students should be able to:</p> <ul style="list-style-type: none">• Demonstrate culturally sensitive and inclusive language with patients, colleagues and carers, to obtain an adequate medical and social history• Develop adequate communication skills and use appropriate methods of communication for people with cognitive, sensory and/or other communication impairments for meaningful interaction based on their specific needs• Apply understanding of communication principles, including augmented communication methods and supportive decision-making strategies• Select and utilise appropriate techniques to interact with patients with disability and the support networks• Recognise both verbal and non-verbal signs relating to pain, anxiety and phobia in patients with disability• Develop an open-minded approach to listening to and understanding the lived experience of people with disability and how this can inform clinical practice and our approach to respecting patient autonomy
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6	Impact of impairments, disabilities and systemic conditions on oral health and oral function	<p>On successful completion of this domain, the students should be able to:</p> <ul style="list-style-type: none"> • Describe key concepts of health, disabilities and systemic conditions • Explain the relationship between systemic and oral health, oral health related quality of life and their implications in the dental management of patients with disability • Understand the complexities of managing patients with a range of social and medical issues impacted by their disability, and recognise the connection between general health and oral health • Analyse behavioural support plans, differentiate and compare between available behavioural support techniques and other supportive measures, and justify their application to individual patients with disability • Differentiate the characteristic oral manifestations of specific patient groups • Determine the impact of risk factors, systemic disease and medications on oral health and treatment planning • Demonstrate confidence when confronted with complex patients in various clinical, aged care and home settings
7	Clinical Management of patients requiring Special Care Dentistry	<p>On successful completion of this domain, the students should be able to:</p> <ul style="list-style-type: none"> • Demonstrate ability to recognize medical emergencies • Demonstrate understanding around the fundamental of SND including developmental disabilities, gerodontology and related medical issues with aging, disease and health, neurodegenerative disorders, endocrine diseases, transplant medicine and dentistry as well as palliative dental care • Translate theoretical knowledge to clinical application for providing appropriate care to the wide range of patients with disability in varying environments to cater for the patient's unique circumstances

		<ul style="list-style-type: none"> • Exhibit knowledge of facilitation of treatment for people with disabilities and anxiety using behavioural, psychological and other non-pharmacological approaches • Demonstrate knowledge, basic life support skills and management of medical emergencies according to local protocols and guidelines • Perform safe transfer techniques and appropriate positioning aids where necessary • Describe the factors (medical, social and environmental) that impact on risk assessment and treatment planning for individual patients requiring special care • Understand basic pharmacology, principal interactions and adverse systemic and oral side effects of commonly used medications and therapeutic regimen for SND • Analyse the implications for dental treatment and oral health care which arise from the effects of pharmacology, their impact on patient management and appropriate application to the clinical environment. • Formulate appropriate dental care based on risk assessment, history taking, examination, diagnosis, treatment planning and delivery of clinical dentistry for patients with a range of disabilities and complex medical conditions • Demonstrate clinical maturity and expertise in assessment, interpretation, diagnosis, treatment planning with sound clinical reasoning and evidence-based clinical care in the management of the complex and unique needs of patients with disability • Recognise both verbal and non-verbal signs relating to pain, anxiety and phobia in patients with disability • Integrate their knowledge of communication, informed consent, and supported decision making into the clinical management and treatment planning of patients with disability • Identify conditions and manifestations of systemic diseases and therapeutics that may put patients at risk in a dental environment
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8	Clinical pathways and team approach to care	<p>On successful completion of this domain, the students should be able to:</p> <ul style="list-style-type: none"> • Recognise the role of the carer • Understand the importance of the intra-interprofessional liaison in addressing patients' unique needs • Recognise the value of teamwork in the management for patients requiring special care • Demonstrate ability to build interprofessional networking locally, advising carers and other practitioners who are providing oral health care to patients with disability to provide best practice care for them • Work collaboratively and professionally with other dental specialties to advocate for relevant treatment options required by patients with disability outside of individual scope of practice (knowing how, when and where to refer) • Practice responsibility for referring or arranging care for patients with more complex needs
9	Dental public health and oral health promotion	<p>On successful completion of this domain, the students should be able to:</p> <ul style="list-style-type: none"> • Describe the principles of oral health promotion • Understand the connection between health promotion and health policy development • Demonstrate skills in oral health promotion in order to develop, design and implement evidence-based health promotion strategies and programs tailored to the needs of individuals with disability • Demonstrate the capability to formulate individualised oral health education and prevention strategy for people with disabilities and their carers • Understand the role of professional advocacy in promoting public policies, services and systems that respect diversity, equality and human rights

		<ul style="list-style-type: none"> • Apply social and environmental facilitators to oral health promotion within service structure • Apply the theories and principles of health promotion to improve oral and general health
10	Clinical research and governance	<p>On successful completion of this domain, the students should be able to:</p> <ul style="list-style-type: none"> • Critically review relevant literature in order to practice evidence based dentistry • Demonstrate an understanding of scientific methodology and the ability to critically analyse published research and where appropriate, transfer this to the clinical situation • Apply contemporary research findings and scientific method in evidence-based dental practice • Understand the importance of continuing professional development, lifelong learning, self-appraisal, peer review and competency

Express of interest for online Delphi study - Postgraduate Special Needs Dentistry Curriculum for Oral Health Therapists: An Online Delphi Study

Please complete the survey below.

1) I would like to participate in the online Delphi study

- Yes, I would like to participate
 No, I decline to participate

If you choose to participate in the Delphi study, please provide your details below:

2) Name: _____

3) Email address: _____

4) Which country are you based in? _____

5) Which role best describes you (select all that apply):

- Have experience in teaching special needs dentistry at an undergraduate level in an academic environment
 Have experience delivering special needs dentistry training programs within community/hospital settings
 Have experience developing and delivering educational programmes/curricula within academic environments,
 A specialist in special needs dentistry,
 An oral health therapy educator in special needs dentistry,
 A consumer representative from organizations like the Australian Society of Special Care in Dentistry (ASSCID)
 A consumer representative from organizations such as the International Association for Disability and Oral Health (IADH)
 others _____

6) How many years of experience do you have in special needs dentistry?

- None
 1-5 years
 6-10 years
 More than 10 years

7) Choose your preferred acknowledgment:

Upon successful completion of all the Delphi rounds, indicate how you would like your name to be included in the publication of the Delphi study:

(Note: You must complete all rounds of the Delphi study to be considered for co-authorship or acknowledgment.)

- To be included as co-author in the Delphi study
 To be included ONLY in the acknowledgment of the Delphi study
 To remain anonymous (none of the above)

Undergraduate and Postgraduate Special Needs Dentistry Curricula for Oral Health Therapists: An Online Delphi Study

Consent

I agree to take part in this research study. In giving my consent, I confirm that:

- The details of my involvement have been explained to me, and I have been provided with a written Participant Information Statement to keep.

- I understand the purpose of the study is to develop a curriculum outline to improve both the theoretical and clinical knowledge of oral health therapists in special needs dentistry. Identifying the preliminary core curriculum domains can enhance the preparation process of the workforce. Consequently, this will enhance the accessibility and improve oral health outcomes of the special needs population.

- I understand the data collected in this Delphi study may be used for future research purposes related to special needs dentistry education, including follow-up studies or further analysis of the curriculum framework being developed.

- I acknowledge that the risks and benefits of participating in this study have been explained to me to my satisfaction.

- I understand that as part of this study, I will be required to complete a three-round online survey, with each round conducted monthly over a three-month period. Additionally, for experts based in Australia, there will be a final consensus online meeting at the end of the study to conclude the process.

- I understand that being in this study is completely voluntary.

- I am assured that my decision to participate will not have any impact on my relationship with the research team or the University of Sydney.

- I understand that I am free to withdraw from this study at any time and that I can choose to withdraw any information I have already provided (unless the data has already been de-identified or published).

- I have been informed that the confidentiality of the information I provide will be protected and will only be used for purposes that I have agreed to. I understand that information identifying me will only be told to others with my permission, except as required by law.

- I understand that the results of this study may be published and that publications will not contain my name or any identifiable information about me, unless I have opted to be acknowledged after completion of the Delphi study.

- Yes, I consent to participate in the Delphi study
 No, I do not consent to participate in the Delphi study

Undergraduate and Postgraduate Special Needs Dentistry Curricula for Oral Health Therapists: An Online Delphi Study

Demographic Data

Name:

Email address:

Which country are you based in?

- Australia
- New Zealand
- United States
- United Kingdom
- Republic of Ireland
- Others: _____

Which role(s) best describe(s) you? Select all that apply.

- Have experience in teaching SND in an academic environment,
- Have experience delivering SND training programs within community/hospital settings,
- Have experience developing and delivering educational programs/curricula within academic environments,
- SND specialist,
- Oral health therapy educator in SND,
- A consumer representative from organizations like the Australian Society of Special Care in Dentistry (ASSCID).

How many years of experience do you have in Special Needs Dentistry?

- 0 to 5 years
- 6 to 10 years
- More than 10 years

Undergraduate and Postgraduate Special Needs Dentistry Curricula for Oral Health Therapists: An Online Delphi Study

SND classification

Indicate groups of people who are included under Special Needs Dentistry in your country. Select all that apply.

- Physical disability
- Intellectual and developmental disability
- Psychiatric conditions
- Complex medical conditions
- Aged care
- Others: _____

Undergraduate and Postgraduate Special Needs Dentistry Curricula for Oral Health Therapists: An Online Delphi Study

Delphi Round 1

In the following sections, we will be exploring 10 learning domains, each with examples of learning outcomes from the literature.

For each domain:

Indicate the level of importance for including the learning outcome in the advanced training of the Oral Health Therapists (OHT) in Special Needs Dentistry (SND),

Specify whether the learning outcomes should be targeted at the undergraduate or postgraduate level,

Propose any additional learning outcomes that you believe should be incorporated into the SND curriculum,

Share examples of learning activities and assessment tasks that you think would enhance the training of OHT. This may be specific. Eg. learning activities - role playing or virtual simulations to practice clinical skills in management of people with disability. Eg. assessment tasks - case study analysis to evaluate students' ability to apply their knowledge to real-world scenarios.

Overview of learning domains:

Domain 1: The Scope of Special Needs Dentistry

Learning outcomes:

On successful completion of this domain, the students should be able to:

- Understand and apply the use of appropriate terminology for the context of SND
- Recognise the need and growth of the emerging speciality of SND
- Describe the key concepts, epidemiology, and classification related to human function, impairments, disability, and health
- Discover the complexities of SND, with a greater understanding of managing patients with diverse social and medical issues resulting from their special needs
- Gain an advanced understanding of the international context and sensitivities of SND

1. Understand and apply the use of appropriate terminology for the context of SND

- Not at all important
 Not so important
 Somewhat important
 Very Important
 Extremely Important

Should Learning Outcome 1 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

2. Recognise the need and growth of the emerging speciality of SND

- Not at all important
 Not so important
 Somewhat important
 Very Important
 Extremely Important

Should Learning Outcome 2 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

3. Describe the key concepts, epidemiology, and classification related to human function, impairments, disability, and health

- Not at all important
 Not so important
 Somewhat important
 Very Important
 Extremely Important

Should Learning Outcome 3 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

4. Discover the complexities of SND, with a greater understanding of managing patients with diverse social and medical issues resulting from their special needs

- Not at all important
 Not so important
 Somewhat important
 Very Important
 Extremely Important

Should Learning Outcome 4 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

5. Gain an advanced understanding of the international context and sensitivities of SND

- Not at all important
 Not so important
 Somewhat important
 Very Important
 Extremely Important

Should Learning Outcome 5 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

Other learning outcomes you believe should be incorporated into the SND curriculum:

Which teaching materials or resources can the educators use? Select all that apply.

- References to different organisations and practitioners of varying levels of experience and specialty training
 Specific textbooks
 DVD
 Online training
 Interactive session with parents of people with disability
 Peer-reviewed journals
 Websites and audio-visual materials

Please share examples of learning activities:
(you can be creative and specific here!)

How can the students' educational outcomes and competencies be assessed? Select all that apply.

- Written exams
 Report
 Essay
 Oral presentation
 Clinical assessments
 Simulations
 OSCEs
 Oral examination
 Standardized patient scenarios
 Problem based learning performance
 Evaluation of the students' management of patients
 Portfolio

Please share examples of assessment tasks:
(you can be creative and specific here!)

Overview of learning domains:

Domain 2: Access and Barriers to Oral Health for People with Disability and other Marginalised Groups

Learning outcomes:

On successful completion of this domain, the students should be able to:

- Identify social, environmental and attitudinal barriers and facilitators to oral healthcare services
- Translate knowledge of the social determinants of health into understanding health inequalities and their implications on oral health
- Understand the government funding and advocacy efforts aimed at supporting people with disability
- Integrate the knowledge of barriers and facilitators to oral health into a considered approach to patient assessment, prevention, treatment planning, and provision of oral health care for people with disability
- Develop tailored strategies to overcome barriers and ensure optimal oral health outcomes for people with disability

1. Identify social, environmental and attitudinal barriers and facilitators to oral healthcare services

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 1 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

2. Translate knowledge of the social determinants of health into understanding health inequalities and their implications on oral health

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 2 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

3. Understand the government funding and advocacy efforts aimed at supporting people with disability

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 3 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

4. Integrate the knowledge of barriers and facilitators to oral health into a considered approach to patient assessment, prevention, treatment planning, and provision of oral health care for people with disability

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 4 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

5. Develop tailored strategies to overcome barriers and ensure optimal oral health outcomes for people with disability

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 5 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

Other learning outcomes you believe should be incorporated into the SND curriculum:

Which teaching materials or resources can the educators use? Select all that apply.

- References to different organisations and practitioners of varying levels of experience and specialty training
 Specific textbooks
 DVD
 Online training
 Interactive session with parents of people with disability
 Peer-reviewed journals
 Websites and audio-visual materials

Please share examples of learning activities:
(you can be creative and specific here!)

How can the students' educational outcomes and competencies be assessed? Select all that apply.

- Written exams
 Report
 Essay
 Oral presentation
 Clinical assessments
 Simulations
 OSCEs
 Oral examination
 Standardized patient scenarios
 Problem based learning performance
 Evaluation of the students' management of patients
 Portfolio

Please share examples of assessment tasks:
(you can be creative and specific here!)

Overview of learning domains:

Domain 3: Professional, Legal and Ethical Context of Special Needs Dentistry

Learning outcomes:

On successful completion of this domain, the students should be able to:

- Explain the social, legal, and ethical considerations of SND
- Demonstrate proficiency in evaluating an individual's capacity to provide consent
- Recognize the role of the family members, carers and the relevant government agencies in assisted decision-making processes
- Apply knowledge to facilitate process of obtaining informed consent for patients who are unable to consent on their own behalf
- Identify and describe concepts and legislation relevant to consent, and determine the appropriate frameworks for obtaining informed consent for people with disability
- Outline the appropriate consent process

1. Explain the social, legal, and ethical considerations of SND

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 1 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

2. Demonstrate proficiency in evaluating an individual's capacity to provide consent

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 2 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

3. Recognise the role of the family members, carers and the relevant government agencies in assisted decision-making processes

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 3 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

4. Apply knowledge to facilitate process of obtaining informed consent for patients who are unable to consent on their own behalf

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 4 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

5. Identify and describe concepts and legislation relevant to consent, and determine the appropriate frameworks for obtaining informed consent for people with disability

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 5 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

6. Outline the appropriate consent process

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 6 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

Other learning outcomes you believe should be incorporated into the SND curriculum:

Which teaching materials or resources can the educators use? Select all that apply.

- References to different organisations and practitioners of varying levels of experience and specialty training
 Specific textbooks
 DVD
 Online training
 Interactive session with parents of people with disability
 Peer-reviewed journals
 Websites and audio-visual materials

Please share examples of learning activities:
(you can be creative and specific here!)

How can the students' educational outcomes and competencies be assessed? Select all that apply.

- Written exams
- Report
- Essay
- Oral presentation
- Clinical assessments
- Simulations
- OSCEs
- Oral examination
- Standardized patient scenarios
- Problem based learning performance
- Evaluation of the students' management of patients
- Portfolio

Please share examples of assessment tasks:
(you can be creative and specific here!)

Overview of learning domains:

Domain 4: Cultural Awareness and Sensitivities of Special Needs Dentistry Including Aboriginal and Torres Strait Islanders Cultural Competency

Learning outcomes:

On successful completion of this domain, the students should be able to:

- Demonstrate awareness of their own culture and how they relate to other communities, families and individuals
- Define principles of cultural safety, which involve creating a respectful and inclusive environment that acknowledges and respects cultural diversity
- Demonstrate an understanding of, and respect for, Australian Aboriginal and Torres Strait Islander values, culture and knowledge
- Develop an positive attitude in relation to diversity in health beliefs, lifestyles, ethnic and cultural background
- Engage with and appreciate others in a respectful and reflective manner, employing culturally relevant, safe, and sensitive communication strategies to facilitate relationships and apply evidence-based and strengths-based best practices in Aboriginal and Torres Strait Islander healthcare
- Exhibit advanced knowledge of the moral and ethical responsibilities involved in the provision of care to individual patients, populations and communities
- Apply key concepts in Indigenous perspectives of health and demonstrated application of these in promoting oral health and improving inequalities in health outcomes

1. Demonstrate awareness of their own culture and how they relate to other communities, families and individuals

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 1 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

2. Define principles of cultural safety, which involve creating a respectful and inclusive environment that acknowledges and respects cultural diversity

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 2 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

3. Demonstrate an understanding of, and respect for, Australian Aboriginal and Torres Strait Islander values, culture and knowledge

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 3 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

4. Develop an positive attitude in relation to diversity in health beliefs, lifestyles, ethnic and cultural background

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 4 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

5. Engage with and appreciate others in a respectful and reflective manner, employing culturally relevant, safe, and sensitive communication strategies to facilitate relationships and apply evidence-based and strengths-based best practices in Aboriginal and Torres Strait Islander healthcare

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 5 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

6. Exhibit advanced knowledge of the moral and ethical responsibilities involved in the provision of care to individual patients, populations and communities

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 6 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

7. Apply key concepts in Indigenous perspectives of health and demonstrated application of these in promoting oral health and improving inequalities in health outcomes

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 7 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

Other learning outcomes you believe should be incorporated into the SND curriculum:

Which teaching materials or resources can the educators use? Select all that apply.

- References to different organisations and practitioners of varying levels of experience and specialty training
- Specific textbooks
- DVD
- Online training
- Interactive session with parents of people with disability
- Peer-reviewed journals
- Websites and audio-visual materials

Please share examples of learning activities:
(you can be creative and specific here!)

How can the students' educational outcomes and competencies be assessed? Select all that apply.

- Written exams
- Report
- Essay
- Oral presentation
- Clinical assessments
- Simulations
- OSCEs
- Oral examination
- Standardized patient scenarios
- Problem based learning performance
- Evaluation of the students' management of patients
- Portfolio

Please share examples of assessment tasks:
(you can be creative and specific here!)

Overview of learning domains:

Domain 5: Communication Skills in Special Needs Dentistry

Learning outcomes:

On successful completion of this domain, the students should be able to:

- Demonstrate culturally sensitive and inclusive language with patients, colleagues and carers, to obtain an adequate medical and social history
- Develop adequate communication skills and use appropriate methods of communication for people with cognitive, sensory and/or other communication impairments for meaningful interaction based on their specific needs
- Apply understanding of communication principles, including augmented communication methods and supportive decision-making strategies
- Select and utilise appropriate techniques to interact with people with disability and the support networks
- Recognise both verbal and non-verbal signs relating to pain, anxiety and phobia in people with disability
- Develop an open-minded approach to listening to and understanding the lived experience of people with disability and how this can inform clinical practice and our approach to respecting patient autonomy

1. Demonstrate culturally sensitive and inclusive language with patients, colleagues and carers, to obtain an adequate medical and social history

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 1 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

2. Develop adequate communication skills and use appropriate methods of communication for people with cognitive, sensory and/or other communication impairments for meaningful interaction based on their specific needs

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 2 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

3. Apply understanding of communication principles, including augmented communication methods and supportive decision-making strategies

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 3 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

4. Select and utilise appropriate techniques to interact with people with disability and the support networks

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 4 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

5. Recognise both verbal and non-verbal signs relating to pain, anxiety and phobia in people with disability

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 5 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

6. Develop an open-minded approach to listening to and understanding the lived experience of people with disability and how this can inform clinical practice and our approach to respecting patient autonomy

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 6 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

Other learning outcomes you believe should be incorporated into the SND curriculum:

Which teaching materials or resources can the educators use? Select all that apply.

- References to different organisations and practitioners of varying levels of experience and specialty training
 Specific textbooks
 DVD
 Online training
 Interactive session with parents of people with disability
 Peer-reviewed journals
 Websites and audio-visual materials

Please share examples of learning activities:
(you can be creative and specific here!)

How can the students' educational outcomes and competencies be assessed? Select all that apply.

- Written exams
- Report
- Essay
- Oral presentation
- Clinical assessments
- Simulations
- OSCEs
- Oral examination
- Standardized patient scenarios
- Problem based learning performance
- Evaluation of the students' management of patients
- Portfolio

Please share examples of assessment tasks:
(you can be creative and specific here!)

Overview of learning domains:

Domain 6: Impact of Impairments, Disabilities and Systemic Conditions on Oral Health and Oral Function

Learning outcomes:

On successful completion of this domain, the students should be able to:

- Describe key concepts of health, disabilities and systemic conditions
- Explain the relationship between systemic and oral health, oral health related quality of life and their implications in the dental management of people with disability
- Understand the complexities of managing patients with a range of social and medical issues impacted by their special needs, and recognise the connection between general health and oral health
- Analyse behavioural support plans, differentiate and compare between available behavioural support techniques and other supportive measures, and justify their application to people with disability
- Differentiate the characteristic oral manifestations of specific patient groups
- Determine the impact of risk factors, systemic disease and medications on oral health and treatment planning
- Demonstrate confidence when confronted with complex conditions in various clinical, aged care and home settings

1. Describe key concepts of health, disabilities and systemic conditions

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 1 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

2. Explain the relationship between systemic and oral health, oral health related quality of life and their implications in the dental management of people with disability

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 2 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

3. Understand the complexities of managing patients with a range of social and medical issues impacted by their special needs, and recognise the connection between general health and oral health

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 3 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

4. Analyse behavioural support plans, differentiate and compare between available behavioural support techniques and other supportive measures, and justify their application to people with disability

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 4 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

5. Differentiate the characteristic oral manifestations of specific patient groups

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 5 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

6. Determine the impact of risk factors, systemic disease and medications on oral health and treatment planning

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 6 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

7. Demonstrate confidence when confronted with complex conditions in various clinical, aged care and home settings

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 7 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

Other learning outcomes you believe should be incorporated into the SND curriculum:

Which teaching materials or resources can the educators use? Select all that apply.

- References to different organisations and practitioners of varying levels of experience and specialty training
- Specific textbooks
- DVD
- Online training
- Interactive session with parents of people with disability
- Peer-reviewed journals
- Websites and audio-visual materials

Please share examples of learning activities:
(you can be creative and specific here!)

How can the students' educational outcomes and competencies be assessed? Select all that apply.

- Written exams
- Report
- Essay
- Oral presentation
- Clinical assessments
- Simulations
- OSCEs
- Oral examination
- Standardized patient scenarios
- Problem based learning performance
- Evaluation of the students' management of patients
- Portfolio

Please share examples of assessment tasks:
(you can be creative and specific here!)

Overview of learning domains:

Domain 7: Clinical Management of People with Disability

Learning outcomes:

On successful completion of this domain, the students should be able to:

- Demonstrate ability to recognize medical emergencies
- Demonstrate understanding around the fundamental of SND including developmental disabilities, gerodontology and related medical issues with aging, disease and health, neurodegenerative disorders, endocrine diseases, transplant medicine and dentistry as well as palliative dental care
- Translate theoretical knowledge to clinical application for providing appropriate care to the wide range of people with disability in varying environments to cater to their unique circumstances
- Exhibit knowledge of facilitation of treatment for people with disability and anxiety using behavioural, psychological and other non-pharmacological approaches
- Demonstrate knowledge, basic life support skills and management of medical emergencies according to local protocols and guidelines
- Perform safe transfer techniques and appropriate positioning aids where necessary
- Describe the factors (medical, social and environmental) that impact on risk assessment and treatment planning for individuals requiring special care
- Understand basic pharmacology, principal interactions and adverse systemic and oral side effects of commonly used medications and therapeutic regimen for SND
- Analyse the implications for dental treatment and oral health care which arise from the effects of pharmacology, their impact on patient management and appropriate application to the clinical environment
- Formulate appropriate dental care based on risk assessment, history taking, examination, diagnosis, treatment planning and delivery of clinical dentistry for patients with a range of disabilities and complex medical conditions
- Demonstrate clinical maturity and expertise in assessment, interpretation, diagnosis, treatment planning with sound clinical reasoning and evidence-based clinical care in the management of the complex and unique needs of people with disability
- Recognise both verbal and non-verbal signs relating to pain, anxiety and phobia in people with disability
- Integrate their knowledge of communication, informed consent, and supported decision making into the clinical management and treatment planning of people with disability
- Identify conditions and manifestations of systemic diseases and therapeutics that may put patients at risk in a dental environment

1. Demonstrate ability to recognize medical emergencies

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 1 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

2. Demonstrate understanding around the fundamental of SND including developmental disabilities, gerodontology and related medical issues with aging, disease and health, neurodegenerative disorders, endocrine diseases, transplant medicine and dentistry as well as palliative dental care

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 2 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

3. Translate theoretical knowledge to clinical application for providing appropriate care to a wide range of people with disability in varying environments to cater to their unique circumstances

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 3 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

4. Exhibit knowledge of facilitation of treatment for people with disability and anxiety using behavioural, psychological and other non-pharmacological approaches

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 4 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

5. Demonstrate knowledge, basic life support skills and management of medical emergencies according to local protocols and guidelines

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 5 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

6. Perform safe transfer techniques and appropriate positioning aids where necessary

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 6 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

7. Describe the factors (medical, social and environmental) that impact on risk assessment and treatment planning for individuals requiring special care

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 7 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

8. Understand basic pharmacology, principal interactions and adverse systemic and oral side effects of commonly used medications and therapeutic regimen for SND

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 8 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

9. Analyse the implications for dental treatment and oral health care which arise from the effects of pharmacology, their impact on patient management and appropriate application to the clinical environment

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 9 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

10. Formulate appropriate dental care based on risk assessment, history taking, examination, diagnosis, treatment planning and delivery of clinical dentistry for patients with a range of disabilities and complex medical conditions

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 10 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

11. Demonstrate clinical maturity and expertise in assessment, interpretation, diagnosis, treatment planning with sound clinical reasoning and evidence-based clinical care in the management of the complex and unique needs of people with disability

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 11 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

12. Recognise both verbal and non-verbal signs relating to pain, anxiety and phobia in people with disability

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 12 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

13. Integrate their knowledge of communication, informed consent, and supported decision making into the clinical management and treatment planning of people with disability

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 13 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

14. Identify conditions and manifestations of systemic diseases and therapeutics that may put patients at risk in a dental environment

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 14 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

Other learning outcomes you believe should be incorporated into the SND curriculum:

Which teaching materials or resources can the educators use? Select all that apply.

- References to different organisations and practitioners of varying levels of experience and specialty training
 Specific textbooks
 DVD
 Online training
 Interactive session with parents of people with disability
 Peer-reviewed journals
 Websites and audio-visual materials

Please share examples of learning activities: (you can be creative and specific here!)

How can the students' educational outcomes and competencies be assessed? Select all that apply.

- Written exams
- Report
- Essay
- Oral presentation
- Clinical assessments
- Simulations
- OSCEs
- Oral examination
- Standardized patient scenarios
- Problem based learning performance
- Evaluation of the students' management of patients
- Portfolio

Please share two examples of assessment tasks:
(you can be creative and specific here!)

Overview of learning domains:

Domain 8: Clinical Pathways and Team Approach to Care

Learning outcomes:

On successful completion of this domain, the students should be able to:

- Recognise the role of the carer
- Understand the importance of the intra-interprofessional liaison in addressing patients' unique needs
- Recognise the value of teamwork in the management for patients requiring special care
- Demonstrate ability to build interprofessional networking locally, advising carers and other practitioners who are providing oral health care to people with disability to provide best practice care for them
- Work collaboratively and professionally with other dental specialties to advocate for relevant treatment options required by people with disability outside of the individual scope of practice (knowing how, when and where to refer)
- Practice responsibility for referring or arranging care for patients with more complex needs

-
1. Recognise the role of the carer
- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 1 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

-
2. Understand the importance of the intra-interprofessional liaison in addressing patients' unique needs
- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 2 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

-
3. Recognise the value of teamwork in the management for patients requiring special care
- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 3 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

-
4. Demonstrate ability to build interprofessional networking locally, advising carers and other practitioners who are providing oral health care to people with disability to provide best practice care for them
- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 4 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

5. Work collaboratively and professionally with other dental specialties to advocate for relevant treatment options required by people with disability outside of the individual scope of practice (knowing how, when and where to refer)

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 5 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

6. Practice responsibility for referring or arranging care for patients with more complex needs

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 6 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

Other learning outcomes you believe should be incorporated into the SND curriculum:

Which teaching materials or resources can the educators use? Select all that apply.

- References to different organisations and practitioners of varying levels of experience and specialty training
 Specific textbooks
 DVD
 Online training
 Interactive session with parents of people with disability
 Peer-reviewed journals
 Websites and audio-visual materials

Please share examples of learning activities: (you can be creative and specific here!)

How can the students' educational outcomes and competencies be assessed? Select all that apply.

- Written exams
- Report
- Essay
- Oral presentation
- Clinical assessments
- Simulations
- OSCEs
- Oral examination
- Standardized patient scenarios
- Problem based learning performance
- Evaluation of the students' management of patients
- Portfolio

Please share two examples of assessment tasks:
(you can be creative and specific here!)

Overview of learning domains:

Domain 9: Dental Public Health and Oral Health Promotion

Learning outcomes:

On successful completion of this domain, the students should be able to:

- Describe the principles of oral health promotion
- Understand the connection between health promotion and health policy development
- Demonstrate skills in oral health promotion in order to develop, design and implement evidence-based health promotion strategies and programs tailored to the needs of people with disability
- Demonstrate the capability to formulate individualised oral health education and prevention strategy for people with disability and their carers
- Understand the role of professional advocacy in promoting public policies, services and systems that respect diversity, equality and human rights
- Apply social and environmental facilitators to oral health promotion within service structure
- Apply the theories and principles of health promotion to improve oral and general health

-
1. Describe the principles of oral health promotion
- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 1 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

-
2. Understand the connection between health promotion and health policy development
- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 2 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

-
3. Demonstrate skills in oral health promotion in order to develop, design and implement evidence-based health promotion strategies and programs tailored to the needs of people with disability
- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 3 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

4. Demonstrate the capability to formulate individualised oral health education and prevention strategy for people with disability and their carers

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 4 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

5. Understand the role of professional advocacy in promoting public policies, services and systems that respect diversity, equality and human rights

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 5 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

6. Apply social and environmental facilitators to oral health promotion within service structure

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 6 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

7. Apply the theories and principles of health promotion to improve oral and general health

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 7 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

Other learning outcomes you believe should be incorporated into the SND curriculum:

Which teaching materials or resources can the educators use? Select all that apply.

- References to different organisations and practitioners of varying levels of experience and specialty training
- Specific textbooks
- DVD
- Online training
- Interactive session with parents of people with disability
- Peer-reviewed journals
- Websites and audio-visual materials

Please share examples of learning activities:
(you can be creative and specific here!)

How can the students' educational outcomes and competencies be assessed? Select all that apply.

- Written exams
- Report
- Essay
- Oral presentation
- Clinical assessments
- Simulations
- OSCEs
- Oral examination
- Standardized patient scenarios
- Problem based learning performance
- Evaluation of the students' management of patients
- Portfolio

Please share examples of assessment tasks:
(you can be creative and specific here!)

Overview of learning domains:

Domain 10: Clinical Research and Governance

Learning outcomes:

On successful completion of this domain, the students should be able to:

- Critically review relevant literature in order to practice evidence-based dentistry
- Demonstrate an understanding of scientific methodology and the ability to critically analyse published research and where appropriate, transfer this to the clinical situation
- Apply contemporary research findings and scientific method in evidence-based dental practice
- Understand the importance of continuing professional development, lifelong learning, self-appraisal, peer review and competency

1. Critically review relevant literature in order to practice evidence-based dentistry

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 1 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

2. Demonstrate an understanding of scientific methodology and the ability to critically analyse published research and where appropriate, transfer this to the clinical situation

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 2 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

3. Apply contemporary research findings and scientific method in evidence-based dental practice

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 3 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum

4. Understand the importance of continuing professional development, lifelong learning, self-appraisal, peer review and competency

- Not at all important
 Not so important
 Somewhat important
 Very important
 Extremely important

Should Learning Outcome 4 be undergraduate level or postgraduate level?

- Undergraduate
 Postgraduate
 Should be excluded from the curriculum
-

Other learning outcomes you believe should be incorporated into the SND curriculum:

Which teaching materials or resources can the educators use? Select all that apply.

- References to different organisations and practitioners of varying levels of experience and specialty training
 Specific textbooks
 DVD
 Online training
 Interactive session with parents of people with disability
 Peer-reviewed journals
 Websites and audio-visual materials
-

Please share examples of learning activities:
(you can be creative and specific here!)

How can the students' educational outcomes and competencies be assessed? Select all that apply.

- Written exams
 Report
 Essay
 Oral presentation
 Clinical assessments
 Simulations
 OSCEs
 Oral examination
 Standardized patient scenarios
 Problem based learning performance
 Evaluation of the students' management of patients
 Portfolio
-

Please share examples of assessment tasks:
(you can be creative and specific here!)

Any additional feedbacks or comments?

End of Round 1 - Panel Recommendations and Researcher Responses

The table below presents a summary of recommendations from all panellists in Round 1 regarding additions to the learning outcome list. These suggestions were reviewed by three researchers.

Keywords of input from panellists	Response	Decision
Domain 1 comments		
Exposure in dental facilities Use of radiology and diagnostic aids	Part of clinical practice.	No change.
Social, environmental, and cultural factors	Elaboration or repetition of learning outcomes in Domain 2.	No change.
Definition of consent Levels of consent Legal process of gaining consent Expert witness	Elaboration or repetition of learning outcomes in Domain 3.	No change.
Cultural competence and safety for patients from diverse backgrounds	Elaboration or repetition of learning outcomes in Domain 4.	No change.
Appropriate Communicate skills Effective communication Inclusive language Person-first language Discriminatory language and actions	Elaboration or repetition of learning outcomes in Domain 5.	No change.
Understanding range of disability and impact on oral health	Elaboration or repetition of learning outcomes in Domain 6.	No change.
Non-pharmacological behaviour support Behavioral challenges related to SND Treatment planning Pain management strategies Oral health interventions	Elaboration or repetition of learning outcomes in Domain 7.	No change.

Knowing when to refer or seek further advice	Elaboration or repetition of learning outcomes in Domain 8.	No change.
Evaluate and integrate interdisciplinary approaches	To be included in Domain 8.	Inserted in Domain 8 postgraduate learning outcome: Adopt an interprofessional team approach to provide comprehensive, patient-centred care to optimise oral health outcomes.
Roles and responsibilities of OHP Professionalism and Advocacy	Elaboration or repetition of learning outcomes in Domain 9.	No change.
Gain an understanding the patient's and carers/parents' perspectives and the lived experience	To include this as learning outcome in Domain 8.	Inserted in Domain 8 postgraduate learning outcome: Develop an understanding of the perspectives and lived experiences of patients and their carers or parents.
International Classification of Functioning	To incorporate this in one of the existing learning outcome from Domain 1.	Inserted in Domain 1 undergraduate learning outcome: Describe the International Classification of Functioning, Disability and Health (ICF) framework and its application. Domain 1 postgraduate learning outcome: Apply the International Classification of Functioning, Disability

		and Health (ICF) framework in clinical decision-making.
Domain 2 comments		
Motivational interviewing	Part of learning activities	No change.
Program design to facilitate a public health outreach program Access to care Barriers - diagnostic overshadowing and lack of up to date research	Elaboration or repetition of learning outcomes in Domain 2.	No change.
Identify external sources to collaborate	To include this as learning outcome in Domain 2.	Inserted in Domain 2 postgraduate learning outcome: Identify external sources to collaborate with in order to improve access to oral health care.
Behavioural issues management	Elaboration or repetition of learning outcomes in Domain 7.	No change.
Referral and scopes	Elaboration or repetition of learning outcomes in Domain 8.	No change.
Perspective of other service providers, managers of services and the voluntary sector	To include this as learning outcome in Domain 8.	Inserted in Domain 8 postgraduate learning outcome: Develop understanding of the perspective of other service providers, managers of services and the voluntary sector.
Advocacy and bigger voice	Elaboration or repetition of learning outcomes in Domain 9.	No change.

Critically analyse and evaluate the effectiveness of current oral health policies and programs	To include this as learning outcome in Domain 9.	Inserted in Domain 9 postgraduate learning outcome: Critically analyse and evaluate the effectiveness of current oral health policies and promotion campaigns for their inclusivity, effectiveness, and impact on different populations.
Comments on learning outcomes: Rewording - Integrate the knowledge of barriers Detailed learning outcomes	Thank you for the comment.	Modification made for learning outcome in Domain 2: Apply an understanding of barriers and facilitators to oral health in patient assessment, prevention, treatment planning, and the provision of oral health care. Minor modifications made for selected learning outcomes.
Domain 3 comments		
Motivational interviewing	Part of learning activities	No change.
Ethical considerations, equity and accessibility	Elaboration or repetition of learning outcomes in Domain 2 and 3.	No change.
Ethical principles Ethical dilemma Ethical issues Legal obligations Malpractice Ethical concepts of palliative care	Elaboration or repetition of learning outcomes in Domain 3.	No change.

Consent for those with diminished capacity Legal scope of practice		
Scope of a public fiduciary, a medical power of attorney, and a legal guardian	To include this as learning outcome in Domain 3.	Inserted in Domain 3 postgraduate learning outcome: Describe the scope of a public fiduciary, a medical power of attorney, and a legal guardian and their roles in providing consent on behalf of another individual.
Behavioural issues management	Elaboration or repetition of learning outcomes in Domain 7.	No change.
Interprofessional collaboration International comparators	Elaboration or repetition of learning outcomes in Domain 8.	No change.
Comments on learning outcomes: Using the term 'underserved' rather than 'marginalised' Some learning outcomes were unclear	Thank you for the comment.	The term 'Underserved' is now used to replace 'Marginalised'. Minor modification made for learning outcomes in Domain 3 to improve wording.
Domain 4 comments		
Cultural differences from various nations Migration of populations	Elaboration or repetition of learning outcomes in Domain 4.	No change.
Culturally tailored health promotion activities and community engagement initiatives among these communities	To include this as learning outcome in Domain 4.	Inserted in Domain 4 postgraduate learning outcome: Implement culturally tailored health promotion activities and

		community engagement initiatives that incorporate the traditional practices of Aboriginal and Torres Strait Islanders, to improve oral health literacy and outcomes.
Comments on learning outcomes: Some learning outcomes needs rewording	Thank you for the comment.	Minor modification made for learning outcomes in Domain 4 to improve wording.
Domain 5 comments		
Understanding of biology and pathophysiology	Elaboration or repetition of learning outcomes in Domain 1 and 7.	No change.
Skill of listening CBT Effective communication Feedback from patients Interpreter	Elaboration or repetition of learning outcomes in Domain 5.	No change.
Technologies for communications	To include this as learning outcome in Domain 5.	Inserted in Domain 5 undergraduate learning outcome: Identify and describe assistive communication technologies, including augmentative and alternative communication (AAC) methods.
Comments on learning outcomes: Some learning outcomes needs rewording	Thank you for the comment.	Minor modification made for learning outcomes in Domain 5 to improve wording.
Domain 6 comments		

Life course approach	To include this as learning outcome in Domain 1.	Inserted in Domain 1 undergraduate learning outcome: Demonstrate an understanding of life course approach to oral health and disability.
Financial impact	Elaboration or repetition of learning outcomes in Domain 2.	No change.
Implications of polypharmacy	To incorporate the term 'polypharmacy' as part of a learning outcome in Domain 7.	Inserted 'polypharmacy' in Domain 7 undergraduate learning outcome: Describe basic pharmacology, principal interactions, including the implications of polypharmacy on oral health and overall health.
Pharmacokinetics and pathophysiology	Elaboration or repetition of learning outcomes in Domain 6.	No change.
Risk assessment Patient-centred care practices Treatment plan Medical consultation as part of risk assessment	Elaboration or repetition of learning outcomes in Domain 7.	No change.
Multidisciplinary care When to refer Capacity building of non-dental health professionals	Elaboration or repetition of learning outcomes in Domain 8.	No change.
Comments on learning outcomes: Some not inclusive language Some has too many concepts and not specific to SND Demonstrate 'the ability to form a plan of action' in place of demonstrate 'confidence'	Thank you for the comment.	Minor modification made for learning outcomes in Domain 6 to improve wording.
Domain 7 comments		

CPR	Not included – mandatory training covered in orientation.	No change.
Basic medicine understanding Pharmacology Treatment protocols	Elaboration or repetition of learning outcomes in Domain 7.	No change.
Clinical components	To include a clinical learning outcome as part of Domain 7 which states some examples of preventive techniques.	Inserted in Domain 7 undergraduate learning outcome: Recognise the importance of prevention-led approaches in SND, including the use of Atraumatic Restorative Treatment (ART), Silver Diamine Fluoride (SDF), and other minimally invasive technique.
BDA case mix tool	To include this as an additional learning outcome in Domain 8.	Inserted in Domain 8 undergraduate learning outcome: Demonstrate an understanding of the BDA Case Mix Tool and its application in assessing patient complexity and determine the need for specialist referral. Inserted in Domain 8 postgraduate learning outcome: Utilise the BDA Case Mix Tool to assess patient complexity and facilitate interdisciplinary

		referrals for optimal patient outcomes.
Know when to refer Cooperation with other health professionals	Elaboration or repetition of learning outcomes in Domain 8.	No change.
Comments on learning outcomes: Learning outcomes on verbal and non-verbal signs was asked before. Complicated learning outcomes which requires rewording	Thank you for the comment. Repeated learning outcomes removed.	Minor modification made for learning outcomes in Domain 7 to improve wording.
Domain 8 comments		
Effective communication Respect autonomy	Elaboration or repetition of learning outcomes in Domain 5.	No change.
Referral letter Multiple health care professionals and caregiver	Elaboration or repetition of learning outcomes in Domain 8.	No change.
Oral health training to different disciplines	To incorporate the term 'training' as part of an existing learning outcome in Domain 8.	Modification made for undergraduate learning outcome: Demonstrate the ability to build interprofessional networks locally, providing guidance and group training to carers and other practitioners to support the delivery of appropriate oral healthcare.
Advocacy	Elaboration or repetition of learning outcomes in Domain 9.	No change.
Comments on learning outcomes: Learning outcome on best care practice seems judgemental Some learning outcomes need to be more specific	Thank you for your comment.	Minor modification made for learning outcomes in Domain 8 to improve wording.

Domain 9 comments		
Preventive strategies (treatment planning)	Elaboration or repetition of learning outcomes in Domain 7.	No change.
Develop oral health promotion materials Individualised instruction Oral health policy Health law	Elaboration or repetition of learning outcomes in Domain 9.	No change.
Health promoting strategies	To incorporate the term 'health promoting strategies' as part of an existing learning outcome in Domain 9.	Modification made for postgraduate learning outcome: Develop, co-design and implement evidence-based oral health promotion strategies and programs in diverse community settings.
Analyse and evaluate oral health promotion campaigns	To include this as an additional learning outcome in Domain 9, postgraduate.	Inserted in Domain 9 postgraduate learning outcome: Critically analyse and evaluate the effectiveness of current oral health policies and promotion campaigns for their inclusivity, effectiveness, and impact on different populations.
Domain 10 comments		
Critical summary Analysing scoping review Ethical implications and responsibilities Ensuring adherence to ethical guidelines and regulations Research integrity and participant protection Continuing learning	Research based – Elaboration or repetition of learning outcomes in Domain 10.	No change.

Understanding of biostatistics, research methodology	To incorporate this into one of the existing learning outcome in Domain 10, undergraduate.	Inserted in Domain 10 undergraduate learning outcome: Demonstrate an understanding of scientific methodology and the ability to critically analyse published research and where appropriate, transfer this to the clinical situation.
Clinical and public health research	To include this as an additional learning outcome in Domain 10, undergraduate.	Inserted in Domain 10 postgraduate learning outcome: Develop skills in undertaking and evaluating clinical and public health research.
Ability to critically evaluate information	To include this as an additional learning outcome in Domain 10, postgraduate.	Inserted in Domain 10 postgraduate learning outcome: Demonstrate an ability to critically evaluate all forms of information.

End of summary for Round 1 learning outcomes.

Undergraduate and Postgraduate Special Needs Dentistry Curricula for Oral Health Therapists: An Online Delphi Study

Basic Information

Name:

Email address:

Undergraduate and Postgraduate Special Needs Dentistry Curricula for Oral Health Therapists: An Online Delphi Study

Round Two

In the following sections, we will explore 10 domains, each with examples of learning outcomes derived from the literature, along with the additional learning outcomes you suggested in the previous round, which have been incorporated into this version of the curriculum for further review.

Based on your feedback, we have refined the categorisation and applied Bloom's Taxonomy to enhance the learning outcomes for undergraduate and postgraduate levels. We have also simplified and improved the wording for clarity. Additionally, we have included an option to indicate whether a learning outcome should be included or excluded, along with a comment box for any further input on each outcome.

Task for this round:

For each domain, please:

- Rate the level of importance for including each learning outcome in the advanced training of Oral Health Therapists (OHT) in Special Needs Dentistry (SND) using a 5-point Likert scale.
 - Specify whether the learning outcome should be targeted at the undergraduate or postgraduate level or be excluded entirely.
 - Provide comments in the textbox.
-

Just as Round 1, the following is in the context of Special Needs Dentistry (SND) & Gerodontology:

We have included the following definition for your reference:

- Special Needs Dentistry (SND): The Royal Australasian College of Dental Surgeons (RACDS) defines SND as "the branch of dentistry that is concerned with the oral health care of people with an intellectual disability or medical, physical, and/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 (1). In line with the Australian Government's inclusive language guidelines, this study adopts more inclusive terminology by replacing the term "special needs" with "disability" (2).
 - Interprofessional: According to the World Health Organization (WHO), interprofessional education (IPE) occurs when students from two or more professions learn about, from, and with each other to enable effective collaboration and improve health outcomes (3). The Australian Dental Council (ADC) defines interprofessional collaborative practice as multiple health workers from different backgrounds working together with patients, families, and communities to deliver high-quality care.
 - Intersectoral: A broader approach that goes beyond healthcare, involving collaboration between different sectors (4). Reference:
 1. Royal Australasian College of Dental Surgeons. Royal Australasian College of Dental Surgeons
 2. People with Disability Australia. PWDA Language Guide: A guide to language about disability. 2021.
 3. World Health Organization. Framework for Action on Interprofessional Education & Collaborative Practice 2010.
 4. World Health Organization. Intersectoral Governance for Health in All Policies - Structures, Actions and Experiences. 2012.
-

A PDF document of the learning domains and outcomes is available for download for easy reference if needed.

[Attachment: "Delphi Learning Outcome Lists (Round 2).pdf"]

Domain 1: The Scope of Special Needs Dentistry (SND)

Domain 1 Undergraduate - Rate the importance

	Not at all important	Not so important	Somewhat important	Very important	Extremely important
1. Explain the need for and apply the use of appropriate terminology.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Describe the International Classification of Functioning, Disability and Health (ICF) framework and its application.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Recognise the need and growth of the emerging specialty of SND.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Demonstrate an understanding of life course approach to oral health and disability.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Describe the key concepts, epidemiology, and classification related to human function, impairments, disability, and health.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Domain 1 Undergraduate - Determine the appropriate level

	Keep it in undergraduate	Move it to postgraduate	Remove it as a learning outcome
1. Explain the need for and apply the use of appropriate terminology.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Describe the International Classification of Functioning, Disability and Health (ICF) framework and its application.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Recognise the need and growth of the emerging specialty of SND.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Demonstrate an understanding of life course approach to oral health and disability.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. Describe the key concepts, epidemiology, and classification related to human function, impairments, disability, and health.

Domain 1 Postgraduate - Rate the importance

	Not at all important	Not so important	Somewhat important	Very important	Extremely important
1. Integrate appropriate terminology in clinical discussions and patient care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Apply the International Classification of Functioning, Disability and Health (ICF) framework in clinical decision-making.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Interpret and apply key concepts, epidemiology, and classification systems in patient care planning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Demonstrate an advanced understanding of the international context and sensitivities of SND.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Domain 1 Postgraduate - Determine the appropriate level

	Keep it in postgraduate	Move it to undergraduate	Remove it as a learning outcome
1. Integrate appropriate terminology in clinical discussions and patient care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Apply the International Classification of Functioning, Disability and Health (ICF) framework in clinical decision-making.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Interpret and apply key concepts, epidemiology, and classification systems in patient care planning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. Demonstrate an advanced understanding of the international context and sensitivities of SND.

Reasons, if any, for excluding learning outcomes:

Other comments:

Domain 2: Access and Barriers to Oral Health for People with Disability and Other Underserved Groups

Domain 2 Undergraduate - Rate the importance

	Not at all important	Not so important	Somewhat important	Very important	Extremely important
1. Identify social, environmental and attitudinal barriers and facilitators to oral healthcare services.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Apply knowledge of the social determinants of health to identify health inequalities and their implications on oral health.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Explain approaches to government funding and advocacy efforts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Apply an understanding of barriers and facilitators to oral health in patient assessment, prevention, treatment planning, and the provision of oral health care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Explore different strategies to overcome barriers and ensure optimal oral health outcomes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Domain 2 Undergraduate - Determine the appropriate level

	Keep it in undergraduate	Move it to postgraduate	Remove it as a learning outcome
1. Identify social, environmental and attitudinal barriers and facilitators to oral healthcare services.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Apply knowledge of the social determinants of health to identify health inequalities and their implications on oral health.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Explain approaches to government funding and advocacy efforts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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| 4. Apply an understanding of barriers and facilitators to oral health in patient assessment, prevention, treatment planning, and the provision of oral health care. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 5. Explore different strategies to overcome barriers and ensure optimal oral health outcomes. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

 Domain 2 Postgraduate - Rate the importance

	Not at all important	Not so important	Somewhat important	Very important	Extremely important
1. Critically assess social, environmental, and attitudinal barriers and facilitators to oral healthcare services, incorporating real-world case studies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Analyse the impact of social determinants of health on oral health inequalities and develop strategies to address them in clinical practice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Implement and justify tailored strategies to address barriers and improve oral health outcomes, considering ethical and practical implications.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Identify external sources to collaborate with in order to improve access to oral health care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

 Domain 2 Postgraduate - Determine the appropriate level

	Keep it in postgraduate	Move it to undergraduate	Remove it as a learning outcome
1. Critically assess social, environmental, and attitudinal barriers and facilitators to oral healthcare services, incorporating real-world case studies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. Analyse the impact of social determinants of health on oral health inequalities and develop strategies to address them in clinical practice.

3. Implement and justify tailored strategies to address barriers and improve oral health outcomes, considering ethical and practical implications.

4. Identify external sources to collaborate with in order to improve access to oral health care.

Reasons, if any, for excluding learning outcomes:

Other comments:

Domain 3: Professional, Legal And Ethical Context Of Special Care Dentistry (including consent matters)

Domain 3 Undergraduate - Rate the importance

	Not at all important	Not so important	Somewhat important	Very important	Extremely important
1. Explain the social, legal, and ethical considerations related to supported decision-making.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Demonstrate proficiency in evaluating an individual's capacity to provide consent.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Recognise the role of the family members, carers and the relevant government agencies in assisting decision-making processes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Facilitate the process of obtaining informed consent for individuals who are unable to consent on their own behalf.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Outline the appropriate consent process, ensuring it adheres to legal and ethical standards.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Domain 3 Undergraduate - Determine the appropriate level

	Keep it in undergraduate	Move it to postgraduate	Remove it as a learning outcome
1. Explain the social, legal, and ethical considerations related to supported decision-making.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Demonstrate proficiency in evaluating an individual's capacity to provide consent.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Recognise the role of the family members, carers and the relevant government agencies in assisting decision-making processes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. Facilitate the process of obtaining informed consent for individuals who are unable to consent on their own behalf.

5. Outline the appropriate consent process, ensuring it adheres to legal and ethical standards.

Domain 3 Postgraduate - Rate the importance

	Not at all important	Not so important	Somewhat important	Very important	Extremely important
1. Evaluate the role of family members, carers, and relevant government agencies in assisted decision-making, integrating ethical frameworks.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Describe the scope of a public fiduciary, a medical power of attorney, and a legal guardian and their roles in providing consent on behalf of another individual.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Implement strategies to obtain informed consent for patients who are unable to consent on their own behalf, ensuring compliance with legal and ethical standards.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Apply relevant legislation and ethical principles to determine appropriate frameworks for obtaining informed consent.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Domain 3 Postgraduate - Determine the appropriate level

	Keep it in postgraduate	Move it to undergraduate	Remove it as a learning outcome
1. Evaluate the role of family members, carers, and relevant government agencies in assisted decision-making, integrating ethical frameworks.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. Describe the scope of a public fiduciary, a medical power of attorney, and a legal guardian and their roles in providing consent on behalf of another individual.

3. Implement strategies to obtain informed consent for patients who are unable to consent on their own behalf, ensuring compliance with legal and ethical standards.

4. Apply relevant legislation and ethical principles to determine appropriate frameworks for obtaining informed consent.

Reasons, if any, for excluding learning outcomes:

Other comments:

Domain 4: Cultural Awareness and Sensitivities of Special Needs Dentistry Including Aboriginal and Torres Straits Islander cultural Competency

Domain 4 Undergraduate - Rate the importance

	Not at all important	Not so important	Somewhat important	Very important	Extremely important
1. Demonstrate awareness of their own culture and how they relate to other communities, families and individuals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Define principles of cultural safety, which involve creating a respectful and inclusive environment that acknowledges and respects cultural diversity.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Demonstrate an understanding of, and respect for, Australian Aboriginal and Torres Strait Islander values, culture and knowledge.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Demonstrate a positive attitude in relation to diversity in health beliefs, lifestyles, ethnic and cultural background.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Engage in a respectful and reflective manner, employing culturally relevant, safe, and sensitive communication strategies to facilitate relationships.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Apply evidence-based and strengths-based best practices in Aboriginal and Torres Strait Islander healthcare.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Domain 4 Undergraduate - Determine the appropriate level

	Keep it in undergraduate	Move it to postgraduate	Remove it as a learning outcome
1. Demonstrate awareness of their own culture and how they relate to other communities, families and individuals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. Define principles of cultural safety, which involve creating a respectful and inclusive environment that acknowledges and respects cultural diversity.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Demonstrate an understanding of, and respect for, Australian Aboriginal and Torres Strait Islander values, culture and knowledge.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Demonstrate a positive attitude in relation to diversity in health beliefs, lifestyles, ethnic and cultural background.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Engage in a respectful and reflective manner, employing culturally relevant, safe, and sensitive communication strategies to facilitate relationships.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Apply evidence-based and strengths-based best practices in Aboriginal and Torres Strait Islander healthcare.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Domain 4 Postgraduate - Rate the importance

	Not at all important	Not so important	Somewhat important	Very important	Extremely important
1. Critically reflect on their own cultural identity and applying this awareness to interactions with diverse communities, families, and individuals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Advocate for inclusive oral healthcare by fostering culturally responsive attitudes and promoting equity in healthcare delivery.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Demonstrate leadership in fostering culturally safe clinical environments by implementing best practices in Aboriginal and Torres Strait Islander healthcare.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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| 4. Apply key concepts in Indigenous perspectives of health and demonstrate application of these in promoting oral health and improving inequalities in health outcomes. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 5. Implement culturally tailored health promotion activities and community engagement initiatives that incorporate the traditional practices of Aboriginal and Torres Strait Islanders, to improve oral health literacy and outcomes. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Domain 4 Postgraduate - Determine the appropriate level

	Keep it in postgraduate	Move it to undergraduate	Remove it as a learning outcome
1. Critically reflect on their own cultural identity and applying this awareness to interactions with diverse communities, families, and individuals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Advocate for inclusive oral healthcare by fostering culturally responsive attitudes and promoting equity in healthcare delivery.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Demonstrate leadership in fostering culturally safe clinical environments by implementing best practices in Aboriginal and Torres Strait Islander healthcare.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Apply key concepts in Indigenous perspectives of health and demonstrate application of these in promoting oral health and improving inequalities in health outcomes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. Implement culturally tailored health promotion activities and community engagement initiatives that incorporate the traditional practices of Aboriginal and Torres Strait Islanders, to improve oral health literacy and outcomes.



Reasons, if any, for excluding learning outcomes:

Other comments:

Domain 5: Communication Skills in Special Needs Dentistry

Domain 5 Undergraduate - Rate the importance

	Not at all important	Not so important	Somewhat important	Very important	Extremely important
1. Demonstrate culturally sensitive and inclusive language with patients, colleagues and carers, to obtain an adequate medical and social history.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Develop adequate communication skills and use appropriate methods of communication to engage in meaningful interaction based on patients' specific needs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Identify and describe assistive communication technologies, including augmentative and alternative communication (AAC) methods.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Apply understanding of communication principles, including supportive decision-making strategies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Domain 5 Undergraduate - Determine the appropriate level

	Keep it in undergraduate	Move it to postgraduate	Remove it as a learning outcome
1. Demonstrate culturally sensitive and inclusive language with patients, colleagues and carers, to obtain an adequate medical and social history.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Develop adequate communication skills and use appropriate methods of communication to engage in meaningful interaction based on patients' specific needs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. Identify and describe assistive communication technologies, including augmentative and alternative communication (AAC) methods.

4. Apply understanding of communication principles, including supportive decision-making strategies.

Domain 5 Postgraduate - Rate the importance

	Not at all important	Not so important	Somewhat important	Very important	Extremely important
1. Evaluate culturally sensitive and inclusive communication strategies to enhance patient engagement and interdisciplinary collaboration.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Integrate and assess the effectiveness of augmented communication methods and shared decision-making approaches in clinical practice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Critically reflect on patient narratives and lived experiences to shape communication strategies that promote patient autonomy and person-centred care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Domain 5 Postgraduate - Determine the appropriate level

	Keep it in postgraduate	Move it to undergraduate	Remove it as a learning outcome
1. Evaluate culturally sensitive and inclusive communication strategies to enhance patient engagement and interdisciplinary collaboration.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Integrate and assess the effectiveness of augmented communication methods and shared decision-making approaches in clinical practice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. Critically reflect on patient narratives and lived experiences to shape communication strategies that promote patient autonomy and person-centred care.



Reasons, if any, for excluding learning outcomes:

Other comments:

Domain 6: Impact of Impairments, Disabilities and Systemic Conditions on Oral Health and Oral Function

Domain 6 Undergraduate - Rate the importance

	Not at all important	Not so important	Somewhat important	Very important	Extremely important
1. Describe key concepts of health, disabilities and systemic conditions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Explain the relationship between systemic and oral health, oral health related quality of life and their implications in the dental management.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Recognise the complexities of managing patients with a range of social and medical issues impacted by their disability, and recognise the connection between general health and oral health.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Differentiate and compare between available behavioural support techniques and other supportive measures, and justify their application.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Differentiate the characteristic oral manifestations of specific patient groups.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Identify the impact of risk factors, systemic disease and medications on oral health and treatment planning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Domain 6 Undergraduate - Determine the appropriate level

	Keep it in undergraduate	Move it to postgraduate	Remove it as a learning outcome
1. Describe key concepts of health, disabilities and systemic conditions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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| 2. Explain the relationship between systemic and oral health, oral health related quality of life and their implications in the dental management. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 3. Recognise the complexities of managing patients with a range of social and medical issues impacted by their disability, and recognise the connection between general health and oral health. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 4. Differentiate and compare between available behavioural support techniques and other supportive measures, and justify their application. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 5. Differentiate the characteristic oral manifestations of specific patient groups. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 6. Identify the impact of risk factors, systemic disease and medications on oral health and treatment planning. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

 Domain 6 Postgraduate - Rate the importance

- | | Not at all important | Not so important | Somewhat important | Very important | Extremely important |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 1. Analyse key concepts of health, disabilities, and systemic conditions, applying them to advanced clinical contexts. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 2. Evaluate the relationship between systemic and oral health, demonstrating its impact on oral health-related quality of life and clinical decision-making. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 3. Apply knowledge of complex medical, social, and psychological factors to optimise patient-centred oral health care. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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| 4. Implement evidence-based behavioural support strategies to enhance patient cooperation and improve oral health outcomes in clinical settings. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 5. Manage the oral manifestations of specific patient groups, incorporating clinical reasoning and interprofessional collaboration. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 6. Develop tailored, risk-based oral health management plans, considering long-term outcomes in various clinical, aged care and home settings. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Domain 6 Postgraduate - Determine the appropriate level

- | | Keep it in postgraduate | Move it to undergraduate | Remove it as a learning outcome |
|--|-------------------------|--------------------------|---------------------------------|
| 1. Analyse key concepts of health, disabilities, and systemic conditions, applying them to advanced clinical contexts. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 2. Evaluate the relationship between systemic and oral health, demonstrating its impact on oral health-related quality of life and clinical decision-making. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 3. Apply knowledge of complex medical, social, and psychological factors to optimise patient-centred oral health care. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 4. Implement evidence-based behavioural support strategies to enhance patient cooperation and improve oral health outcomes in clinical settings. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 5. Manage the oral manifestations of specific patient groups, incorporating clinical reasoning and interprofessional collaboration. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

6. Develop tailored, risk-based oral health management plans, considering long-term outcomes in various clinical, aged care and home settings.



Reasons, if any, for excluding learning outcomes:

Other comments:

Domain 7: Clinical Management of Patients Requiring Special Needs Dentistry

Domain 7 Undergraduate - Rate the importance

	Not at all important	Not so important	Somewhat important	Very important	Extremely important
1. Demonstrate basic life support skills and management of medical emergencies including gerodontics, according to local protocols and guidelines.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Describe the factors (medical, social and environmental) that impact on risk assessment and treatment planning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Describe basic pharmacology, principal interactions, including the implications of polypharmacy on oral health and overall health.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Perform safe transfer techniques and appropriate positioning aids where necessary.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Recognise and manage both verbal and non-verbal signs relating to pain, anxiety and phobia.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Provide preventive-focused dental treatment using behavioural, psychological and other non-pharmacological approaches in clinical practice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Recognise the importance of prevention-led approaches in SND, including the use of Atraumatic Restorative Treatment (ART), Silver Diamine Fluoride (SDF), and other minimally invasive technique.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Recognise the signs of abuse and understand the legal and ethical responsibilities of mandatory reporting in the context of patient care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Domain 7 Undergraduate - Determine the appropriate level

	Keep it in undergraduate	Move it to postgraduate	Remove it as a learning outcome
1. Demonstrate basic life support skills and management of medical emergencies including gerodontology, according to local protocols and guidelines.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
2. Describe the factors (medical, social and environmental) that impact on risk assessment and treatment planning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Describe basic pharmacology, principal interactions, including the implications of polypharmacy on oral health and overall health.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Perform safe transfer techniques and appropriate positioning aids where necessary.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Recognise and manage both verbal and non-verbal signs relating to pain, anxiety and phobia.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Provide preventive-focused dental treatment using behavioural, psychological and other non-pharmacological approaches in clinical practice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Recognise the importance of prevention-led approaches in SND, including the use of Atraumatic Restorative Treatment (ART), Silver Diamine Fluoride (SDF), and other minimally invasive technique.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Recognise the signs of abuse and understand the legal and ethical responsibilities of mandatory reporting in the context of patient care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

 Domain 7 Postgraduate - Rate the importance

	Not at all important	Not so important	Somewhat important	Very important	Extremely important
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1. Manage medical emergencies, including palliative dental care, following local protocols and guidelines.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Integrate and evaluate medical, social, and environmental factors to develop comprehensive, patient-specific risk assessments and treatment plans.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Evaluate the implications for dental treatment and oral health care which arise from the effects of pharmacology and their impact on patient management.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Provide clinical care using behavioural, psychological and other non-pharmacological approaches.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Develop and justify individualised, risk-based dental care plans using clinical reasoning to provide evidence-based patient-centred care in diverse settings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Apply mandatory reporting protocols in compliance with legal and ethical frameworks for abuse, demonstrating professional responsibility in safeguarding patients.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Domain 7 Postgraduate - Determine the appropriate level

	Keep it in postgraduate	Move it to undergraduate	Remove it as a learning outcome
1. Manage medical emergencies, including palliative dental care, following local protocols and guidelines.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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|---|-----------------------|-----------------------|-----------------------|
| 2. Integrate and evaluate medical, social, and environmental factors to develop comprehensive, patient-specific risk assessments and treatment plans. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 3. Evaluate the implications for dental treatment and oral health care which arise from the effects of pharmacology and their impact on patient management. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 4. Provide clinical care using behavioural, psychological and other non-pharmacological approaches. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 5. Develop and justify individualised, risk-based dental care plans using clinical reasoning to provide evidence-based patient-centred care in diverse settings. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 6. Apply mandatory reporting protocols in compliance with legal and ethical frameworks for abuse, demonstrating professional responsibility in safeguarding patients. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Reasons, if any, for excluding learning outcomes:

Other comments:

Domain 8: Clinical Pathways and Team Approach to Care

Domain 8 Undergraduate - Rate the importance

	Not at all important	Not so important	Somewhat important	Very important	Extremely important
1. Recognise the role of the carer and the importance of lived experience.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Explain the importance of the intra-interprofessional liaison in addressing patients' unique needs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Recognise the value of teamwork in the clinical management.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Demonstrate the ability to build interprofessional networks locally, providing guidance and group training to carers and other practitioners to support the delivery of appropriate oral healthcare.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Work collaboratively and professionally with other dental specialties to advocate for relevant treatment options outside of individual scope of practice (knowing how, when and where to refer).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Practice responsibility for referring or arranging care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Demonstrate an understanding of the BDA Case Mix Tool and its application in assessing patient complexity and determine the need for specialist referral.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Domain 8 Undergraduate - Determine the appropriate level

	Keep it in undergraduate	Move it to postgraduate	Remove it as a learning outcome
1. Recognise the role of the carer and the importance of lived experience.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. Explain the importance of the intra-interprofessional liaison in addressing patients' unique needs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Recognise the value of teamwork in the clinical management.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Demonstrate the ability to build interprofessional networks locally, providing guidance and group training to carers and other practitioners to support the delivery of appropriate oral healthcare.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Work collaboratively and professionally with other dental specialties to advocate for relevant treatment options outside of individual scope of practice (knowing how, when and where to refer).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Practice responsibility for referring or arranging care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Demonstrate an understanding of the BDA Case Mix Tool and its application in assessing patient complexity and determine the need for specialist referral.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

 Domain 8 Postgraduate - Rate the importance

	Not at all important	Not so important	Somewhat important	Very important	Extremely important
1. Develop an understanding of the perspectives and lived experiences of patients and their carers or parents.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Adopt an interprofessional team approach to provide comprehensive, patient-centred care to optimise oral health outcomes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. Demonstrate leadership in care coordination, ensuring integrated and seamless patient management across healthcare providers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Develop understanding of the perspective of other service providers, managers of services and the voluntary sector.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Utilise the BDA Case Mix Tool to assess patient complexity and facilitate interdisciplinary referrals for optimal patient outcomes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Domain 8 Postgraduate - Determine the appropriate level

	Keep it in postgraduate	Move it to undergraduate	Remove it as a learning outcome
1. Develop an understanding of the perspectives and lived experiences of patients and their carers or parents.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Adopt an interprofessional team approach to provide comprehensive, patient-centred care to optimise oral health outcomes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Demonstrate leadership in care coordination, ensuring integrated and seamless patient management across healthcare providers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Develop understanding of the perspective of other service providers, managers of services and the voluntary sector.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Utilise the BDA Case Mix Tool to assess patient complexity and facilitate interdisciplinary referrals for optimal patient outcomes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Reasons, if any, for excluding learning outcomes:

Other comments:

Domain 9: Dental Public Health and Oral Health Promotion

Domain 9 Undergraduate - Rate the importance

	Not at all important	Not so important	Somewhat important	Very important	Extremely important
1. Describe the principles of oral health promotion and common risk factor approach.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Explain the connection between health promotion and health policy development.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Demonstrate the capability to formulate individualised oral health education and prevention strategy for patients and their carers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Describe the role of professional advocacy in promoting public policies, services and systems that respect diversity, equality and human rights.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Domain 9 Undergraduate - Determine the appropriate level

	Keep it in undergraduate	Move it to postgraduate	Remove it as a learning outcome
1. Describe the principles of oral health promotion and common risk factor approach.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Explain the connection between health promotion and health policy development.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Demonstrate the capability to formulate individualised oral health education and prevention strategy for patients and their carers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Describe the role of professional advocacy in promoting public policies, services and systems that respect diversity, equality and human rights.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Domain 9 Postgraduate - Rate the importance

	Not at all important	Not so important	Somewhat important	Very important	Extremely important
1. Apply the theories and principles of oral health promotion to improve general health through oral health.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Develop, co-design and implement evidence-based oral health promotion strategies and programs in diverse community settings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Apply social and environmental facilitators to enhance accessibility and effectiveness of oral health promotion programs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Critically analyse and evaluate the effectiveness of current oral health policies and promotion campaigns for their inclusivity, effectiveness, and impact on different populations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Domain 9 Postgraduate - Determine the appropriate level

	Keep it in postgraduate	Move it to undergraduate	Remove it as a learning outcome
1. Apply the theories and principles of oral health promotion to improve general health through oral health.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Develop, co-design and implement evidence-based oral health promotion strategies and programs in diverse community settings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Apply social and environmental facilitators to enhance accessibility and effectiveness of oral health promotion programs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Critically analyse and evaluate the effectiveness of current oral health policies and promotion campaigns for their inclusivity, effectiveness, and impact on different populations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Reasons, if any, for excluding learning outcomes:

Other comments:

Domain 10: Clinical Research and Governance

Domain 10 Undergraduate - Rate the importance

	Not at all important	Not so important	Somewhat important	Very important	Extremely important
1. Critically review relevant literature in order to practice evidence based dentistry.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Demonstrate an understanding of scientific methodology and the ability to critically analyse published research and where appropriate, transfer this to the clinical situation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Domain 10 Undergraduate - Determine the appropriate level

	Keep it in undergraduate	Move it to postgraduate	Remove it as a learning outcome
1. Critically review relevant literature in order to practice evidence based dentistry.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Demonstrate an understanding of scientific methodology and the ability to critically analyse published research and where appropriate, transfer this to the clinical situation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Domain 10 Postgraduate - Rate the importance

	Not at all important	Not so important	Somewhat important	Very important	Extremely important
1. Develop skills in undertaking and evaluating clinical and public health research.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Apply and interpret scientific methodology, critically appraising research for its clinical relevance and practical application.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Demonstrate an ability to critically evaluate all forms of information.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- | | | | | | |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 4. Apply contemporary research findings and scientific method in evidence-based dental practice. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 5. Understand the importance of continuing professional development, lifelong learning, self-appraisal, peer review and competency. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Domain 10 Postgraduate - Determine the appropriate level

	Keep it in postgraduate	Move it to undergraduate	Remove it as a learning outcome
1. Develop skills in undertaking and evaluating clinical and public health research.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Apply and interpret scientific methodology, critically appraising research for its clinical relevance and practical application.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Demonstrate an ability to critically evaluate all forms of information.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Apply contemporary research findings and scientific method in evidence-based dental practice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Understand the importance of continuing professional development, lifelong learning, self-appraisal, peer review and competency.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Reasons, if any, for excluding learning outcomes:

Other comments:

Undergraduate and Postgraduate Special Needs Dentistry Curricula for Oral Health Therapists: An Online Delphi Study

Conclusion

Any other comments?

End of Round 2 - Panel Recommendations and Research Responses

The table below presents a summary of recommendations and comments from panellists in Round 2. These suggestions were reviewed by three researchers.

Key:

LO – Learning outcomes; OHTs – Oral Health Therapists; PG – Postgraduate; SND – Special Needs Dentistry; UG – Undergraduate

Keywords of input from panellists	Researcher responses	Decision
Domain 1 comments		
UG LO1 – Explain the need for and apply the use of appropriate terminology appropriate terminology. <ul style="list-style-type: none"> - Appropriate terminology is repeated twice - LO 1 should be same for both UG and PG 	We have removed the repeated “appropriate terminology” accordingly.	LO1 is similar across UG and PG, on a different level. No changes.
UG LO3 – Recognise the need and growth of the emerging specialty of SND. <ul style="list-style-type: none"> - Remove LO3 - Replace “recognise” as it is not measurable outcome 	We have replaced the word “recognise” with “understand”. Understanding the need and growth of the emerging specialty of SND is foundational and helps OHTs appreciate the broader systemic and societal factors contributing to oral health disparities.	UG LO3 - Understand the need and growth of the emerging specialty of SND as a learning outcome. It will be included in Round 3 for re-evaluation after modification, as it remains essential for establishing the context and relevance of SND within oral health practice.
UG LO4 - Demonstrate an understanding of life course approach to oral health and disability. <ul style="list-style-type: none"> - Prefers term ‘life span’ 	We acknowledge the suggestion to use the term 'life span'; however, we will retain 'life course approach' as it is a widely accepted public health concept.	No change.

<p>UG LO5 - Describe the key concepts, epidemiology, and classification related to human function, impairments, disability, and health.</p> <ul style="list-style-type: none"> - Remove 'key concepts' 	<p>We decided to retain it, as 'key concepts' provides essential foundational understanding.</p>	<p>No change.</p>
<p>PG LO4 – Demonstrate an advanced understanding of the international context and sensitivities of SND.</p> <ul style="list-style-type: none"> - Unsure of the definition of “sensitivities” - Concepts are confusing 	<p>To improve the logical flow of the LO, the previous LO4 has been repositioned to LO3. To improve clarity of this LO, we replaced “sensitivities” with “life course approach of SND”.</p>	<p>PG LO3 - Apply an advanced understanding of life course approach of SND. The modification will be presented in Round 3.</p>
<p>Domain 2 comments</p>		
<p>Domain 2 title: Access and Barriers to Oral Health for People with Disability and Other Underserved Groups</p> <ul style="list-style-type: none"> - Replace 'groups' with 'populations' 	<p>We have replaced 'groups' with 'populations'.</p>	<p>Domain 2 title: Access and Barriers to Oral Health for People with Disability and Other Underserved Populations. The modification will be presented in Round 3.</p>
<p>UG LO3 – Explain approaches to government funding and advocacy efforts.</p> <ul style="list-style-type: none"> - Replace 'explain' 	<p>We have replaced 'explain' to 'understand'.</p>	<p>UG LO3 - Understand approaches to government funding and advocacy efforts. It will be included in Round 3 for re-evaluation after modification.</p>
<p>UG LO5 – Explore different strategies to overcome barriers and ensure optimal oral health outcomes.</p> <ul style="list-style-type: none"> - Revise the term 'ensure optimal' as practitioners do not ensure outcomes - “explore” is difficult to measure as an objective, should replace it 	<p>We decided to replace 'explore different strategies...' to 'identify external key stakeholders' and remove 'ensure optimal...' to improve clarity of this LO.</p>	<p>UG LO5 - Identify external key stakeholders to overcome access barriers. The modification will be presented in Round 3.</p>

<p>PG LO4 – Identify external sources to collaborate with in order to improve access to oral health care.</p> <ul style="list-style-type: none"> - External sources not specific - Identify external sources is relatively simple and should be included in UG level 	<p>We have now included “identify external key stakeholders’ in UG LO5 and replace ‘external sources’ to ‘external key stakeholders’. We have also added a new LO and modified PG LO4 to address the concern.</p>	<p>We have included additional LO (now PG LO3) - Explore opportunities and apply for government funding. And modified LO4 (now LO5) - Explore external key stakeholders to collaborate with in order to improve access to oral health care. The modifications will be presented in Round 3.</p>
<p>Not all UG interested in academia/research, may be beneficial to move government fundings/policies/advocacy to PG level. UG can focus more on clinical management.</p>	<p>To improve clarity, we have included a fundamental level of understanding in government funding and advocacy efforts in UG and the opportunity to implement knowledge and apply for government funding on a PG level.</p>	<p>The modifications will be presented in Round 3.</p>
<p>Domain 3 comments</p>		
<p>Include all PG LOs in UG level.</p>	<p>PG LOs are already embedded within the UG curriculum framework, but at a more foundational level appropriate for UG education.</p>	<p>No change.</p>
<p>UG LO3 - Recognise the role of the family members, carers and the relevant government agencies in assisting decision-making processes.</p> <ul style="list-style-type: none"> - “recognise” cannot be measured 	<p>We have retained the verb 'recognise' as it reflects awareness and understanding of the roles of family members, carers, and relevant agencies. It aligns with Bloom’s taxonomy at the early-stage learners to appreciate the importance of these roles before progressing to higher levels of learning and application in</p>	<p>No change.</p>

	practice.	
PG LO4 – Apply relevant legislation and ethical principles to determine appropriate frameworks for obtaining informed consent. - Student should have to understand relevant legislation and ethical principles (LO3) before implementing strategies	We can see where it overlaps and decided to simplify LO3 and remove LO4 completely to improve clarity.	PG LO3 - Obtain informed consent for patients who are unable to consent on their own behalf, ensuring compliance with legal and ethical standards. The modification will be presented in Round 3.
Others	We noticed overlapping between UG LO4 and LO5 on consent taking process. We have merged LO5 with LO4.	UG LO4 has been modified to “Facilitate the process of obtaining informed consent for individuals who are unable to consent on their own behalf, ensuring it adheres to legal and ethical standards.” The modification will be presented in Round 3.
Domain 4 comments		
PG LO should be part of UG LO.	PG LOs are already embedded within the UG curriculum framework, but at a more foundational level appropriate for UG education.	No change.
Inconsistent terminology between Aboriginal and Torres Strait Islander, and Indigenous.	We have replaced ‘Indigenous’ with ‘Aboriginal and Torres Strait Islander’.	Changes have been made to affected LO.
Cultural safety requires element of reflection.	Reflection component can be seen in UG LO4 and PG LO1.	No change.

<p>Comments on this domain having no specific reliance on Special Needs, and should be part of overall patient care across all cultures.</p>	<p>We acknowledge the feedback. However, its inclusion is essential as it aligns with the Australian Dental Council's (ADC) competencies, which emphasise cultural safety and awareness. While it may not be exclusive to Special Needs Dentistry, understanding and applying these principles is critical in delivering inclusive and equitable care to people with disability.</p>	<p>No change.</p>
<p>UG LO1 - Demonstrate awareness of their own culture and how they relate to other communities, families and individuals.</p> <ul style="list-style-type: none"> - Include how their values relate - Include understanding of different cultures response to people with disability 	<p>We have included 'cultural values' into UG LO1.</p>	<p>UG LO1 - Demonstrate awareness of their own cultural values and how they relate to other communities, families and individuals. The modification will be presented in Round 3.</p>
<p>UG LO4 – Demonstrate a positive attitude in relation to diversity in health beliefs, lifestyles, ethic and cultural background.</p>	<p>We noticed significant overlapping between UG LO4 and UG LO2. We merged both LO, retaining 'health beliefs and lifestyles' into LO2.</p>	<p>UG LO2 - Define principles of cultural safety, which involves creating a respectful and inclusive environment that acknowledges health beliefs and lifestyles, and respects cultural diversity. The modification will be presented in Round 3.</p>
<p>UG LO6 – Apply evidence-based and strengths-based best practices in Aboriginal and Torres Strait Islander healthcare.</p> <ul style="list-style-type: none"> - Implies this is only for Aboriginal and Torres Strait Islander, require rewording. 	<p>We have removed this LO completely as it overlaps other existing LO.</p>	<p>UG LO6 removed.</p>

<p>PG LO5 - Implement culturally tailored health promotion activities and community engagement initiatives that incorporate the traditional practices of Aboriginal and Torres Strait Islanders, to improve oral health literacy and outcomes.</p> <ul style="list-style-type: none"> - Redundant and overlapping PG LO4. 	Removed LO4 completely and include 'inequalities' into LO5.	PG LO5 (now LO4) - Implement culturally tailored health promotion activities and community engagement initiatives that incorporate the traditional practices of Aboriginal and Torres Strait Islanders, to improve oral health literacy, inequalities and outcomes. The modification will be presented in Round 3.
Domain 5 comments		
Consider using terminology of lived experience in the UG LO.	Incorporated the term 'with lived experience' into UG LO1.	UG LO1 - Use and reflect on culturally sensitive and inclusive language with patients, colleagues and carers with lived experience, to obtain an adequate medical and social history. The modification will be presented in Round 3.
Should include element of reflection in both UG and PG.	We have added in UG LO1 'use and reflect on...' and PG LO1 'evaluate and reflect on...'	<p>UG LO1 - Use and reflect on culturally sensitive and inclusive language with patients, colleagues and carers with lived experience, to obtain an adequate medical and social history.</p> <p>PG LO1 - Evaluate and reflect on culturally sensitive and inclusive communication strategies to enhance patient engagement and intersectoral collaboration.</p>

		The modifications will be presented in Round 3.
<p>UG LO1 – Demonstrate culturally sensitive and inclusive language with patients, colleagues and carers, to obtain an adequate medical and social history.</p> <ul style="list-style-type: none"> - Replace action word 	We have replaced action word with ‘use and reflect on’.	UG LO1 - Use and reflect on culturally sensitive and inclusive language with patients, colleagues and carers with lived experience, to obtain an adequate medical and social history. The modification will be presented in Round 3.
<p>UG LO4 – Apply understanding of communication principles, including supportive decision-making strategies.</p> <ul style="list-style-type: none"> - Redundant and overlapping LO2 	We have removed UG LO4 and add ‘including supportive decision-making strategies’ into UG LO2.	UG LO2 - Develop adequate communication skills and use appropriate methods of communication, including supportive decision-making strategies, to engage in meaningful interaction based on patients’ specific needs. The modification will be presented in Round 3.
<p>PG level – should include content from UG as international PG students may not have pre-existing knowledge on cultural sensitivities or historical context.</p>	This comment has been addressed in domain 4 on cultural safety and awareness.	No change.
<p>PG LO1 - Evaluate culturally sensitive and inclusive communication strategies to enhance patient engagement and interdisciplinary collaboration.</p>	LO modified to ‘intersectoral collaboration’.	PG LO1 - Evaluate and reflect on culturally sensitive and inclusive communication strategies to enhance patient engagement and intersectoral collaboration. The modification will be presented in Round 3.

Domain 6 comments		
Clinical exposure	This component has been addressed in domain 7.	No change.
Risk factor analysis, know what is within scope of practice and how to collaborate	This component has been addressed partially in domain 6, 7 and 8.	No change.
Mention of interprofessional collaboration but not intra-professional collaboration.	The definition of interprofessional collaboration has been provided.	-
UG LO3 - Recognise the complexities of managing patients with a range of social and medical issues impacted by their disability, and recognise the connection between general health and oral health. - Not inclusive language	We removed 'impacted by their disability' and improve clarity of UG LO3.	UG LO3 - Recognise the complexities of managing patients with a range of disability, social and medical issues, and recognise the connection between general health and oral health. The modification will be presented in Round 3.
UG LO5 - Differentiate the characteristic oral manifestations of specific patient groups. - LO not clear - Discriminative language	We have replaced 'specific patient groups' to 'specific conditions'.	UG LO5 - Differentiate the characteristic oral manifestations of specific conditions. The modification will be presented in Round 3.
PG LO4 - Implementing evidence-based behavioural support strategies to enhance patient cooperation and improve oral health outcomes in clinical settings. - Should also be part of UG LO	We made changes to UG LO4 to incorporate use of behavioural support strategies.	UG LO4 - Identify the different available behavioural support strategies and justify their use within the scope of practice. The modification will be presented in Round 3.

<p>PG LO5 - Manage the oral manifestations of specific patient groups, incorporating clinical reasoning and interprofessional collaboration.</p> <ul style="list-style-type: none"> - LO not clear - Discriminative language 	<p>We have replaced ‘specific patient groups’ to ‘specific conditions’.</p>	<p>PG LO5 - Manage the oral manifestations of specific conditions, incorporating clinical reasoning and interprofessional collaboration. The modification will be presented in Round 3.</p>
<p>Domain 7 comments</p>		
<p>Some LO depends on the country and scope of practice.</p>	<p>We agreed with this statement. Those that were included in this study fall within scope of practice in Australia.</p>	<p>-</p>
<p>Concerns on overlapping medical and BDS domains.</p>	<p>Our intention is not to extend beyond the oral health therapy scope of practice but to ensure that OHTs are equipped with appropriate foundational knowledge and preparedness to respond within their role—particularly in recognising signs of medical emergencies and initiating appropriate first-line responses (e.g., basic life support, anaphylaxis protocols), as outlined in the Australian Dental Council (ADC) competencies.</p>	<p>-</p>
<p>Crossovers between domains.</p>	<p>We agreed and have reviewed the LO to remove crossovers where necessary.</p>	<p>-</p>
<p>Suggested to replace ‘recognise’ in the LOs.</p>	<p>We have retained the verb 'recognise' as it aligns with Bloom’s taxonomy at the early-stage learners to appreciate the importance before progressing to</p>	<p>No change.</p>

	higher levels of learning and application in practice.	
UG should also include mandatory reporting protocols	It can be seen in UG LO8 - Recognise the signs of abuse and understand the legal and ethical responsibilities of mandatory reporting in the context of patient care.	No change.
UG LO1 - Demonstrate basic life support skills and management of medical emergencies including gerodontics. according to local protocols and guidelines. - Unsure why gerodontics were incorporated	Aged care/gerodontics is part of SND in Australia. In this LO, it meant 'everyone including gerodontics'	-
UG LO2 - Describe the factors (medical, social and environmental) that impact on risk assessment and treatment planning. PG LO 2 - Integrate and evaluate medical, social, and environmental factors to develop comprehensive, patient-specific risk assessments and treatment plans. - Both UG and PG should include cultural context into risk assessments and treatment planning	Incorporated 'cultural' into both LO.	UG LO2 - Describe the factors (medical, social, cultural and environmental) that impact on risk assessment and treatment planning. PG LO2 - Integrate and evaluate medical, social, cultural, and environmental factors to develop comprehensive, patient-specific risk assessments and treatment plans. The modifications will be presented in Round 3.
UG LO4 - Perform safe transfer techniques and appropriate positioning aids where necessary. - UG shouldn't perform transfers, should instead do higher training or CPD depending on workplace needs.	All students should be trained in manual handling and patient transfer ensuring safety of all.	No change.

- Should include safe moving and handling techniques		
Domain 8 comments		
'develop' and 'recognise' blurs perception.	In this domain, we have replaced develop to demonstrate, recognise to explain.	-
UG LO1 – Recognise the role of the carer and the importance of lived experience. - Replace the word 'recognise'	We have replaced action word to 'explain'.	UG LO1 - Explain the role of the carer and the importance of lived experience. The modification will be presented in Round 3.
UG LO3 – Recognise the value of teamwork in the clinical management. - Omit this LO as it overlaps with LO5	We have retained 'the value of teamwork' and merged with UG LO5.	UG LO5 - Identify the value of teamwork, work collaboratively with dental specialties to advocate for relevant treatment options outside of individual scope of practice (knowing how, when and where to refer). The modification will be presented in Round 3.
UG LO5 - Work collaboratively and professionally with other dental specialties to advocate for relevant treatment options outside of individual scope of practice (knowing how, when and where to refer). - Can be misunderstood as OHT will graduate as a dental specialists	Revised LO to improve clarity. Removed 'other' in other dental specialties.	UG LO5 - Identify the value of teamwork, work collaboratively with dental specialties to advocate for relevant treatment options outside of individual scope of practice (knowing how, when and where to refer). The modification will be presented in Round 3.
UG LO7 - Demonstrate an understanding of the BDA Case Mix Tool and its application in	Given these points, we have decided to remove the BDA Case Mix Tool from	LOs on BDA case mix tools removed.

<p>assessing patient complexity and determine the need for specialist referral</p> <p>PG LO5 - Utilise the BDA Case Mix Tool to assess patient complexity and facilitate interdisciplinary referrals for optimal patient outcomes.</p> <ul style="list-style-type: none"> - Already part of UG LO5 and PG LO3 - Unnecessary to be using a specific tool - Tool may be superseded in the future - Unsure how core using this tool is - Not familiar with using this tool 	<p>both UG LO7 and PG LO5. We acknowledge the importance of preparing students to assess patient complexity and facilitate appropriate referrals through broader learning outcomes without referencing a specific tool. Should a refined version or an Australian-adapted case mix tool become available and widely adopted in the future, we will review and update the curriculum and associated learning outcomes accordingly.</p>	
<p>Domain 9 comments</p>		
<p>LO for domain 9 are very general and would have been covered in other subjects of OHT undergraduate, with no specific reliance on SND.</p>	<p>As this curriculum framework is focused on SND, the context of disability care is embedded throughout. We acknowledge the feedback that LOs in Domain 9 may appear general, due to the constraints of an already crowded UG curriculum, these concepts may be taught across other subjects in the OHT UG curriculum. We believe it is important to contextualise these outcomes within SND at a higher level, in PG. Therefore, we maintain these LOs at a foundational level for undergraduates, with the expectation that deeper, disability-specific LOs will be explored in PG curriculum. This approach aligns with the Australian</p>	<p>No change.</p>

	Dental Council competencies requirement.	
UG LO4 - Describe the role of professional advocacy in promoting public policies, services and systems that respect diversity, equality and human rights. - Should have understanding about advocacy in oral health promotion on a UG level	UG LO4 included a fundamental component of understanding the role of advocacy.	No change.
Domain 10 comments		
LOs needs to be more specific to reflect research and governance relevant to people with disability.	As this curriculum framework is focused on SND, the context of disability care is embedded throughout. However, to enhance clarity and ensure the relevance, we have revised both UG LO1 and PG LO1 to include “special needs dentistry”. These additions improve understanding of the intended scope.	UG LO1 - Critically review relevant literature in order to practice evidence based special needs dentistry. PG LO1 - Develop skills in undertaking and evaluating special needs dentistry and public health research. The modifications will be presented in Round 3.
Overlapping between LOs.	We have reviewed the LOs and addressed the overlap by refining the Bloom’s taxonomy action verbs to better differentiate the level of complexity and intent.	LOs that has revised Blooms’ taxonomy will be will be presented in Round 3.
UG LO2 - Demonstrate an understanding of scientific methodology and the ability to critically	‘transfer’ is now replaced with ‘integrate’.	UG LO2 - Demonstrate an understanding of scientific

<p>analyse published research and where appropriate, transfer this to the clinical situation.</p> <ul style="list-style-type: none"> - Replace the word ‘transfer’ with ‘integrate’ 		<p>methodology and the ability to critically analyse published research and where appropriate, integrate this to disability care. The modification will be presented in Round 3.</p>
<p>PG LO4 - Apply contemporary research findings and scientific method in evidence-based dental practice.</p> <ul style="list-style-type: none"> - Suggested to include this in UG level 	<p>UG LO1 and LO2 already included components of contemporary research and evidence-based dentistry.</p>	<p>No change.</p>
<p>PG LO5 – Understand the importance of continuing professional development, lifelong learning, self-appraisal, peer review and competency.</p> <ul style="list-style-type: none"> - Should be included in UG level 	<p>We have included this LO in UG, and revised the LO in PG.</p>	<p>UG LO3 - Understand the importance of continuing professional development, lifelong learning, self-appraisal, peer review and competency.</p> <p>PG LO5 - Plan and evaluate one’s own continuing professional development, lifelong learning, self-appraisal, peer review and competency in the field of special needs dentistry. The modifications will be presented in Round 3.</p>

End of summary for Round 2 learning outcomes.

Undergraduate and Postgraduate Special Needs Dentistry Curricula for Oral Health Therapists: An Online Delphi Study

Basic Information

Name:

Email Address:

Undergraduate and Postgraduate Special Needs Dentistry Curricula for Oral Health Therapists: An Online Delphi Study

Delphi Round 3

In this round, we will be focusing only on the learning outcomes that did not reach consensus in the previous rounds. Based on the feedback received, we have revised and refined several learning outcomes to improve clarity and relevance with the curriculum framework.

For each learning outcome, you will be presented with both the original and revised (modified) versions in a side-by-side table format. We kindly ask you to:

Rate the importance of each revised learning outcome

Indicate whether it should be included at the undergraduate or postgraduate level, or excluded entirely

Provide reasons or additional comments in the space provided

In the next section of this round, you will be presented with the revised versions of learning outcomes that had already reached consensus in previous rounds. These have undergone minor modifications based on feedback received.

Finally, you will be invited to indicate your preferred method of acknowledgement and provide your details for inclusion in any future publication of this Delphi study.

Just as the previous rounds, the following is in the context of Special Needs Dentistry (SND) & Gerodontology:

We have included the following definition for your reference:

Special Needs Dentistry (SND): The Royal Australasian College of Dental Surgeons (RACDS) defines SND as "the branch of dentistry that is concerned with the oral health care of people with an intellectual disability or medical, physical, and/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 (1). In line with the Australian Government's inclusive language guidelines, this study adopts more inclusive terminology by replacing the term "special needs" with "disability" (2). This includes people with disability and additional healthcare needs.

Interprofessional: According to the World Health Organisation (WHO), interprofessional education (IPE) occurs when students from two or more professions learn about, from, and with each other to enable effective collaboration and improve health outcomes (3). The Australian Dental Council (ADC) defines interprofessional collaborative practice as multiple health workers from different backgrounds working together with patients, families, and communities to deliver high-quality care.

Intersectoral: A broader approach that goes beyond healthcare, involving collaboration between different sectors (4).

Reference:

1. Royal Australasian College of Dental Surgeons. Royal Australasian College of Dental Surgeons
2. People with Disability Australia. PWDA Language Guide: A guide to language about disability. 2021.
3. World Health Organization. Framework for Action on Interprofessional Education & Collaborative Practice 2010.
4. World Health Organization. Intersectoral Governance for Health in All Policies - Structures, Actions and Experiences. 2012.

Domain 1: The Scope of Special Needs Dentistry (SND)

Original learning outcome Revised learning outcome Comment
 UG LO2: Recognise the need and growth of the emerging specialty of SND.

UG LO2: Understand the need and growth of the emerging specialty of SND.

We have retained this LO and replaced the word "recognise" with "understand". Understanding the need and growth of the emerging specialty of SND is foundational and helps OHTs appreciate the broader systemic and societal factors contributing to oral health disparities.

UG LO2: Rate the importance

- Not at all important
- Not so important
- Somewhat important
- Very important
- Extremely important

UG LO2: Determine the appropriate level

- Keep it in undergraduate
- Move it to postgraduate
- Remove it as a learning outcome

Reasons, if any, for excluding learning outcomes:

Domain 2: Access and Barriers to Oral Health for People with Disability and Other Underserved Populations

Original learning outcome Revised learning outcome Comment
 UG LO3: Explain approaches to government funding and advocacy efforts.

UG LO3: Understand approaches to government funding and advocacy efforts.

We have retained this LO, changing "Explain" to "Understand" to better reflect the expected level of knowledge at the undergraduate level. A foundational understanding of government funding and advocacy is important in UG level.

UG LO3: Rate the importance

- Not at all important
- Not so important
- Somewhat important
- Very important
- Extremely important

UG LO3: Determine the appropriate level

- Keep it in undergraduate
- Move it to postgraduate
- Remove it as a learning outcome

Original learning outcome Revised learning outcome Comment
 PG LO3: Explore opportunities and apply for government funding.

We added this new LO to address the concern of needing this in UG and PG level. This is a higher level of UG LO3.

PG LO3: Rate the importance

- Not at all important
- Not so important
- Somewhat important
- Very important
- Extremely important

PG LO3: Determine the appropriate level

- Keep it in postgraduate
- Move it to undergraduate
- Remove it as a learning outcome

Reasons, if any, for excluding learning outcomes:

Domain 10: Clinical Research and Governance

Original learning outcome Revised learning outcome Comment

UG LO3: Understand the importance of continuing professional development, lifelong learning, self-appraisal, peer review and competency.

We added this new LO to address the concern of needing this in UG and PG level.

UG LO3: Rate the importance

- Not at all important
- Not so important
- Somewhat important
- Very important
- Extremely important

UG LO3: Determine the appropriate level

- Keep it in undergraduate
- Move it to postgraduate
- Remove it as a learning outcome

Reasons, if any, for excluding learning outcomes:

Learning Outcomes with Minor Revisions (Consensus Achieved) - No Action Required

 Items Original learning outcomes Revised learning outcomes Comments

Domain 1

UG LO1 Explain the need for and apply the use of appropriate terminology appropriate terminology. Explain the need for and apply the use of appropriate terminology. Removed repeated terminology.

PG LO3 Demonstrate an advanced understanding of the international context and sensitivities of SND Apply an advanced understanding of life course approach of SND.

To improve the logical flow of the LO, the previous LO4 has been repositioned to LO3. To improve clarity of this LO, we replaced "sensitivities" with "life course approach of SND".

Domain 2

Title Access and Barriers to Oral Health for People with Disability and Other Underserved Groups Access and Barriers to Oral Health for People with Disability and Other Underserved Populations Replaced 'groups' with 'populations'.

UG LO5 Explore different strategies to overcome barriers and ensure optimal oral health outcomes. Identify external key stakeholders to overcome access barriers. Replaced 'explore different strategies...' to 'identify external key stakeholders' and remove 'ensure optimal...' to improve clarity of this LO.

PG LO5 Identify external sources to collaborate with in order to improve access to oral health care. Explore external key stakeholders to collaborate with in order to improve access to oral health care. There were concerns about 'external sources' not specific. We have replaced it with 'external key stakeholder'.

Domain 3

UG LO5 / UG LO4 Outline the appropriate consent process, ensuring it adheres to legal and ethical standards. UG LO4: Facilitate the process of obtaining informed consent for individuals who are unable to consent on their own behalf, ensuring it adheres to legal and ethical standards. Overlapping, repeated LO. We merged with UG LO4.

PG LO3 / PG LO4 Apply relevant legislation and ethical principles to determine appropriate frameworks for obtaining informed consent. PG LO3: Obtain informed consent for patients who are unable to consent on their own behalf, ensuring compliance with legal and ethical standards. Overlapping, repeated LO. We merged with PG LO3.

Domain 4

UG LO1 Demonstrate awareness of their own culture and how they relate to other communities, families and individuals. Demonstrate awareness of their own cultural values and how they relate to other communities, families and individuals. Addressed concern on values relate to this domain.

UG LO4 / UG LO2 Demonstrate a positive attitude in relation to diversity in health beliefs, lifestyles, ethic and cultural background. UG LO2: Understand principles of cultural safety, which involves creating a respectful and inclusive environment that acknowledges health beliefs and lifestyles, and respects cultural diversity. Significant overlapping between UG LO4 and UG LO2. We merged both LO, retaining 'health beliefs and lifestyles' into LO2.

UG LO6 Apply evidence-based and strengths-based best practices in Aboriginal and Torres Strait Islander healthcare. - We have removed this LO completely as it overlaps other existing LO.

PG LO4 Implement culturally tailored health promotion activities and community engagement initiatives that incorporate the traditional practices of Aboriginal and Torres Strait Islanders, to improve oral health literacy and outcomes. Implement culturally tailored health promotion activities and community engagement initiatives that incorporate the traditional practices of Aboriginal and Torres Strait Islanders, to improve oral health literacy, inequalities and outcomes. Removed LO4 completely and include 'inequalities' into LO5 (now PG LO4).

Domain 5

UG LO1 Demonstrate culturally sensitive and inclusive language with patients, colleagues and carers, to obtain an adequate medical and social history. Use and reflect on culturally sensitive and inclusive language with patients, colleagues and carers with lived experience, to obtain an adequate medical and social history.

Incorporated the term 'with lived experience' and included an element of reflection.

UG LO4 / UG LO2 Apply understanding of communication principles, including supportive decision-making strategies. UG LO2: Develop adequate communication skills and use appropriate methods of communication, including supportive decision-making strategies, to engage in meaningful interaction based on patients' specific needs.

UG LO4 redundant and overlapping. Merged with UG LO2.

PG LO1 Evaluate culturally sensitive and inclusive communication strategies to enhance patient engagement and interdisciplinary collaboration. Evaluate and reflect on culturally sensitive and inclusive communication strategies to enhance patient engagement and intersectoral collaboration.

Inserted an element of reflection and replaced interdisciplinary to intersectoral which adds clarity to this LO.
Domain 6

UG LO3 Recognise the complexities of managing patients with a range of social and medical issues impacted by their disability, and recognise the connection between general health and oral health. Recognise the complexities of managing patients with a range of disability, social and medical issues, and recognise the connection between general health and oral health.

Changes made to ensure more inclusive language is used.

UG LO4 Differentiate and compare between available behavioural support techniques and other supportive measures, and justify their application. Identify the different available behavioural support strategies and justify their use within the scope of practice.

Incorporated introductory content on behavioural support strategies at the UG level, recognising its importance as foundational knowledge.

UG LO5 Differentiate the characteristic oral manifestations of specific patient groups. Differentiate the characteristic oral manifestations of specific conditions.

Rectified the use of discriminative language.

PG LO5 Manage the oral manifestations of specific patient groups, incorporating clinical reasoning and interprofessional collaboration. Manage the oral manifestations of specific conditions, incorporating clinical reasoning and interprofessional collaboration.

Rectified the use of discriminative language.

Domain 7

UG LO2 Describe the factors (medical, social and environmental) that impact on risk assessment and treatment planning. Describe the factors (medical, social, cultural and environmental) that impact on risk assessment and treatment planning.

Incorporated 'cultural'.

PG LO2 Integrate and evaluate medical, social, and environmental factors to develop comprehensive, patient-specific risk assessments and treatment plans. Integrate and evaluate medical, social, cultural, and environmental factors to develop comprehensive, patient-specific risk assessments and treatment plans.

Incorporated 'cultural'.

Domain 8

UG LO1 Recognise the role of the carer and the importance of lived experience. Explain the role of the carer and the importance of lived experience.

Replaced action word.

UG LO3 / UG LO5 Recognise the value of teamwork in the clinical management. UG LO5: Identify the value of teamwork, work collaboratively with dental specialties to advocate for relevant treatment options outside of individual scope of practice (knowing how, when and where to refer).

Retained 'value of teamwork' and merged with LO5.

UG LO5 Work collaboratively and professionally with other dental specialties to advocate for relevant treatment options outside of individual scope of practice (knowing how, when and where to refer). Identify the value of teamwork, work collaboratively with dental specialties to advocate for relevant treatment options outside of individual scope of practice (knowing how, when and where to refer).

Improve wording as participant has concerns LO may be misinterpreted as OHT is a 'dental specialist'.

UG LO7 Demonstrate an understanding of the BDA Case Mix Tool and its application in assessing patient complexity and determine the need for specialist referral.

-

LO removed as participants have concerns this tool may be superseded in the future. Not necessary to be using a specific tool.

PG LO5 Utilise the BDA Case Mix Tool to assess patient complexity and facilitate interdisciplinary referrals for optimal patient outcomes.

-

LO removed as participants has concerns this tool may be superseded in the future. Not necessary to be using a specific tool.

Domain 10

UG LO1 Critically review relevant literature in order to practice evidence based dentistry.

Critically review relevant literature in order to practice evidence based special needs dentistry.

Modified to strengthen its relevance to the care of people with disability

UG LO2 Demonstrate an understanding of scientific methodology and the ability to critically analyse published research and where appropriate, transfer this to the clinical situation.

Demonstrate an understanding of scientific methodology and the ability to critically analyse published research and where appropriate, integrate this to disability care.

Replaced 'transfer' with 'integrate'.

PG LO1 Develop skills in undertaking and evaluating clinical and public health research.

Develop skills in undertaking and evaluating special needs dentistry and public health research.

Modified to strengthen its relevance to the care of people with disability

PG LO5 Understand the importance of continuing professional development, lifelong learning, self-appraisal, peer review and competency.

Plan and evaluate one's own continuing professional development, lifelong learning, self-appraisal, peer review and competency.

Original LO has been moved to the undergraduate level, and the action verbs have been refined to better reflect the expected depth of knowledge and skills at PG.

For further details and justifications, please refer to the 'Round 2 Panel Recommendations and Research Responses' document.

Any further comments:

Undergraduate and Postgraduate Special Needs Dentistry Curricula for Oral Health Therapists: An Online Delphi Study

Acknowledgments

Our team would like to thank you again for your time, effort, and valuable contributions throughout this Delphi study. Your expertise has made a significant impact on shaping a stronger Special Needs Dentistry curriculum for oral health therapy education, with the goal of improving inclusive oral healthcare for people with disability.

Although this was addressed at the beginning of the study, we would like to reconfirm how you would like your name to appear in any resulting publication, to ensure your contribution is accurately acknowledged.

Please indicate how you would like to be included in the publication of the Delphi study:

- To be included as co-author in the Delphi study
 - To be included ONLY in the acknowledgment of the Delphi study
 - To remain anonymous (none of the above)
-

Please indicate your preferred name and title for acknowledgment in the publication:
(Your details will not be included if you select to remain anonymous)

Title:

- Prof
 - A/Prof
 - Assistant Professor
 - Dr
 - Mr
 - Ms
 - Mrs
 - Miss
-

First name:

Middle name (if any):

Last name:

Affiliation (your current institution or organisation):

Department or unit:

ORCID iD (if any):

Undergraduate and Postgraduate Special Needs Dentistry Curricula for Oral Health Therapists: An Online Delphi Study

Conclusion

Any other comments?

Round 4 Meeting Agenda

1. Welcome and Introduction (10 mins):

- Welcome
- Brief overview of the Delphi process.
 - Participation rate for each round
 - Countries involved right at the start
 - Consensus percentage for each round
- Meeting aim/outline
 - To finalise and achieve consensus on the remaining learning outcomes that have not yet reached the predefined agreement threshold in previous rounds.
 - Learning outcomes that have already reached consensus need not be re-evaluated. However, if clarification is required, we welcome brief input.
 - To review the overall curriculum outline to determine if it can be adapted to the Australian OHT curriculum and practice.

2. Review of Learning Outcomes – discussion point 1 (15 mins):

- Two of the learning outcomes we presented in Round 2 & 3 did not reach consensus.
 - Domain 2 UG LO: Understand approaches to government funding and advocacy efforts (68.8% consensus)
 - Domain 2 PG LO: Explore opportunities and apply for government funding (62.5% consensus)
- Summary of experts' comments
- Open discussions
- Raise-hand voting to capture consensus if required

3. Review of Learning Outcomes – discussion point 2 (15 mins):

- *insert discussion points that experts wish to address*
- Open discussions
- Raised-hand voting to capture consensus if required

4. Review of Learning Outcomes – discussion point 3 (15 mins):

- *insert discussion points that experts wish to address*
- Open discussions
- Raised-hand voting to capture consensus if required

5. Conclusion (5 mins)

Final Round: Delphi Study Discussion

Student: Dorothy Koh
Supervisors: A/Prof Archana Pradhan, A/Prof Delyse Leadbeatter,
Prof Woosung Sohn, A/Prof Melanie Aley.



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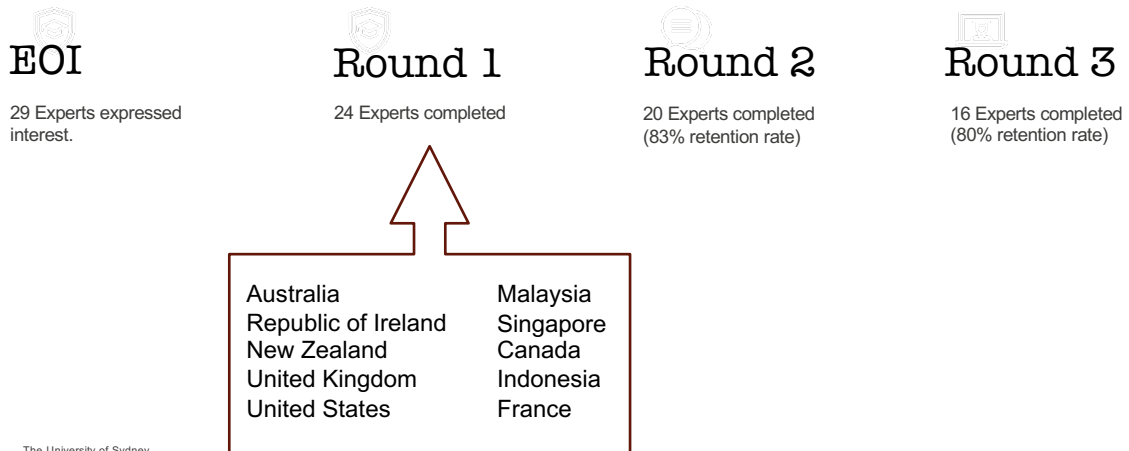
Meeting Agenda



The University of Sydney

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Participants by Round



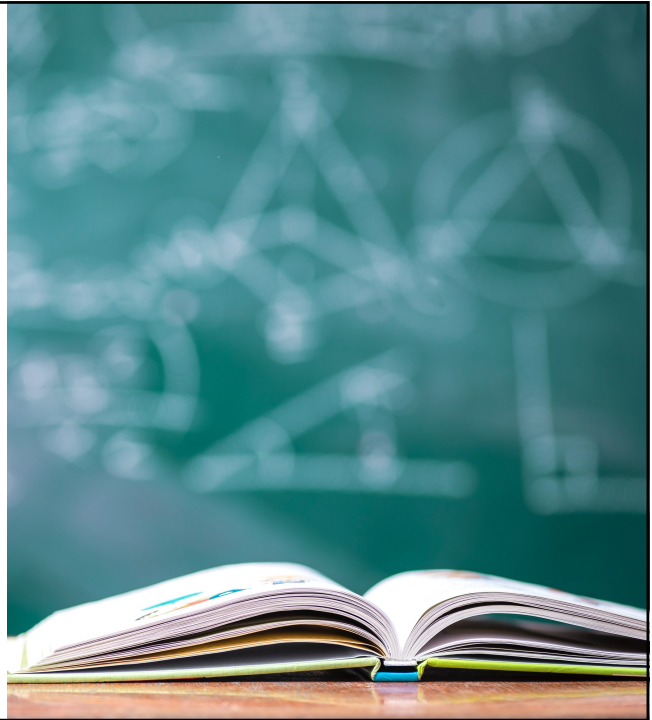
The University of Sydney

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Round 1 Consensus

- 66 out of 67 items reached consensus.
- Improve Bloom's Taxonomy and the need for clearer categorisation between undergraduate and postgraduate level.

The University of Sydney

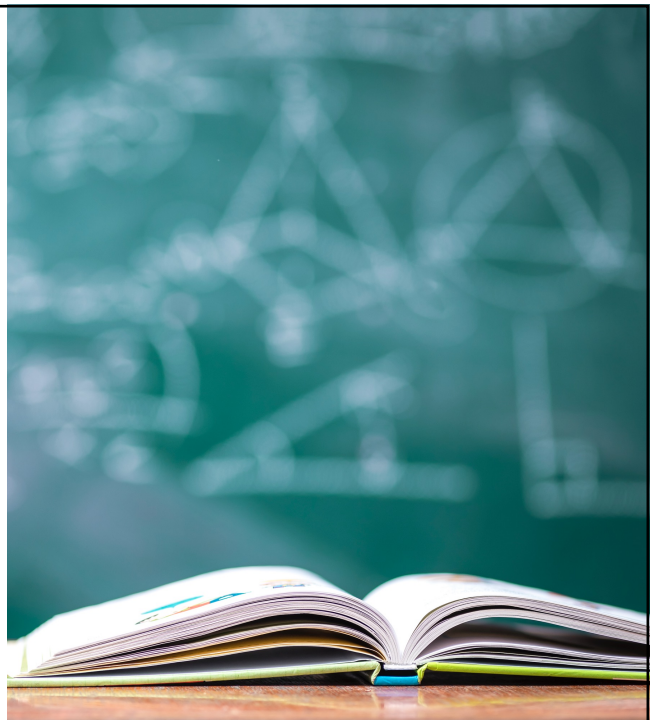


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Round 2 Consensus

- We separated undergraduate and postgraduate learning outcomes.
- Presented a total of 98 learning outcomes of which 96 items reached consensus.

The University of Sydney

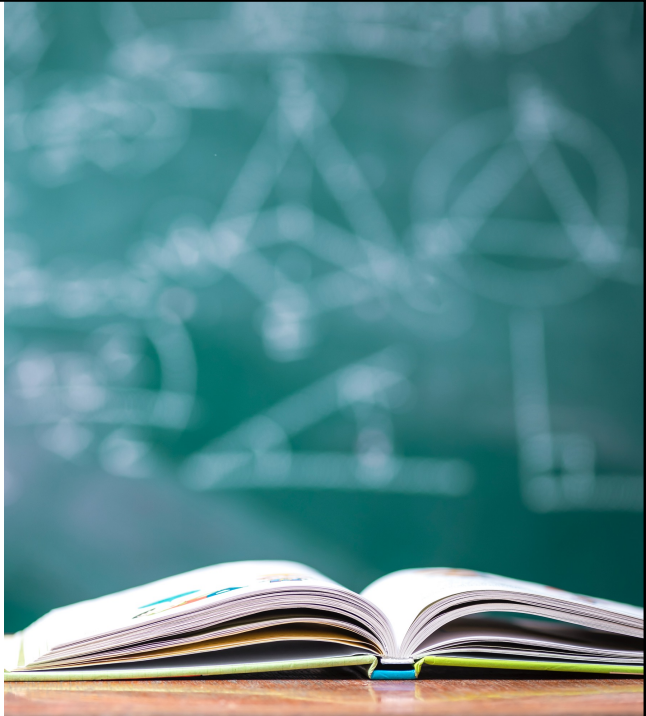


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Round 3 Consensus

- 1 item from Round 2 and 2 newly added learning outcomes went through the third round.
- 2 items did not reach consensus and will form part of our discussion today.

The University of Sydney



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...appropriate and comprehensive... This was missing in my undergraduate and postgraduate studies... - OHT (mobile dental)

...very thorough.. Can include use of SDF.. when not to treat in RACF, carer preventive training... - Dentist special interest in Aged Care

The University of Sydney

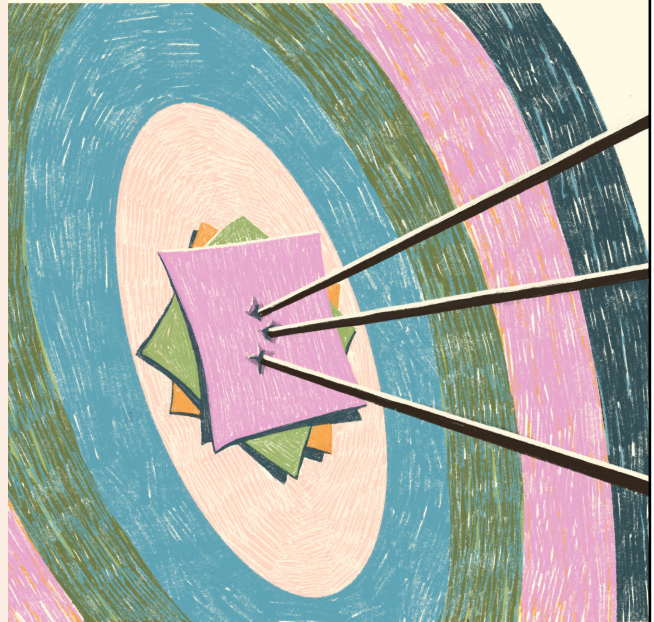
...comprehensive and thoughtful approach developed for both the undergraduate and postgraduate levels... - OHT special interest in SND

...the only ones we think will be difficult to implement are the ones related to patient care (we have difficulty sourcing special needs placements!) – practicing as OHT & involve in OHT academics

8

Aim of Today's Meeting

- To finalise and achieve consensus on outstanding learning outcomes.
- To review the curriculum outline to determine if it is adapted to the Australian OHT curriculum and practice.



9

Discussion Point 1

Domain 2: Access and Barriers to Oral Health for People with Disability and Other Underserved Populations

ROUND 1 Domain 2 UG LO	Understand the government funding and advocacy efforts aimed at supporting people with disability.	75% consensus (achieved)
ROUND 2 Domain 2 UG LO	Explain approaches to government funding and advocacy efforts.	55% consensus
ROUND 3 Domain 2 UG LO	Understand approaches to government funding and advocacy efforts.	68.8% consensus
Domain 2 PG LO	Explore opportunities and apply for government funding.	62.5% consensus

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Discussion Point 1

Domain 2: Access and Barriers to Oral Health for People with Disability and Other Underserved Populations

Expert comments:

- **Confusing** as it is implying the student will be applying for funding, not possible to achieve in postgrad training,
- If the OHT graduates are not working in academia or government jobs, and I think mostly will not since those positions are limited, I **don't think that there will be many opportunities** to apply for such funding thus should not be included as a learning outcome,
- If the intention here is to obtain funding to support research/programming, then it should be kept at the postgraduate level. If the intention is to apply for government funds to support the dental care/treatment needs of patients with disabilities, then keep at the undergraduate level.

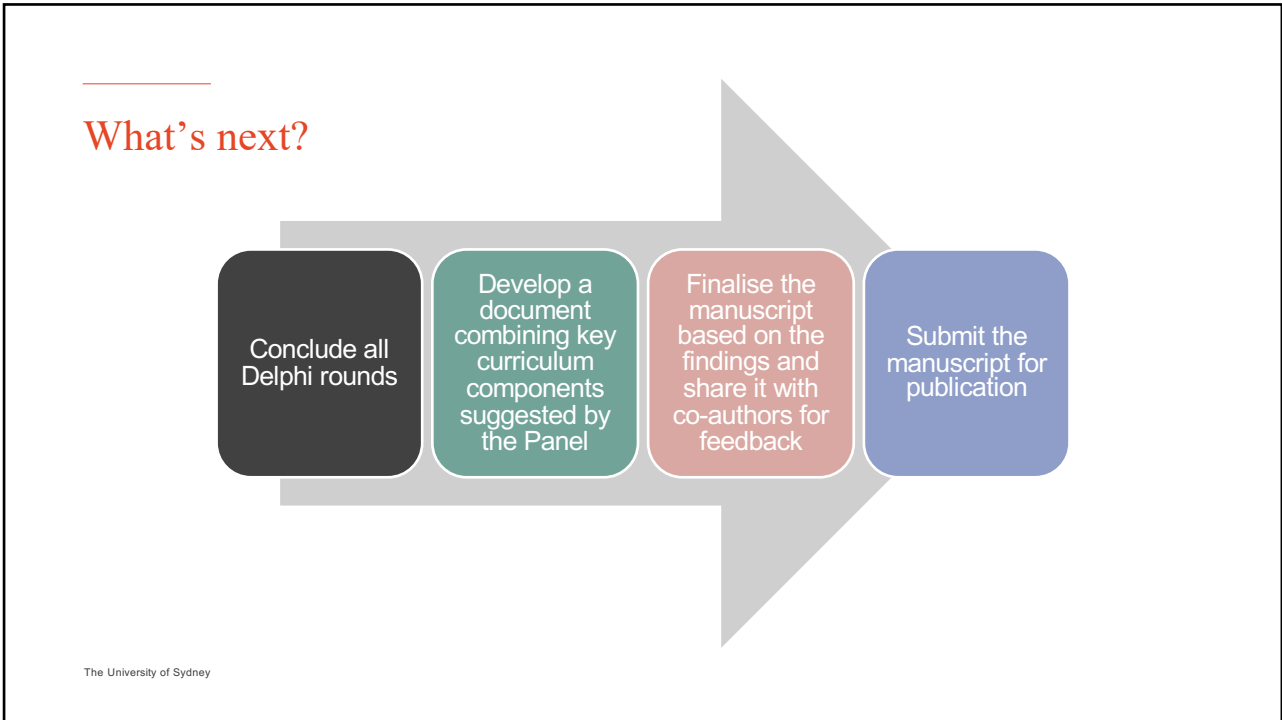
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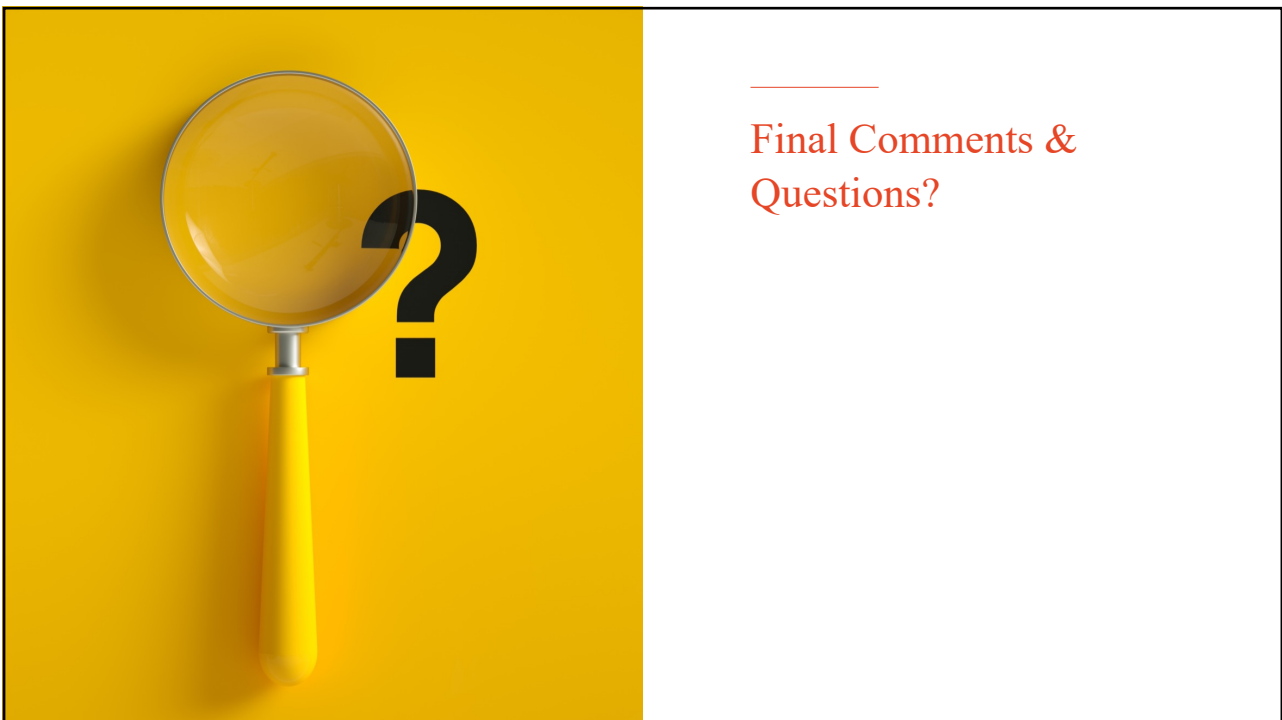
Further discussion?

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DELPHI STUDY

FINAL ROUND – SUMMARY

DATE	18 th June 2025	TIME	12pm	FACILITATOR	Dorothy Koh
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EXPERT PANEL		
Dr Mathew Lim	Dr Troy Longbottom	Dr Keng Soon Yeoh
INTERNAL PANEL		
A/Prof Archana Pradhan	A/Prof Delyse Leadbeatter	Prof Woosung Sohn
APOLOGIES		
Prof Hanny Calache	A/Prof Melanie Aley	

TIME	ITEM	BY
12:05 PM	Welcome, Thank You, Meeting Agenda	Dorothy
	Participants by Round <ul style="list-style-type: none"> • A total of 29 experts expressed interest to be part of this Delphi process • 24 experts completed Round 1 • 20 completed round 2 (83% retention rate) • 16 completed round 3 (80% retention rate) • 3 attended our online meeting today (75% attendance) • The countries that were involved right at the start were Australia, Ireland, New Zealand, UK, US, Malaysia, Singapore, Canada, Indonesia, France. 	Dorothy
	Round 1 consensus <ul style="list-style-type: none"> • 66 out of 67 items reached consensus • Feedback highlighted the need to refine Bloom's Taxonomy usage and the need for clearer categorisation between undergraduate and postgraduate level. 	Dorothy
	Round 2 consensus <ul style="list-style-type: none"> • Undergraduate and postgraduate learning outcomes were separated • 96 out of 98 learning outcomes reached consensus 	Dorothy
	Round 3 consensus	Dorothy

TIME	ITEM	BY												
	<ul style="list-style-type: none"> 2 items did not reach consensus which will form part of our discussion today 													
	<p>Informal validation</p> <ul style="list-style-type: none"> Post-Round three, the consolidated list of LOs were shared with four experienced clinicians (OHTs and a dentist who have extensive experience and active involvement in SND at present). This step served as a check to ensure the proposed curriculum resonated with those delivering care directly to people with disability. Comments were generally positive, one of them expanded on the importance of training in RACF, which will fall within the elaboration of the content under our 'Access and Barriers' and 'Clinical Management' domains. Another comment (from an OHT who is involved in clinical teaching), expressed that it can be challenging to secure special needs placements. 	Dorothy												
	<p>Aim of today's meeting</p> <ul style="list-style-type: none"> Finalise and achieve consensus on a remaining learning outcomes Review the overall curriculum outline for alignment with the Australian OHT curriculum and practice 	Dorothy												
12:15 PM	<p>Discussion Point 1</p> <hr/> <p>Discussion Point 1</p> <p>Domain 2: Access and Barriers to Oral Health for People with Disability and Other Underserved Populations</p> <table border="1"> <tbody> <tr> <td>ROUND 1 Domain 2 UG LO</td> <td>Understand the government funding and advocacy efforts aimed at supporting people with disability.</td> <td>75% consensus (achieved)</td> </tr> <tr> <td>ROUND 2 Domain 2 UG LO</td> <td>Explain approaches to government funding and advocacy efforts.</td> <td>55% consensus</td> </tr> <tr> <td>ROUND 3 Domain 2 UG LO</td> <td>Understand approaches to government funding and advocacy efforts.</td> <td>68.8% consensus</td> </tr> <tr> <td>Domain 2 PG LO</td> <td>Explore opportunities and apply for government funding.</td> <td>62.5% consensus</td> </tr> </tbody> </table> <hr/> <p>Discussion Point 1</p> <p>Domain 2: Access and Barriers to Oral Health for People with Disability and Other Underserved Populations</p> <div style="border: 1px solid red; padding: 5px;"> <p>Expert comments:</p> <ul style="list-style-type: none"> Confusing as it is implying the student will be applying for funding, not possible to achieve in postgrad training. If the OHT graduates are not working in academia or government jobs, and I think mostly will not since those positions are limited, I don't think that there will be many opportunities to apply for such funding thus should not be included as a learning outcome. If the intention here is to obtain funding to support research/programming, then it should be kept at the postgraduate level. If the intention is to apply for government funds to support the dental care/treatment needs of patients with disabilities, then keep at the undergraduate level. </div> <ul style="list-style-type: none"> Clarified the learning outcome intent: to build understanding of disability funding and advocacy—not about grant application. Example: NDIS doesn't fund oral healthcare but covers specialised toothbrushes or oral care devices, transport services, support workers to accompany them during dental appt, etc. It is beneficial for students to be aware of what was covered, what are the service available, and what are the limits of NDIS. So they can educate the patients accordingly. 	ROUND 1 Domain 2 UG LO	Understand the government funding and advocacy efforts aimed at supporting people with disability.	75% consensus (achieved)	ROUND 2 Domain 2 UG LO	Explain approaches to government funding and advocacy efforts.	55% consensus	ROUND 3 Domain 2 UG LO	Understand approaches to government funding and advocacy efforts.	68.8% consensus	Domain 2 PG LO	Explore opportunities and apply for government funding.	62.5% consensus	Everyone
ROUND 1 Domain 2 UG LO	Understand the government funding and advocacy efforts aimed at supporting people with disability.	75% consensus (achieved)												
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Domain 2 PG LO	Explore opportunities and apply for government funding.	62.5% consensus												

TIME	ITEM	BY
	<ul style="list-style-type: none"> The panel brainstormed for appropriate language/wording to make the learning outcomes clearer. <p>Replace...to...</p> <ul style="list-style-type: none"> Approaches -> types and sources Understand -> identify Remove 'government' (as it could be philanthropic or other funding) <p>Final</p> <ul style="list-style-type: none"> UG: Identify different types and sources of disability support funding and advocacy. PG: Explore opportunities and application processes for funding aimed at supporting people with disability. 	
	<p>Discussion Point 2</p> <p>Will our expert panel apply these learning outcomes in their OHT curriculum?</p> <ul style="list-style-type: none"> Experts expressed concern over lack of student interest in pursuing further training. Noted the challenge of integrating content into already crowded curriculum. Concerned about what was taught in UG level currently, may not be sufficient to proceed to PG level. Agreed that the proposed content is adaptable to current OHT and dental hygiene practices, so long as it is within scope of practice and knowing when/where to refer. 	Everyone
	<p>Next steps</p> <ul style="list-style-type: none"> Conclude Delphi rounds (Data analysis) Develop a document combining key curriculum components suggested by the Panel Finalise the manuscript and share it with co-authors for feedback Submit the manuscript for publication 	Dorothy
12:50 PM	End of Meeting	

Meeting minutes vetted by: A/Prof Archana Pradhan & A/Prof Delyse Leadbeatter