"Our bodies aren't meant to live the whitefellas way": Navigating Indigenous oral health in neoliberal Australia

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"Non-Indigenous Australians must learn to appreciate the discomfort that is a daily experience for Aboriginal and Torres Strait Islander Australians. You can't experience what we feel every day, but you can accept it as real. You can sit with, and use this, experience of discomfort in this learning to enable much-needed change. Change oneself and then apply those principles to work in policy development and service delivery." – Red Little

ACKNOWLEDGMENT OF COUNTRY

I would like to acknowledge that during my Candidature I have been honoured to live, learn, and work on the traditional lands of the Kaurna Peoples. I would like to take this opportunity to extend my appreciation for the Kaurna People as the Traditional Owners of these lands. Today and every day, I pay respects to leaders and Elders past and present for they hold the memories, the traditions, the cultures, and the hopes of all Kaurna Peoples.

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I express my gratitude in the sharing of these lands, my sorrow for the personal, spiritual, and cultural costs of that sharing and my hope that we may walk forward together in harmony and in the spirit of healing.

DECLARATION

I certify that this work contains no material which has been accepted for the award of any other degree or diploma in my name, in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. In addition, I certify that no part of this work will, in the future, be used in a submission in my name, for any other degree or diploma in any university or other tertiary institution without the prior approval of the University of Adelaide and where applicable, any partner institution responsible for the joint-award of this degree.

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Signed:

Brianna Poirier (Candidate)

Date: 30/09/2022

TABLE OF CONTENTS

ACKNOWLEDGMENT OF COUNTRY ii

DECLARATION iii

TABLE OF CONTENTS iv

LIST OF FIGURES vii

LIST OF TABLES viii

KEYWORDS ix

LIST OF ABBREVIATIONS AND ACRONYMS x

ABSTRACT xi

ACKNOWLEDGMENTS xiii

RESEARCH OUTCOMES xvi

PUBLICATIONS DURING CANDIDATURE xvi
PRESENTATIONS DURING CANDIDATURE xx
AWARDS DURING CANDIDATURE xxii
COURSES COMPLETED DURING CANDIDATURE xxiii

SECTION A: INTRODUCTION 1

CHAPTER 1: BACKGROUND 2

1.1 PREFACE 3
1.2 BACKGROUND 3
1.3 REFERENCES 4

CHAPTER 2: LITERATURE REVIEW 6

2.1 PREFACE 7
2.2 PUBLICATION DETAILS 7
2.3 HIGHLIGHTS 7
2.4 STATEMENT OF AUTHORSHIP 9
2.5 PUBLICATION 11

CHAPTER 3: LITERATURE REVIEW 42

3.1 PREFACE 43
3.2 PUBLICATION DETAILS 43
3.3 HIGHLIGHTS 43
3.4 STATEMENT OF AUTHORSHIP 44
3.5 PUBLICATION 46

SECTION B: METHODOLOGY & STUDY DESIGN 58

CHAPTER 4: STUDY DESIGN 59

4.1 PREFACE 60
4.2 BACKGROUND TO THIS RESEARCH 60
4.3 AIMS AND OBJECTIVES WITHIN THIS THESIS 63
4.4 THEORETICAL FOUNDATIONS 65
4.5 REFERENCES 67

CHAPTER 5: POSITIONALITY 69

5.1 PREFACE....70
5.2 POSITIONALITY STATEMENT....70
5.3 REFERENCES....76

CHAPTER 6: METHODOLOGY....77

6.1 PREFACE....78
6.2 PUBLICATION DETAILS....78
6.3 HIGHLIGHTS....78
6.4 STATEMENT OF AUTHORSHIP....79
6.5 PUBLICATION....80

SECTION C: RESULTS....88

CHAPTER 7: RESULTS....89

7.1 PREFACE....90
7.2 PUBLICATION DETAILS....90
7.3 HIGHLIGHTS....90
7.4 STATEMENT OF AUTHORSHIP....91
7.5 PUBLICATION....93

CHAPTER 8: RESULTS....105

8.1 PREFACE....106
8.2 PUBLICATION DETAILS....106
8.3 HIGHLIGHTS....106
8.4 STATEMENT OF AUTHORSHIP....107
8.5 PUBLICATION....109

CHAPTER 9: RESULTS....128

9.1 PREFACE....129
9.2 PUBLICATION DETAILS....129
9.3 HIGHLIGHTS....129
9.4 STATEMENT OF AUTHORSHIP....130
9.5 PUBLICATION....132

CHAPTER 10: RESULTS....146

10.1 PREFACE....147
10.2 PUBLICATION DETAILS....147
10.3 HIGHLIGHTS....147
10.4 STATEMENT OF AUTHORSHIP....148
10.5 PUBLICATION....150

CHAPTER 11: RESULTS....157

11.1 PREFACE....158
11.2 PUBLICATION DETAILS....158
11.3 HIGHLIGHTS....158
11.4 STATEMENT OF AUTHORSHIP....159
11.5 PUBLICATION....161

CHAPTER 12: RESULTS....170

12.1 PREFACE....171
12.2 PUBLICATION DETAILS....171
12.3 HIGHLIGHTS....171

12.4 STATEMENT OF AUTHORSHIP 172
12.5 PUBLICATION 174

SECTION D: FUTURE DIRECTIONS 192

CHAPTER 13: NEOLIBERAL RESISTANCE 193

13.1 PREFACE 194
13.2 PUBLICATION DETAILS 194
13.3 HIGHLIGHTS 194
13.4 STATEMENT OF AUTHORSHIP 195
13.5 PUBLICATION 197

CHAPTER 14: ORAL HEALTH DISCOURSE 204

14.1 PREFACE 205
14.2 PUBLICATION DETAILS 205
14.3 HIGHLIGHTS 205
14.4 STATEMENT OF AUTHORSHIP 206
14.5 PUBLICATION 207

CHAPTER 15: CONCLUSIONS & RECOMMENDATIONS 216

15.1 PREFACE 217
15.2 OVERVIEW OF RESEARCH 217
15.3 RECOMMENDATIONS 217
15.4 CONCLUSIONS 220
15.5 REFERENCES 220

CHAPTER 16: APPENDICES 223

16.1 APPENDIX A: MOTIVATIONAL INTERVIEWING GUIDES 224

LIST OF FIGURES

Figure 1. Study design schematic emphasising the sources of data collated for this thesis.

Figure 2. Pictorial representation of thesis aims in relation to chapters that address each aim.

LIST OF TABLES

Table 1. World Health Assembly Resolution on oral health comparison with evidence generated within this thesis.

KEYWORDS

Aboriginal and Torres Strait Islander health

Neoliberalism

Thematic Analysis

Indigenous Wellbeing

Indigenous Resistance

Community autonomy

Critical realism

Subjectivity

Nutrition

Oral health

Health equity

Strengths-based

Relationality

Yarning

Decolonising Theories

LIST OF ABBREVIATIONS AND ACRONYMS

ACCHO – Aboriginal Community Controlled Health Organisations

ACCHS – Aboriginal Community Controlled Health Services

AHW – Aboriginal Health Workers

CaFHS - Child and Family Health Service

CGT – Constructivist Grounded Theory

ECC – Early Childhood Caries

IHW – Indigenous Health Workers

JBI – Joanna Briggs Institute

MI – Motivational Interviewing

PRISMA – Preferred Reporting Items for Systematic Reviews and Meta-Analyses

PROSPERO – International prospective register of systematic reviews

SEP – Socioeconomic Position

SSB – Sugar Sweetened Beverages

SUMARI – System for the Unified Management, Assessment and Review of Information

UNDRIP – United Nation Declaration on the Rights of Indigenous Peoples

WHO – World Health Organisation

ABSTRACT

Aboriginal and Torres Strait Islander Peoples have a healthy oral health history. Intentional disruptions initiated during colonisation and sustained by neoliberalism and institutional racism have had devastating impacts on oral health, and general wellbeing. Despite concerted efforts to reduce the experiences of oral diseases for Aboriginal and Torres Strait Islander Communities, inequities persist and, in some cases, have worsened. Therefore, the research comprising this thesis broadly aimed to further our understanding of the complex circumstances contributing to the inequitable experience of oral health for Aboriginal and Torres Strait Islander Peoples through qualitative methodologies. This thesis is broadly divided into four sections and 16 chapters.

Section A provides an introduction to this thesis. It its divided into two parts, the first provides a brief overview of Aboriginal and Torres Strait Islander oral health in Australia. The second part is a literature review comprised of two qualitative systematic reviews.

Section B details the methodologies and study design of this thesis. Chapter 4 provides details related to the study design, methodological approaches, and theoretical frameworks. Chapter 5 provides the Candidate's positionality statement. Chapter 6 details a methodological approach to research, termed Relational Yarning, that was conceptualised alongside the research comprising this thesis.

Section C includes the results generated from the research undertaken during Candidature and includes six chapters. Chapters 7, 8, and 9 detail barriers, facilitators, and motivators related to establishing and maintaining oral health for Aboriginal and Torres Strait Islander families. Chapters 10 and 11 focus on exploring the impact of neoliberalism on Aboriginal and Torres Strait Islander oral health as well as global Indigenous wellbeing.

Section D provides an overview of the research presented in this thesis and recommendations for future directions. Chapter 13 and 14 are commentaries regarding aspects of concepts

deemed critical during previous sections of the thesis: self-determination, resistance to neoliberalism, and the need to progress a strengths-based narrative regarding Aboriginal and Torres Strait Islander oral health. Chapter 15 provides concluding remarks and recommendations.

This thesis provides evidence and suggestions to enhance existing facilitators to establishing and maintaining oral health, as identified by Aboriginal and Torres Strait Islander families and Indigenous Communities, globally. Aboriginal Community Controlled Health Organisations (ACCHOs) have a strong history of supporting Aboriginal and Torres Strait Islander self-determination and subsequently, Community wellbeing. Any successful endeavour to further oral health equity for Aboriginal and Torres Strait Islander Peoples must privilege the leadership and expertise of ACCHOs and their workforce. There remains a need for structural changes that ensure adequate funding to comprehensively embed oral health promotion and programming in the service delivery of ACCHOs This thesis supports the notion of neoliberalism as a re-colonisation of Aboriginal and Torres Strait Islander Peoples, and indeed Indigenous Peoples globally, that is furthering health disparities through both insidious process of internalisation as well as generative mechanisms external to individuals. Critically, the strength of Aboriginal and Torres Strait Islander Communities continues to resist these processes.

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RESEARCH OUTCOMES

The following research outcomes were produced during the PhD Candidature.

PUBLICATIONS DURING CANDIDATURE

The current thesis includes eleven research articles, out of which nine are published or accepted for publication and two have been submitted for publication and are currently under review.

Published:

1. **Poirier B**, Hedges J, Smithers L, Moskos M, Jamieson L. 'What are we doing to our babies' teeth?' Barriers to establishing oral health practices for Indigenous children in South Australia. BMC Oral Health 2021, 21, 434. doi: 10.1186/s12903-021-01791-x

2. **Poirier B**, Hedges J, Smithers L, Moskos M, Jamieson L. Aspirations and Worries: The role of parental intrinsic motivation in establishing oral health practices for Indigenous children. International Journal of Environmental Research and Public Health 2021, 18, 11695. doi: 10.3390/ ijerph182111695.

3. **Poirier B**, Hedges J, Smithers L, Moskos M, Jamieson L. Child-, family- and Community-level facilitators for Indigenous childhood oral health. International Journal of Environmental Research and Public Health 2022. doi: 10.3390/ ijerph19031150.

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Australia 2022. doi: 1002/hpja.640.

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10. **Poirier B**, Hedges J, Soares G, Jamieson L. Aboriginal Community Controlled Health Services: An Act of Resistance Against Australia's Neoliberal Ideologies. International Journal of Environmental Research and Public Health. International Journal of Environmental Research and Public Health 2022. doi: 10.3390/ijerph191610058

Under Review:

11. **Poirier B**, Hedges J, Jamieson L. The future of Aboriginal and Torres Strait Islander oral health lies in the footprints of the past. Australia New Zealand Journal of Public Health. *(Submitted June 2022)*.

Other research articles produced during the Candidature period:

12. Sethi S, **Poirier B**, Hedges J, Smith M, Canfell K, Garvey G, Ju x, Jamieson L. Working towards a comprehensive understanding of HPV and cervical cancer amongst Indigenous women: A qualitative systematic review. BMJ Open 2021. doi: 10.1136/bmjopen-2021-050113

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PRESENTATIONS DURING CANDIDATURE

Presentation Title	Conference/Research Centre
"I'd feel like a failure, you know, like I didn't do enough to protect them": Neoliberal Subjectivity in Indigenous Oral Health	14th Health Disparities Conference Xavier University of Louisiana 2021
"Aspirations and Worries: The role of parental intrinsic motivation in establishing oral health practices for Indigenous children"	South Australian Scientific Meeting Australian Society for Medical Research 2021
Neoliberalism & Indigenous Oral Health	Public Health Association of Australia National Conference 2021
"What are we doing to our babies' teeth?" Barriers to establishing oral health practices for Indigenous children in South Australia	Florey Postgraduate Conference University of Adelaide 2021
Looking back and moving forward: Colonisation & Indigenous Health Research	Research Seminar Australian Research Centre for Population Oral Health 2021
Child-, family- and Community-level facilitators for Indigenous childhood oral health	Adelaide Dental School Research Day 2021
Walking together: Relational yarning as a mechanism to ensure meaningful and ethical Indigenous oral health research in Australia	10th Annual Indigenous Health Research Showcase Poche 2021
The evolution of the teledentistry landscape in Australia: A scoping review	Preventive Health Conference Public Health Association of Australia 2022
Relational Yarning as a methodology	Wardliparingga Scientific Seminar SAHMRI 2022
Exploring Neoliberal Subjectivity in the Context of Indigenous Oral Health	General Session International Association of Dental Research 2022
Aboriginal Community Controlled Health Services: An act of resistance against Australia's neoliberal oral health system	26th IADH Congress: Quality Matters, Ensuring Equitable Health Outcomes IADH Paris France

	2022
The Impact of Neoliberal Generative Mechanisms on Indigenous Health: A Critical Realist Scoping Review	Australia and New Zealand Population Health Congress 2022

AWARDS DURING CANDIDATURE

1. Florey Postgraduate Award, Adelaide Dental School, 2021
2. Travel and Development Grant, Healthy Development Adelaide, 2022
3. Student Scholarship, Oral Health Special Interest Group Public Health Association of Australia, 2022

COURSES COMPLETED DURING CANDIDATURE

1. Comprehensive Systematic Review Training Program, Joanna Briggs Institute, University of Adelaide
2. Scoping Review Workshop, Joanna Briggs Institute, University of Adelaide
3. Public Policy Economics, University of Oxford
4. Globalisation, University of Oxford
5. Doing Discourse Analysis: Populism, Neoliberalism and Radical Democratic Politics, University of Essex
6. Biostatistics, School of Public Health, University of Adelaide
7. Making Healthy Public Policy, School of Public Health, University of Adelaide
8. Introduction to Epidemiology, School of Public Health, University of Adelaide
9. Epidemiological Research Methods, School of Public Health, University of Adelaide

"A pattern of development which
allows Aboriginal people to be
who we are, for we can be no other
lest we die." – Bruce McGuinness

SECTION A

Introduction

OVERVIEW

Section A provides an introduction to this thesis. It is broadly divided into two parts, the first provides a brief overview of Aboriginal and Torres Strait Islander oral health in Australia. The second part is a literature review comprised of two qualitative systematic reviews.

1

Background

1.1 PREFACE

This chapter briefly outlines the background to the body of research comprising this thesis and summarises the key aspects related to the oral health experiences of Aboriginal and Torres Strait Islander Peoples in Australia. Although efforts have been made to minimise repetition between the details provided in this Chapter and those outlined in each manuscript, some may still exist. This chapter concludes by outlining the overarching aim of this thesis.

1.2 BACKGROUND

Aboriginal and Torres Strait Islander Peoples have a history of strong oral health, grounded in a relational and holistic understanding of wellbeing that considers oral health as central to general health. Prior to European colonisation in 1788, over 260 language groups of Aboriginal and Torres Strait Islander Peoples in Australia thrived for 65,000 years, each with their unique histories, cultures, and spiritual traditions (1). Colonisation brought mass suffering for Aboriginal and Torres Strait Islander Peoples in Australia, through removal of Communities from Country, forced removal of children from their families, restriction of language use, ecological destruction, and suppression of participation in cultural activities (2, 3). Colonisation, assimilation, marginalisation, and globalisation has had, and continues to have, devasting impacts on Aboriginal and Torres Strait Islander wellbeing (2, 4). Despite the social disadvantage created by colonial attempts at assimilation, Aboriginal and Torres Strait Islander Peoples continue to resist dominant ideologies and forces; we must recognise this immense strength, as well as interrogate the circumstances that have maintained the need for continued resilience.

Although considerable resourcing has been allocated to addressing health inequities experienced by Aboriginal and Torres Strait Islander Peoples, disparities persist and, in some cases, have worsened (5, 6). Approximately 61% of Aboriginal and Torres Strait Islander

Peoples experience decay in their primary teeth, compared with 41% of non-Indigenous Australians, and are more likely to have untreated decay compared with non-Indigenous children (7). Early Childhood Caries (ECC) has deleterious impacts on children, including pain, speech difficulties, compromised self-esteem, and difficulties eating and sleeping (8). Evidence suggests that severe consequences of ECC can affect child growth, development, concentration, quality of life, failure to thrive and educational attainment (9-13). Challenges to establishing and maintaining oral health for Aboriginal and Torres Strait Islander families persist (14). Present strategies for strengthening oral health, and indeed overall wellbeing, for Aboriginal and Torres Strait Islander Peoples often fail to consider the historical, socio-political, and structural challenges Aboriginal and Torres Strait Islander Peoples face in attaining oral health (15, 16).

There remains a need to move beyond clinical indicators of oral health to build a contextual understanding of the environments in which oral health inequities persist (17). This approach must be led by Community-identified needs, consider structural and institutional factors related to the experience of inequities, and progress a strengths-based narrative that counteracts the deficit discourse often told of Aboriginal and Torres Strait Islander health. Therefore, through a range of qualitative methodologies informed by decolonising theories, this thesis broadly aims to explore the barriers, facilitators, and motivators to maintaining oral health for Aboriginal and Torres Strait Islander families in the context of neoliberal Australia.

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2

Literature Review

Facilitators and challenges to maintaining oral health for Indigenous Communities globally: A qualitative systematic review

2.1 PREFACE

This qualitative systematic review and meta-aggregation aimed to identify factors that facilitate and challenge the ability of global Indigenous Communities to maintain oral health. This is an important component to the thesis as it situates the findings within the global Indigenous context.

2.2 PUBLICATION DETAILS

Poirier B, Soares G, Sethi S, Hedges J, Jamieson L. Facilitators and challenges to maintaining oral health for Indigenous Communities globally: A qualitative systematic review. Journal of Health Care for the Poor and Underserved. (Forthcoming Journal of Health Care for the Poor and Underserved 34.1 February 2023. All rights reserved.)

2.3 HIGHLIGHTS

- Challenges and facilitators to maintaining oral health were identified at the child, carer, Community, and service level.
- The results indicate the complexity of oral health maintenance for Indigenous Communities in Canada and Australia; the myriad of factors influencing oral hygiene practices, dental appointment attendance, and health-promoting behaviours cannot simply be reduced to a single factor.
- Structural inequities confounded the ability to maintain oral health for participants; all those involved in the oral health of Indigenous Peoples must recognise and act upon the effects of socioeconomic, historic, and systemic inequities that enable the continuation of Indigenous Peoples' collective experiences of discrimination.

- Interventions to strengthen the oral health of Indigenous Communities must use a comprehensive and integrated approach to care that considers oral health as central to overall well-being and addresses challenges at levels beyond personal responsibility.

2.4 STATEMENT OF AUTHORSHIP

Statement of Authorship

Title of Paper	Facilitators and challenges to maintaining oral health for Indigenous communities globally: A qualitative systematic review
Publication Status	☐ Published ☒ Accepted for Publication ☐ Submitted for Publication ☐ Unpublished and Unsubmitted work written in manuscript style
Publication Details	Poirier B, Soares G, Sethi S, Hedges J, Jamieson L. Facilitators and challenges to maintaining oral health for Indigenous communities globally: A qualitative systematic review. Journal of Health Care for the Poor and Underserved. (Forthcoming Journal of Health Care for the Poor and Underserved 34.1 February 2023. All rights reserved.)

Principal Author

Name of Principal Author (Candidate)	Brianna Poirier		
Contribution to the Paper	Conceptualisation of research question Data analysis Manuscript writing Editing and revisions Corresponding author for publication process		
Overall percentage (%)	75%		
Certification:	This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper.		
Signature		Date	13/07/2022

Co-Author Contributions

By signing the Statement of Authorship, each author certifies that:

i. the candidate's stated contribution to the publication is accurate (as detailed above);

ii. permission is granted for the candidate in include the publication in the thesis; and

iii. the sum of all co-author contributions is equal to 100% less the candidate's stated contribution.

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Signature		Date	

2.5 PUBLICATION

TITLE: Facilitators and challenges to maintaining oral health for Indigenous Communities globally: A qualitative systematic review

Authors: Brianna Poirier[1*], Gustavo Soares[1], Sneha Sethi[1], Joanne Hedges[1], Lisa Jamieson[1]

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Abstract

Globally, Indigenous Peoples experience pervasive oral health inequities due to a complex interplay of social determinants of health, the sustained effects of the colonisation, racism, and intergenerational disruption to Indigenous Communities. Therefore, this qualitative systematic review aimed to synthesise evidence related to facilitators and challenges that impact the ability of global Indigenous Communities to maintain oral health. Two independent reviewers searched PubMed, SCOPUS, Web of Science and Embase. Qualitative studies including illustrations from Indigenous Peoples regarding facilitators and challenges to oral health maintenance were considered. Included articles were critically appraised. The search identified 4247 articles eligible for inclusion; 22 articles were included. Challenges and facilitators were synthesised across child, carer, Community, and service levels during the meta-aggregation. The prioritisation of integrated oral health services, programs, and research that encompass multiple factors at various levels of influence are needed to strengthen the oral health of Indigenous Communities.

Keywords:

Indigenous peoples [MeSH]

Oral health [MeSH]

Public Health Dentistry [MeSH]

Social determinants of health [MeSH]

Holistic Health [MeSH]

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Introduction

Indigenous Peoples[1] is a global term used to refer to a vast range of groups with unique social, cultural, and historic characteristics whose societies developed on their traditional lands prior to colonisation.[1] Despite such rich sociocultural diversity, robust evidence has demonstrated a clear pattern of poorer health and social outcomes for Indigenous populations compared with their non-Indigenous counterparts, irrespective of the level of development of the region where they live.[2, 3] For instance, Canada and Australia, two high-income countries, present some of the highest gaps in life expectancy between Indigenous and non-Indigenous groups globally.[2] These pervasive health inequities have been attributed to a complex interplay of social determinants of health, including the sustained effects of the colonial enterprise on land and cultural deprivation, structural and interpersonal racism, and intergenerational disruption of Indigenous families and Communities.[4-6] Factors such as lack of adequate health infrastructure, socioeconomic deprivation, and cultural barriers continue to limit the accessibility of resources and health care that would enable increased well-being and uptake of healthy behaviours for Indigenous Peoples.[7-11]

Poor oral health is a strong marker of socioeconomic disadvantage within and across populations. Due to the complex interplay of colonial legacy, ongoing assimilation efforts, and social disadvantage, including limited access to economic resources, Indigenous Peoples experience a disproportionately high burden of oral disease.[12] Challenges faced by Indigenous Peoples in maintaining their oral health include lack of oral health providers serving the Community, difficulties obtaining a dental appointment, financial and geographic barriers to dental care, and the costs of healthy food, toothpaste, and toothbrushes.[8, 13-15]

[1] In Canada, Indigenous Peoples refers to First Nations, Inuit, and Metis Peoples and in Australia, Indigenous Peoples refers to Aboriginal and Torres Peoples.

Pooled estimates of oral disease show that Indigenous Peoples worldwide have a higher prevalence of periodontal disease, dental caries, and worse self-rated oral health than non-Indigenous populations across the lifespan.[16-20] Findings indicate that oral health inequities between Indigenous and non-Indigenous groups are also manifest in the prevalence of oral human papillomavirus (HPV) infections and in the incidence HPV-related oropharyngeal squamous cell carcinoma.[21, 22] The magnitude of the oral disease burden among Indigenous populations is not only an unfair consequence of unequal power structures and social gradients, but also produces significant impacts on the well-being of individuals, their families, and their Communities.[23-25]

Indigenous cultures often share holistic notions of health and healing that are centred on connections, family, and Community.[26] From an individual perspective, this concept is understood as a balance of body, mind, heart, and spiritual well-being. Within the family context, supportive relationships provide a safe environment that enables the healthy development of its members. At the Community level, collective efforts are directed at intergenerational healing, cultural continuity, and empowerment.[4] Recently, Indigenous scholars and non-Indigenous allies have placed increasing emphasis on Community strengths as a way of overcoming deficit discourses based on vulnerability, disease burden, and discrimination that prevail in the Indigenous health literature.[27] Examining Community strengths related to oral health while recognising the contextual and structural barriers that prevent Indigenous populations from maintaining positive oral health practices may provide a comprehensive picture of facilitators and challenges in this field. Oral health knowledge that builds on the strengths and needs of Indigenous Communities might generate renewed and culturally meaningful strategies of oral health promotion.[15] Therefore, this qualitative systematic review and meta-aggregation aimed to identify factors that facilitate and challenge the ability of global Indigenous Communities to maintain oral health.

Methods

This systematic review has been registered in PROSPERO (blinded) and the Joanna Briggs Systematic Reviews register. A prior search of the PROSPERO register discovered no comparable studies. The Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines [28] were adhered to in the conduct of this systematic review (Supplementary File 1 – available from the authors upon request).

Positionality. The research team acknowledges the influence of personal experiences and philosophies on research and the importance of self-situation and reflection. This systematic review is a consequence of aspirations to highlight personal stories, reflections, and opinions of Indigenous Peoples regarding oral health. Stories shared with the primary reviewers (BP, GS) related to oral health inequities experienced by Indigenous Communities in South Australia, Brazil, and Canada, while conducting field work over the past five years provided the motivation to investigate existing qualitative evidence regarding oral health maintenance for Indigenous Communities. Although both researchers are non-Indigenous, BP has qualitative experience with Community-engaged scholarship in the context of Indigenous health in Canada and Australia; and GS has had the privilege of working with Indigenous Peoples of Brazil and South Australia. The supporting research team consists of Indigenous leaders and non-Indigenous researchers with extensive experience in the realm of Indigenous oral health.

Identifying studies for inclusion. The reviewers used a pre-established search strategy,[29] which used key terms (and their related variants) related to the population of interest, the phenomenon being researched, as well as the included study designs. Two independent reviewers (BP, SS) screened the collected literature for eligible articles using PubMed, SCOPUS, Web of Science, and Embase databases from database inception until

March 2022. The search was tailored and adapted according to the requirements of each database (Supplementary File 2 – available from the authors upon request).

To ensure an exhaustive and thorough search for eligible studies, the reviewers used the option to run "related" searches where possible and performed manual bibliographic searches of each included article to identify other potentially relevant publications. Titles and abstracts were screened independently by both reviewers to assess eligibility, with articles considered relevant by either reviewer progressing to full-text review. The selected articles then progressed to full-text screening, and the reviewers included studies that satisfied the following criteria:

- The study focused on the oral health experiences of Indigenous Peoples
- The study was qualitative or mixed methods (with explicit qualitative examples)
- The study was available in English
- The study was published prior to March 2022

Studies that exclusively included Indigenous health workers, had no ethical approval, contained no qualitative illustrations, and those published in languages other than English were excluded. Any disagreements were solved through discussion with a third reviewer (GS).

Critical appraisal. Of the various validated tools for appraisal of qualitative studies, this review used the Joanna Briggs Institute (JBI) System for the Unified Management, Assessment and Review of Information (SUMARI) critical appraisal tool. The JBI SUMARI tool was chosen due to its focus on congruity and high sensitivity to aspects of validity.[30] Included studies were appraised by two independent reviewers (GS, SS). The JBI SUMARI tool includes 10 questions that consider methodology, positionality, findings, and cohesion; each question is scored as yes, no, or unclear. Studies that scored at least eight yes answers

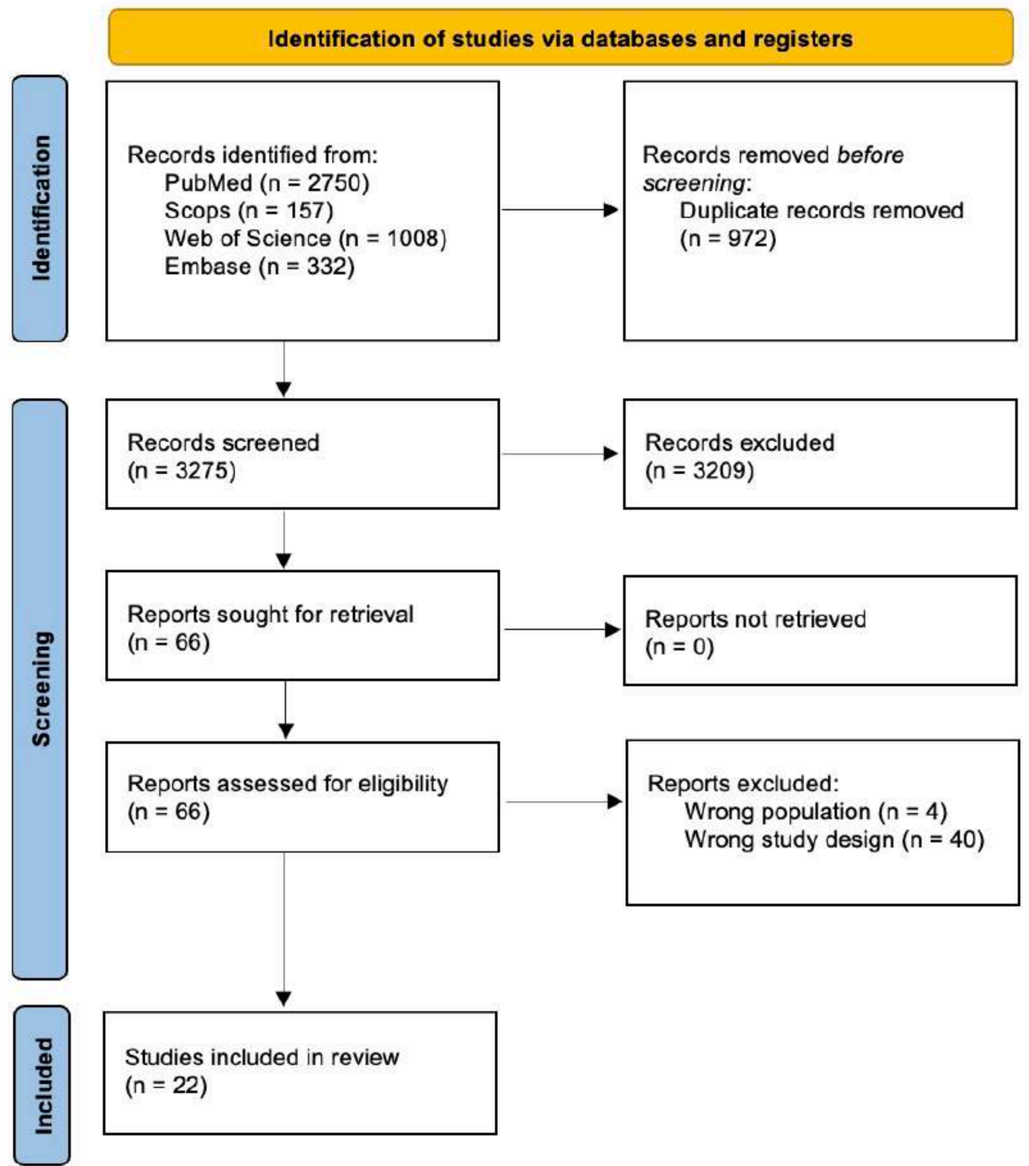
were considered of high methodological rigor, while those that scored five or less were considered of low methodological rigor.

Data extraction and synthesis. Data were extracted in phases. For the initial phase, the reviewers (BP, GS, SS) applied concepts of thematic analysis and expansively acknowledged findings from each included study. These findings were then extracted into JBI SUMARI. The successive phase used the JBI data extraction tool for all the included studies. Extracted findings were scored within JBI SUMARI as Credible, Not Supported, and Unequivocal.[31] The synthesis of findings was carried out manually by the research team, including writing all extracted findings on a white board and categorising common concepts and themes. Common themes were then grouped together, with networks between other identified themes explored in the context of oral health. These synthesised categories were subsequently transferred from the white board to JBI SUMARI. Each individual finding was placed within the appropriate category, with each category then assigned to an overarching synthesised finding. [31, 32]

Results

The search identified 4,247 articles eligible for inclusion in this review, of which 972 were duplicates, leaving 3,275 unique records for screening. The full text of 66 articles were retrieved and assessed for eligibility; during this process 44 articles were excluded, largely due to a lack of qualitative study design. Therefore, a total of 22 articles were included in this systematic review (Figure 1).

Figure 1. PRISMA 2020 flow diagram [28]



Study characteristics. The included studies were published between 2003 and 2022, with seven from Canada [9, 15, 33-37] and 15 from Australia.[8, 24, 38-50] Methods among articles included focused ethnography,[35] motivational interviewing,[8, 24, 41] yarning circles,[38, 39, 45] sharing circles,[9, 36] focus groups,[33, 34, 37, 42, 43, 46, 48] and semi-structured interviews.[15, 33, 34, 37-40, 42, 47, 50] Community-based participatory research and participatory action research methodologies framed three[15, 33, 36] and two[35, 49] studies, respectively. Findings presented in this review represent First Nations,[15, 33-35] Métis,[9, 36] Inuit,[37] and Aboriginal and Torres Strait Islander Communities [8, 24, 38-50] (Table 1).

Table 1. Study Characteristics

Study	Country	Methods	Phenomena of interest	Setting	Participant characteristics and sample size
Naidu et al. 2014 [33]	Canada	Community-based participatory research, interviews, and focus groups Analysis: Thematic analysis.	Beliefs and practices regarding oral health	Algonquin Community of Rapid Lake, Western Quebec	Children aged 9 to 11 years (N=7) and their parents (N= 8)
Ogenchuk et al. 2021[15]	Canada	Community-based participatory research, interviews Analysis: Inductive thematic analysis	Strengths and barriers related to the provision of oral health services in an Indigenous Community	La Loche Community in northwest Saskatchewan	Elders, Community leaders, healthcare providers, teachers, and parents/guardians of children (N=38)
Patel et al. 2021[39]	Australia	Interviews and yarning circles Analysis: Grounded theory	Perception and attitudes towards dental services	Indigenous Communities in Kimberley region, Western Australia	Indigenous adults aged 18 years or older (N=80)
Patel et al. 2021[38]	Australia	Interviews and yearning circles Analysis: Grounded theory	Perceptions and attitudes towards oral health education and disease prevention	Indigenous Communities in Kimberley region, Western Australia	Indigenous adults aged 18 years or older (N=80)
Piggott et al. 2021[40]	Australia	Interviews. Analysis: Thematic analysis	Parents' and carers' perceptions on the use of minimally invasive dental treatments to young Indigenous children	Indigenous Communities in Kimberley region, Western Australia	Parents and carers of Indigenous children. Sample: 29.
Poirier et al. 2021[41]	Australia	Motivational interviewing. Analysis: Reflexive thematic analysis	Motivations identified by parents of Indigenous children to enhance	Indigenous Communities in South Australia	Parents of Indigenous children. Sample: 226.

			effectiveness of future oral health prevention efforts		
Poirier et al. 2021[8]	Australia	Motivational interviewing. Analysis: Reflexive thematic analysis	Barriers impeding parental efforts to establish oral health and nutrition practices for Indigenous children	Indigenous Communities in South Australia	Women pregnant with Indigenous children. Sample: 327.
Poirier et al. 2022[24]	Australia	Motivational interviewing. Analysis: Reflexive thematic analysis	Facilitators for establishing oral health and nutritional practices to Indigenous children	South Australian Indigenous Communities	Women pregnant with Indigenous children. Sample: 226.
Shrivastava et al. 2019[34]	Canada	Interviews and focus groups. Analysis: Inductive thematic analysis	Barriers and enablers of relational continuity of oral health care	Cree Communities in Northern Québec	Patients, health care providers, and managers of local health centres. Sample: 74 (36 interviews and 6 focus groups)
Tynan et al. 2020[42]	Australia	In-depth interviews and focus groups. Analysis: Thematic analysis with NVivo.	Perceived importance of oral health	Rural Indigenous Communities in Queensland	Patients accessing local health services and members of Community groups. Sample: 27 (12 interviews and 3 focus groups).
Vaughn et al. 2003[43]	Australia	Focus groups. Analysis: coding and categorisation of the data.	Oral health-related experiences, attitudes, and behaviours	Milyakburra, Umbakumba, and Angurugu Communities in the Groote Eylandt Island, Northern Territhory	Children's caregivers and Aboriginal health workers. Sample: 40 (7 focus groups with children's caregivers, 1 focus groups with Aboriginal Health Workers)
Butten et al. 2019[45]	Australia	Yarning circles and face-to-face interviews.	The impact child oral health has on families from the perspective of urban, Aboriginal	Aboriginal and Torres Strait Islander Communities in Caboolture	N=20 All mothers (one carer was an aunt) of Aboriginal and

		Analysis: Thematic analysis	and Torres Strait Islander parents and carers	(near Brisbane, Queensland).	Torres Strait Islander children
Butten et al. 2020[44]	Australia	Yarning circles and face-to-face interviews. Analysis: Thematic analysis	Experiences and perceptions of oral health from the perspective of urban, Aboriginal and Torres Strait Islander women	Aboriginal and Torres Strait Islander Communities in Caboolture (near Brisbane, Queensland)	N=20 Aboriginal and Torres Strait Islander women, who were or had been the parent or carer of an Indigenous child under the age of 5
Durey et al. 2017[46]	Australia	Focus groups (n=9) and interviews (n=1). Analysis: Thematic analysis	Perceptions and experiences of Aboriginal parents of young children as they relate to oral health	Health services, playgroup centres, family day centres, and Community centres in Perth, Western Australia	N=52 Aboriginal and Torres Strait Islander parents of young children (overwhelmingly young mothers, with 2 fathers, and some grandmothers)
Jamieson et al. 2008[48]	Australia	Focus groups. Analysis: Content analysis	Social, cultural, and environmental context of oral health	Indigenous people in South Australia's mid-north region (Pika Wiya)	N=34 30 women (21-72 years), 4 men (55-65 years) Indigenous adults who had lived in South Australia's mid-north region for most of their lives
Jones et al. 2016[47]	Australia	Semi-structured, face-to-face interviews. Analysis: Themes-based coding methodology	Self-reported factors contributing to attendance and non-attendance at South Australian public dental clinics	Indigenous Communities in South Australia	N=49 Indigenous participants were purposively sampled from 1 of 3 groups: (1) those who accessed and completed a recommended course of dental care, (2) those who accessed dental care but do not complete it, and (3) those who did not

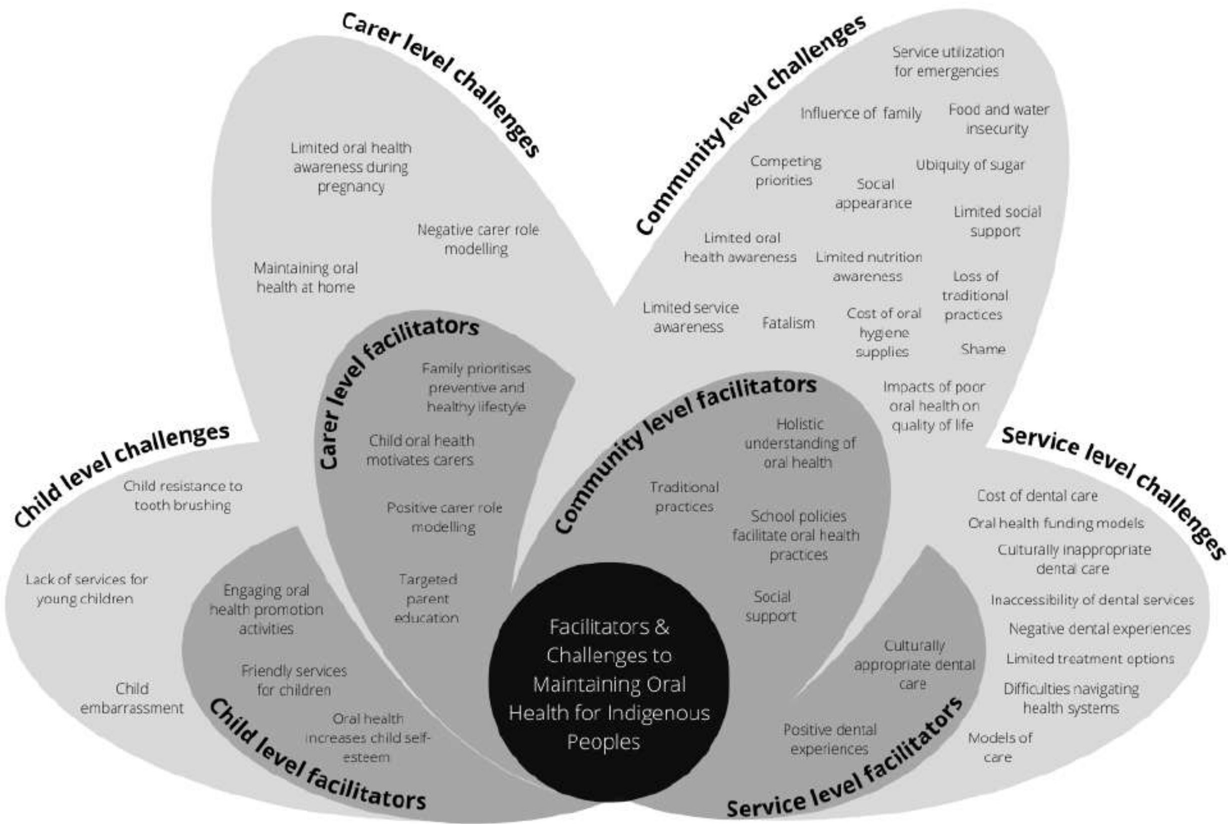
					initiate access to dental care following a referral for such care
Kim et al. 2021[35]	Canada	Focused ethnography using participatory research principles, including interviews and participant observation. Analysis: Thematic analysis	Children and youths' oral health experiences and understandings	Two Anishnabeg Communities in Quebec	N=27 Anishnaabe children aged 6-11 (7 male, 7 female) Anishnaabe youth aged 12-17 (6 male, 7 female)
Kong et al. 2021[49]	Australia	Semi-structured interviews, participatory action research Analysis: Inductive thematic analysis	Oral health perceptions and needs during pregnancy for Aboriginal and Torres Strait Islander women and oral health promotion.	Aboriginal and Torres Strait Islander Communities in GWS region of Sydney, NSW	N=12 Aboriginal and Torres Strait Islander women (18-36 years), N=7 pregnant
Krichauff et al. 2020[50]	Australia	Interviews. Analysis: Grounded theory.	Experiences of oral health, and factors that prevent Indigenous Australians from seeking preventive dental care.	Aboriginal and Torres Strait Islander Communities in South Australia	N=20
Kyoon-Achan et al. 2020[36]	Canada	Focus groups and sharing circles, Community based participatory research Analysis: Thematic analysis	Views on paediatric dental surgery to treat early childhood caries under general anaesthesia and receptivity to silver diamine fluoride	First Nation and Métis Communities in Manitoba, Canada	First Nations and Métis individuals, mean age of 35.6 years (N=59)
Kyoon-Achan et al. 2021[9]	Canada	Focus groups and sharing circles	Challenges and problems faced by First Nations and	First Nations and Métis Communities	Male and females 21-71 years (N=59)

		Analysis: Grounded theory guided thematic analysis	Métis parents in meeting the early childhood oral health needs of their children	in Manitoba, Canada	
Martin et al. 2018[37]	Canada	Focus groups and key informant interviews Analysis: Inductive thematic approach	How conceptualisations of oral health differ between Inuit and dental service providers and the implications of these differences	Inuit Communities in NunatuKavut, Labrador, Canada	Youth (10-17 years), caregivers, and adults who worked directly with youth (N=121)

Critical appraisal. An inter-reviewer reliability score of 8.3 for critical appraisals demonstrated a high level of agreement between reviewers (Supplementary File 3 – available from the authors upon request). Included studies performed poorly across critical appraisal items concerned with philosophical perspectives, researcher positionality, and influence of researchers on study outcomes (Supplementary File 4 – available from the authors upon request). No studies were deemed ineligible on the sole basis of critical appraisal scores.[31]

Meta-aggregation findings. From the included studies, 354 illustrations were extracted, which were merged into 42 categories, and further aggregated into eight synthesised findings (Supplementary File 5 – available from the authors upon request). The eight synthesised findings included child-level challenges, child-level facilitators, parent-level challenges, parent-level facilitators, Community-level challenges, Community-level facilitators, service-level challenges, and service-level facilitators (Figure 2).

Figure 2. Conceptual model of challenges and facilitators to maintaining oral health for Indigenous Peoples.



Child-level challenges. At the child level, resistance to tooth brushing created difficulties for carers working to establish and maintain oral hygiene practices that support oral health, particularly for single carers.[9] Despite this, carers made every effort to encourage regular brushing, as exemplified by one mother whose children didn't enjoy brushing their teeth: *"They just refuse to brush their teeth. But we really try our best to take care of her teeth. There are nights where she doesn't want to brush but I sit her on the potty and then like, we'll brush her teeth and then they go to bed. It's how we do this. And with couples, its communication right? Ask did you brush their teeth? Make sure you brush their teeth. I always tell my fiancé because I am not the only one putting* [the child] *to bed"* [9]. Lack of services for young children created challenges for carers prioritising their children's oral health, with one parent acknowledging the ramifications of failing to provide preventive oral health care: *"Here, they get nothing till they are five, and that is just ridiculous. And then you*

are looking at dental emergencies instead of treating it when it could have been treated with a filling or whatever. And now they are in the children's hospital being put under [general anaesthetic]*, which is dangerous and stressful, having a hospital procedure and something really painful when it could have been prevented. So it is like this great big hole in the system. This massive big hole where these kids are just falling in."* [46] Some carers and children discussed the implications of poor oral health in terms of child embarrassment, specifically one's social appearance, and subsequent self-esteem challenges. [36, 41] Some adolescents saw embarrassment as motivation to brush their teeth: *"The most time we brush our teeth is before an event, like going to the movies, out with friends, or to check out a hockey game, so it doesn't stink."* [35]

Child-level facilitators. Engaging oral health promotion activities were acknowledged as beneficial for children, with carers suggesting jingles for tooth-brushing, similar to hand-washing promotion, to engage and educate children from a young age.[44] Oral health was identified as a mechanism to increase child self-esteem, with youth in rural Quebec asserting that oral health is not only important for physical but mental well-being.[35] The mental well-being component of oral health was also considered in the Australian context: "[If my kids have no fillings, they'll] *feel very pretty about themselves. . .pretty inside and outside and that's something that every girl needs to feel. They need to feel secure about themselves and everything."* [41] The importance of friendly services for children[24, 40, 43, 45] was highlighted, particularly services that encouraged child self-determination: *"At the school they are so wonderful. My kids are scared of dentist and they are wonderful and he wants to go there all the time, every time his teeth hurt he wants to go there, so it's really good, so we are quite impressed with the way they handle the children there. It's about the children's opinion and what they want and they make them feel safe and secure."* [45]

Carer-level challenges. At the carer level, negative role modelling was a challenge in terms of oral hygiene, dietary habits, and smoking behaviours.[8, 35, 44] Carers acknowledged the difficulty in expecting behaviours from children when they did not lead by example. One parent discussed the need for education to address these gaps: *"I also think there does need to be more education for the parent, particularly in those early years. If they don't have good dental hygiene, they are not going to be able to teach the kids well and for them just waiting until school age, there needs to be something out there for the parents."* [44] Maintaining oral health at home was challenging for some carers, with tooth-brushing routines causing stress for both carers and children.[45] During pregnancy, limited oral health awareness was discussed as a challenge for mothers who wanted the best for their child's health.[43, 44, 49] Many mothers expressed shock or remorse when they learned the impact of poor maternal oral health on child health outcomes (i.e. premature birth): *"I didn't think it would hurt the baby... If I would have known that, I would have gone to the dentist a hell of a lot earlier."* [49] Mothers described efforts to self-educate, *"I had to go research it myself, there's not a lot of parents that get to have the internet and stuff. Like I can't get on the internet. It's not like old-school where you can go to an encyclopaedia."* [44]

Carer-level facilitators. Carers resonated with the impact of positive carer role modelling on improved oral health experiences for their children.[35, 46, 49] Not only did carers identify their personal role, they also reflected on the intergenerational role their carers played: "*I think that the parents are* [helpful to oral hygiene] *because I probably wouldn't have* [taken] *care of my teeth if my mom hadn't told me every day to."* [35] Despite carer apprehensions about visiting the dentist, child oral health motivated carers to take preventive action for their children.[8, 15, 24, 36, 38, 41, 49] Carer experiences of oral disease underscored motivations for ensuring robust oral health for children: *"His dad doesn't want him to have teeth the way that he has them... which is very decayed "ight now because he's too scared to*

go to the dentist. He doesn't want [our son] *to have that fear."* [41] Carers that prioritised preventive and healthy lifestyles, by promoting water consumption, low sugar consumption, regular dental appointments, and oral hygiene behaviours from a young age facilitated oral health for children.[24, 35-37, 41, 43, 44, 46, 49] Many carers were determined to take preventive steps for the benefit of their children's health: *"… if* [the kids] *don't like what they see in solid* [vegetables]*, I will blend it and put it on pizza bases or in spaghetti bolognaise. They are going to get it one way or another."* [44] Prioritising prevention also related to parent willingness to use dental products, such as silver diamine fluoride or fluoride varnish: *"In my mind, the reason why I say yes* [to silver diamine fluoride] *is because I know that that's the best solution. It's going to stop* [the decay] *in its track. It's not going to hurt my baby anymore. It's not going to keep proceeding."* [36] Carers identified the need for targeted parent education embedded in other services typically accessed by new carers: *"As part of their prenatal care, they should actually have a free dental service for these mums to be able to, use and teach them about their teeth, have a look at their teeth… I think this is a huge factor because educating the parents from such a young age with their babies also educates the parents."* [46] Importantly, carers acknowledge the range of needs and preferences for education, suggesting that a dynamic and flexible program would be most appropriate.[46, 49]

Community-level challenges. Numerous challenges exist at the Community level, including the ubiquity of sugar.[8, 37, 38, 43, 44, 48] Participants described food environments in schools, homes, and Communities where sugar-sweetened beverages and candy were accessible and affordable: *"Food full of sugar is causing the problem and the Community shops sell too much food full of sugar which the children buy and it is no good for their teeth."* [43] Participants from Australia and Canada[37] related increased sugar consumption to the introduction of sugar during colonial settlement, as one Aboriginal woman recalled, "*All our relations, everybody used those bottles with cordial (juice), you know, sugar to put kids*

to sleep. Or to give to them to shut up, you know. It's just normal, we just knew that's the way to do that. We grew up into that system. It's like, a carry on from the mission stuff, you know?" [48] Participants also discussed the influence of family members with regard to sugar consumption as challenging:[8, 9, 41, 46] "*Grandparents are great, but sometimes are a problem, I'll tell my kids, 'No, you can't have candy' and Mama and Papa will show up and bring something ... they bring cookies and we say we don't give them those but they just give them*." [9] Loss of traditional practices due to assimilation efforts and the continuing impacts of colonisation posed significant challenges to maintaining oral health for Communities:[9, 15, 37, 38, 43, 48, 49] "*So when people were eating the bush tucker (traditional foods) a lot, it was good for their teeth. But then in the missions it was sit, sit still, the Europeans came in and made 'em all sit down in one spot. But we're in the fast lane now. Too much fast food. Gives you a buzz. Sugar and fat, that's part of the thing. Without even knowing it, it's giving you a buzz so you just go back and want more of it, you know."* [48] Food and water insecurity also posed challenges for Communities.[8, 9, 15, 37, 38] Water insecurity affected water consumption as well as tooth-brushing patterns,[37] whereas food insecurity affected food choices and dental service use: *"Both me and my husband work and if he goes to see a dentist it's going to cost us $400 and that $400 would put groceries in our fridge, we choose groceries or dentist and right now that's not like an option."* [9]

Limited oral health awareness [8, 9, 15, 24, 35-37, 44, 48] and nutrition awareness [8, 9, 24, 44, 46] contributed to challenges at the Community level in maintaining oral health. Low levels of oral health and nutrition knowledge compounded, even for those trying to make the healthiest decisions for their families: *"*[Baby food is] *advertised* [as being] *good for your baby and healthy for your baby and a lot of them claim ... it's pure fruit, no added sugar... That's a bit sad because a lot of Mums especially when you're shopping, you're busy, you go well this is supposed to be healthy for my baby, it's on special, I'm going to chuck*

it in my trolley. And not realising that it could be doing more harm than good." [8] Community members discussed education and true understanding as fundamental to changing behaviour: "*We are told, 'You shouldn't do this, you shouldn't do that.' There isn't really a concrete understanding of how bad soft drink is for people. And I think we understand it when it starts to affect someone in our family. And then we are like 'Oh, that is what soft drink does to your teeth.'"* [46] Community members also discussed a lack of service awareness:[15, 39, 40, 49] *"Like, am I able to go to the dentist? Are they able to rip out teeth? Like do you know what I mean—anaesthesia like all that kind of stuff. What if I need work? Like I have no idea."* [49] This was particularly problematic in more rural areas with sporadic access to dental services, where Communities were not aware of dental visits: *"No-one knows if there is a government dentist, everyone finds out two days after. Oh! the dentist was here I didn't even know!"* [39] The use or understanding of dental services as emergency services[24, 37, 39, 42, 44, 46, 49, 50] limited uptake of preventive oral health behaviours for some: *"I haven't gone to the doctor—the dentist, in quite a long time and everyone I know don't go to the dentist—unless it's to the dental hospital… for emergencies."* [49] The cost of oral hygiene supplies also created challenges at the Community level:[9, 35, 38, 44] *"It's six, eight, nine dollars (in regional Australia), toothpaste and the brush they are separate prices...you got to feed the whole family and if you don't have enough bread or something you've got to go and buy all of these things you wouldn't have a chance to buy all these toothpaste toothbrushes."* [38]

Poor oral health greatly affected quality of life for Community members:[35, 38, 43, 48] *"It affects your whole body, having toothache, your way of thinking. You just don't wanna get out of bed. You just wanna lay with a hot pack. You don't wanna talk. You don't want to associate, or nothing. You can't eat food."* [48] Oral health-related fatalism was a pervasive belief in some Communities, where oral disease was assumed an inevitable outcome:[39, 43, 44, 46, 48] *"A lot of people just think that your teeth are gunna get bad and that there's nothing you*

can do about it anyway." [48] Many Community members discussed managing competing priorities, including other health priorities, as challenging in relation to oral health-related needs.[8, 9, 15, 35, 36, 41, 42, 45-48, 50] Basic living essentials such as housing and food took precedence, *"There are just all sorts of things ... there's other important bills that come before* [dental care] *you know the roof over your head and like some people are struggling."* [9] Limited social support affected individuals' ability to attend dental appointments,[42, 46] and in some instances Community members were reprimanded for bringing children with them to dental appointments, *"I was a single mum, no support, no family over here. So when I did get into that dentist early in the morning, they said, 'What did you bring your kids here for?'... And they said, 'We can't treat you, you have got to find a place for your children.' And I'm like 'Well, what am I meant to do with them?' and they're like 'Well, ring up someone to come and get them' and I'm like 'I don't have anyone' and they said 'Oh, everyone has someone.'"* [46] Participants also discussed challenges related to social appearance and oral health;[35, 36, 42, 44, 48] for some, poor oral health affected self-esteem and confidence in social settings, and others saw social standards as potentially motivating: "*The media affects a lot of the youth. You see people with perfect teeth ... and then you look at yourself and you don't have that. It kind of pushes you to brush your teeth.*" [35] Related to social appearance, shame due to oral health was a common experience for participants:[37-39, 41, 46-48] *"We are all frightened to laugh. When we laugh, we laugh like this* [puts hand over mouth] *and hide our teeth when we smile."* [46] Shame also related to accessing dental services: *"She was really upset, she was devastated, staying home, real 'shame' you know. And she finally got to go to the dentist and she didn't have any money. They did something. But then they kept sending her this bill. And she was too embarrassed because she didn't have the money so she never went back for treatment. Her teeth are just falling out."* [46]

Community-level facilitators. Social support was identified as a key facilitator to maintaining oral health.[24, 35, 40, 47] For some Community members, family members enabled attendance to dental appointments through provision of transportation or childcare. Others identified the importance of wider support as central to oral health: *"Family have helped in getting us to where we are now. So it's like looking after babies and everything like that. It is like a necessity basically that we teach our children and in that way they can teach their children and so on, and so on and so on. So it does play a big role in healthy teeth."* [24] School policies facilitated oral health for some families by ensuring children's teeth were checked regularly and lunchbox policies related to sugar content.[15, 38] Traditional practices were recognised for their alignment with good oral health among Communities and the low need for dental care in olden times:[43, 44, 48] *"They cooked in the charcoal, and they didn't shake it off, they just ate it. I can remember going fishing they chucked the fish on the coals. I can remember sitting there spitting out charcoal, you know what I mean about the crunchy gritty bits, but that's how they lived off the land."* [44] Having a connected or holistic understanding of oral health[44, 48] was beneficial for Communities because it encouraged healthy behaviours: *"If you look after your body it helps you look after the rest of your parts. Like our eyes now for diabetics. If we eat a lot of sugar it affects our eyes. I have been through that step, I know exactly what happens now with those things, so with our teeth we need to look after them, eh?"* [48] Community members also reflected on the need for this connected understanding to extend to service provisions: *"I think it* [dental] *could be more into the medical side of things, like medical centres as well because you know it seems so separate. You know you got the dental side and the medical side, and I think they really need to push it, you know when they do the health checks, they really don't check too much about the dental."* [44]

Service-level challenges. Several challenges at the service level affected oral health for participants, including inaccessibility of dental services.[8, 9, 37, 39, 40, 47, 49, 50] Inaccessibility related to lack of transport, waiting lists, paid parking, impermanence of visiting services, and distance from dental services: *"So* [towns] *are two and a half hours away too… Some of them do come on Community transport. But you know what? A lot of those leave at six, seven o'clock in the morning because they don't just take that one person… So, therefore, I reckon—out of town [Aboriginal and Torres Strait Islander] communit[y members] that come to my work, I reckon 90% of them don't show up [for appointments]."* [49]

Participants explained the complexities and difficulties of navigating health systems[9, 45, 47] especially considering that for some, making an appointment was a foundational barrier to services: *"Some people just don't even know how to make appointments for themselves. They never have to do that and then they have children and they don't even know how to do that for their children because they never did it for themselves. Some people have like six or eight kids and they don't even worry about that. They are too busy just getting by every day, making food to eat."* [9] Payment plans and different qualification schemes compounded difficulties.[45] Some participants expressed frustration at oral health funding models[9, 48-50] and subsequent eligibility for dental care schemes: *"There's a lot of assumptions made by health care providers that everybody's covered under First Nation's health. But what I would like to say is people are working in minimum wage jobs, a lot of those jobs don't come with benefits, so they don't have benefits through work. They're making just enough money or not on income assistance so you don't have any benefits through there. So they have no coverage and even things like* [dental care] *that should not be an issue, it becomes an issue."* [9] Some funding models require confirmation of Indigenous status, which is problematic for families fractured through colonial assimilation policies, *"I can't get my* [Confirmation of Aboriginality] *papers because they can't track back far enough."* [49]

The cost of dental care[36, 39, 42, 46, 49] also presented challenges for participants, and the lack of knowledge of costs prohibited some people from making appointments: *"Yes, I actually know somebody who they have issues with their teeth because they don't have any insurance, they are not on social assistance, they are not status, and they are not on nothing so it is very difficult for them. They haven't really been to the dentist at all."* [9] Related to costs, some participants reflected on being given limited treatment options,[44, 45] where either service providers only offered the least expensive option or individuals believed they could only afford one service, which was often tooth removal rather than restoration: *"With the dental where you go to the hospital and that, they don't offer root canals and things like that, you got the basics. If it can't be filled well then it's pulled out. You don't have a choice when you don't have money to go to the dentist. At the dental hospitals and clinics it's mainly pulled. They don't do a lot."* [45]

Many individuals shared instances of negative and traumatic dental experiences which dampened motivations to further engage with dental services.[8, 9, 34, 36, 39, 43-46, 48-50] Experiences involved poor provision of care where dental problems persisted or worsened after utilising services, but also poor provision in terms of social encounters: *"It feels degrading and it makes me want… I want to see change. But this particular time I wasn't in a good mood, wasn't in a good space. I was like, 'I'm not coming back.' Because you will go back to the services that look after you, and if you don't get that service, you just don't go back. People don't like it… if you're getting bad service at that dentist, why would you go back?"* [46] Trauma also related to accessing government services, which ties in with colonisation efforts and assimilation policies, particularly those related to removal of children: *"With some of the Indigenous families, because it was then a government initiative, the dentist was a government initiative but now Medicare required a signature and signing a government form when you don't know the terms and conditions does bring about a bit of fear like what are*

you signing, then there's the other thing, the fear of what my mum went through like when they questioned how I broke my tooth, umm so the shame and the wariness as to what they are going to do, are they going to take their kids away because of bad teeth." [45] Culturally inappropriate dental care was discussed in relation to discrimination, assumptions, and racism experienced at dental services, which compounded other challenges to accessing services:[39, 46, 50] *"Some people when they see an Aboriginal person coming, we are all put in that category, we are all put in that box if they have had a bad experience with another Aboriginal person. They wouldn't do that to an Italian woman if they had a bad experience with another Italian woman. But they will do it with an Aboriginal person. Do you see what I mean?"* [46] Participants also shared experiences in which dental staff made them feel guilty for missing appointments or bringing children with them to the service. Fundamentally, oral health models of care don't reflect the needs[9, 34, 45-47, 49, 50] of many Indigenous Communities. Participants described the inability of models of care to meet their family, transportation, follow-up, time, comfort, and education needs: *"I think it's the big families. The parents are aware that their kids have tooth decay or they are having tooth problems. They need to see a dentist, but it's really hard to get into a dentist when you have six kids. There is no way you are going to get six kids; they are going to put you one-week, next week, the next one the next week, and like who wants to be at the dentist that many times ... But being in this area where there are no dentists here, you have to travel out of town to see the dentist, so that's another issue."* [9]

Service-level facilitators. At the service level, culturally appropriate dental care (which included interactions with Indigenous staff and services), transportation, sensitivity to needs, and empathy facilitated oral health maintenance for Communities.[24, 37, 47-49] Participants shared stories of occasions when service providers made them feel comfortable throughout treatment and provided suggestions for ways Community members could be

better supported, such as the use of a support person: *"If you want your dental work...* [the support person] *can go with you and pick you up and take you to a dental clinic... You know, for the fella's that have got really bad teeth... I suppose she explains to the dentist beforehand that, you know, like be prepared more or less, like don't say this is this... You know, don't let these fella's walk in and be like oh my God you didn't brush your teeth, because obviously they haven't... She prepares them so you don't feel bad about not looking after your teeth."* [24] Participants also reflected on positive dental experiences that encouraged use of services and eventually relationality (trusting connection) between service providers and Community members:[24, 47, 49, 50] *"I always had a dentist that I went to growing up that I really trusted, and I must say I'm scared of dentists. So, when I found one, I could really trust, I just stuck with them. Yeah, and it's just the security of knowing that, okay, I can trust you."* [49]

Discussion

This systematic review and meta-aggregation synthesised perspectives from 22 articles conducted with Indigenous Communities in Canada and Australia. Community members from the included articles highlighted a variety of challenges and facilitators across child, parent, Community, and service levels. Importantly, individuals resonated with the centrality of oral health for the general well-being of their entire Community. The large number of findings at the Community level indicates that interventions targeted on strengthening facilitators or overcoming challenges would have more widespread benefit than efforts focused on children or carers individually. These findings directly align with notions of connectedness within Indigenous Communities[25, 51] as well as in Indigenous understandings of well-being.[52]

The results from this review indicate the complexity of oral health maintenance for Indigenous Communities in Canada and Australia. The myriad factors influencing oral

hygiene practices, dental appointment attendance, and related health-promoting behaviours cannot simply be reduced to dental fear or transportation, for example. The range of challenges and facilitators across child, parent, Community, and service levels underscores the importance of moving beyond a deficit discourse of individual blame and responsibility for poor oral health outcomes.[13, 25, 53, 54] Structural inequities, identified here and elsewhere, [13, 25, 53] confound the ability to maintain oral health; failing to identify the shortcomings of deficit discourses reproduces the narrative that Indigenous Peoples cannot make good oral health decisions nor comply with 'expert' advice. [55] All those involved in the oral health, and indeed overall health, of Indigenous Peoples must recognise and act upon the effects of socioeconomic, historic, and systemic inequities that enable the continuation of Indigenous Peoples' collective experiences of discrimination.[37, 53] Interventions to strengthen the oral health of Indigenous Communities must use a comprehensive and integrated approach to care that considers oral health as central to overall well-being and address challenges at levels beyond personal responsibility. This could include the integration of dental care in universal health care coverage; Canada has recently launched a dental care program that will cover all low-income Canadians by 2025.[56] Australia and other countries would benefit greatly from following suit and considering oral health as central to health at a policy level. Changes in dental care funding would address some of the concerns raised by participants in this review who hover between eligibility for targeted funding schemes and the ability to pay for dental care.[9, 48-50]

The results of this review are weighed to challenges rather than facilitators to maintaining oral health for Indigenous Peoples. In line with moving beyond the individual responsibility narrative and deficit discourse of oral health experienced by Indigenous Peoples, future work should employ a strengths-based approach that focuses on building solutions. The oral health disparities experienced by Indigenous Peoples are well

documented, work must now shift to ways that challenges to maintaining oral health can be addressed while sharing stories of success that can inspire and motivate change in other Communities. The varying needs and suggestions for improvement identified in this review underscore the importance of engaging with each Community affected by oral health programs, policy, and research to identify its needs. Where independent consultation is not possible, particularly for state or national level oral health programs, the time and space for individual tailoring of programs to the needs of each Community must be embedded within programs to ensure uptake and benefit for each Community affected by programming. This includes providing funding and resources for Communities to adapt parts of plans to their needs in a culturally responsive manner. Adequate programming and funding models that reflect Community values, in combination with the prioritisation of Indigenous leadership and Indigenous Health Worker participation in oral health,[14] would advance the reorientation of oral health services that are currently failing to meet the needs of Indigenous Communities. Indigenous leadership and involvement in oral health provision has the potential to strengthen the accessibility, culturally security, relationality, and sensitivity of services.

To the best of our knowledge, this systematic review is the first to synthesise the challenges and facilitators to maintaining oral health for Indigenous Peoples at a global level. This systematic review complied with all relevant systematic review methodological protocols to maintain transparency of processes and results. The variety of findings at the child, parent, Community, and service levels is a highlight of this review as it provides areas for targeted action by researchers, health programmers, and policymakers. The studies included in this review represent a limited number of Indigenous Communities from Canada and Australia, that draws attention to the need for more research that unpacks oral health challenges and facilitators in a qualitative approach among other diverse Indigenous

populations, within these countries and across the world. Despite best efforts to perform a comprehensive search including all possible 'Indigenous' search terms, the search was limited to articles available in the English language, and as such, some relevant papers may have been excluded during the screening phases.

Conclusion. The prioritisation of integrated oral health services, programs, and research that encompass multiple factors at various levels of influence would strengthen the oral health of Indigenous Communities. Central to the success of integrated initiatives is adequate funding to tailor programs to Community needs and Indigenous leadership. To ensure a culturally responsive and reflexive approach to oral health, the discourse of oral health inequity must move beyond individual blame to a strengths-based discourse that encourages success while recognising systemic challenges to maintaining oral health for Indigenous Peoples. Taking lead from Indigenous Communities will improve the quality of care, programming, and awareness among Communities, ultimately contributing to sustained oral health maintenance.

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3

Literature Review

Building an understanding of Indigenous Health Workers' role in oral health: A qualitative systematic review

3.1 PREFACE

This qualitative systematic review aimed to synthesise Indigenous Health Worker (IHW) perspectives regarding their roles and involvement in oral health. This is an important component to the thesis as it contributes to the evidence base regarding the ways in which oral health can be better integrated into Indigenous health service provisions in a culturally secure way.

3.2 PUBLICATION DETAILS

Poirier B, Sethi S, Hedges J, Jamieson L. Building an understanding of Indigenous Health Workers' role in oral health: A qualitative systematic review. Community Dentistry and Oral Epidemiology 2022. doi: 10.1111/cdoe.12743

3.3 HIGHLIGHTS

- There were four overarching findings of this review: systemic barriers limiting IHW ability to support oral health, benefits of IHW involvement in oral health, avenues to increase IHW involvement in oral health, and oral health challenges in Community.
- IHW resonated with the need to clarify their roles in oral health and the opportunities to benefit Community experiences of oral health through their involvement.
- Utilising IHWs in a more official oral health capacity with a well-defined scope of practice would increase the ability of Communities to establish and maintain oral health, particularly in remote regions.

3.4 STATEMENT OF AUTHORSHIP

Statement of Authorship

Title of Paper	Building an understanding of Indigenous Health Workers' role in oral health: A qualitative systematic review
Publication Status	[X] Published [ ] Accepted for Publication [ ] Submitted for Publication [ ] Unpublished and Unsubmitted work written in manuscript style
Publication Details	Poirier B, Sethi S, Hedges J, Jamieson L. Building an understanding of Indigenous Health Workers' role in oral health: A qualitative systematic review. Community Dentistry and Oral Epidemiology 2022. doi: 10.1111/cdoe.12743

Principal Author

Name of Principal Author (Candidate)	Brianna Poirier		
Contribution to the Paper	Conceptualisation of research question Data analysis Manuscript writing Editing and revisions Corresponding author for publication process		
Overall percentage (%)	75%		
Certification:	This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper.		
Signature		Date	

Co-Author Contributions

By signing the Statement of Authorship, each author certifies that:

i. the candidate's stated contribution to the publication is accurate (as detailed above);

ii. permission is granted for the candidate in include the publication in the thesis; and

iii. the sum of all co-author contributions is equal to 100% less the candidate's stated contribution.

Name of Co-Author	Sneha Sethi		
Contribution to the Paper	Revision of methodology Revision of manuscript Second reviewer for title/abstract/full text review Second reviewer for critical appraisal Assistance with data synthesis and meta-aggregation		
Signature		Date	

Name of Co-Author	Joanne Hedges		
Contribution to the Paper	Revision of methodology Input on theory application Input regarding interpretation of results Revision of manuscript		
Signature		Date	

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Name of Co-Author	Lisa Jamieson		
Contribution to the Paper	Orientation of research question formulation Revision of methodology Input on theory application Input regarding interpretation of results Revision of manuscript		
Signature		Date	13/07/2022

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SYSTEMATIC REVIEW

Building an understanding of Indigenous Health Workers' role in oral health: A qualitative systematic review

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Abstract

Objectives: Indigenous health workers (IHW) play an integral role in the provision of culturally safe care for Indigenous communities. Despite this, IHW involvement in oral health has been limited. Therefore, this qualitative systematic review aimed to build an understanding of IHW insights on oral health.

Methods: Two independent reviewers searched PubMed, EMBASE, Web of Science and Scopus using a pre-established search strategy. Qualitative studies that included IHW illustrations about oral health were considered. The search was not limited by geographic setting. Included articles were critically appraised with the Joanna Briggs Institute appraisal tool for qualitative studies.

Results: The search identified 1856 articles eligible for inclusion; a total of 10 articles were included. Four synthesized findings were identified during the meta-aggregation: oral health challenges in community, systemic barriers limiting IHW ability to support oral health, benefits of IHW involvement in oral health and avenues to increase IHW involvement in oral health.

Conclusion: The prioritization of Indigenous leadership in oral health has the potential to address many of the current challenges Indigenous communities face. Future works need to determine the capacity of IHW to provide oral health care and explore opportunities to create specific oral health roles for IHW.

KEYWORDS

dental public health, health promotion, Indigenous health, Indigenous health worker, oral health

1 | INTRODUCTION

Colonization has had, and continues to have, such pervasive impacts on Indigenous peoples' well-being that the United Nations definition of Indigenous peoples centres around the idea of historical continuity with lands prior to invasion of colonial societies: 'Indigenous communities, peoples and nations are those which, having a historical continuity with pre-invasion and pre-colonial societies that developed on their territories, consider themselves distinct from other sectors of the societies now prevailing on those territories, or parts of them'.[1] The destructive impacts of government practices and societal continuance of colonization, assimilation and racism against Indigenous peoples' well-being are evidenced by the similar poor health outcomes experienced by Indigenous peoples globally.[2,3] The forcible removal of Indigenous peoples from their lands, prohibition of cultural practices and languages, and destruction of

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families through various child removal policies has understandably had profound influences on Indigenous well-being.[4,5]

Oral health is one of the many facets of well-being that has suffered due to the impacts of colonial policies, structures and ideologies with recent reports highlighting the persistence of oral health inequities experienced by Indigenous peoples.[6–8] Oral health presents a myriad of challenges for Indigenous communities that span individual, family, community and systemic factors.[9] Inaccessibility of oral health services,[10–12] racism,[11,13,14] experiences of dental and medical trauma,[15] limited knowledge,[9,12,13] financial costs associated with dental care[12,13,16] and competing priorities[11,16,17] are some of the many factors that work together to create substantial barriers to establishing and maintaining oral health for Indigenous peoples.

Due to their foundation of colonial and biomedical values as well as limited appreciation for holistic understandings of well-being, mainstream health services often fail to adequately meet the needs of Indigenous peoples.[18] This inability of mainstream services combined with the importance of Indigenous self-determination has, in some instances, resulted in the creation of alternate models of care. Countries like Australia have established Aboriginal Community Controlled Health Services (ACCHS) to address the shortcomings of existing mainstream health services.[19] Community-controlled services overcome issues of Indigenous exclusion from governance structures, which is a key indicator of institutional racism.[20,21] Indigenous health workers (IHW) were a catalyst for the establishment of ACCHS in Australia due to their success in advocating for community needs and their leadership in culturally appropriate health promotion and education.[22–24] There is a large body of evidence supporting the role of IHW in improving service provision and health outcomes for Indigenous peoples, ranging from health promotion to disease management.[25,26] IHW are becoming an increasingly qualified workforce and are responsible for the provision of a range of health services from primary, secondary and tertiary to community-based prevention programmes.[27–31] IHW provide cultural brokerage between mainstream health services and Indigenous patients as well as between Western and Indigenous understandings of well-being.[25,27,32,33] The use of IHW builds on familiar relationships of trust, which are imperative to holistic identification of patient needs, utilization of health services and appointment attendance.[34,35] While sometimes challenging, IHW navigate their availability and visibility as a health worker in their community seamlessly between professional and personal roles.[36] IHW describe this aspect of their role as imperative to the provision of quality health care, an importance poorly understood by their non-Indigenous peers.[36] This difference in understanding is one example of the misalignments between dominant cultures understanding of health and Indigenous paradigms of well-being, highlighting the foundational role of IHW in Indigenous health. Community members in Alaskan Native communities have been successfully trained as dental assistants and provide more consistent and culturally safe services, particularly in remote areas with traditionally sporadic dental care[37,38]; this service model has also been recommended for Canadian Inuit communities.[39]

Despite the important role IHW play in Indigenous well-being, the utilization of IHW in oral health promotion or care provision has been sporadic and poorly defined. This in part could be due to a lack of oral health training, the view of oral health as a more specialized skillset, and existing colonial or racist values that impact the value associated with IHW involvement in mainstream health services. However, given the continuing and increasing burden of oral diseases experienced by Indigenous peoples, oral health models of care must be modified in a way that prioritizes equitable service provision that aligns with Indigenous values and best meets the needs of Indigenous patients. Although many authors have called for the incorporation of IHW in oral health, it is critical to inform decisions about IHW inclusion in oral health with IHW perspectives. Currently, there is no existing synthesis of IHW perceptions of their role or involvement in oral health. Therefore, this qualitative systematic review and meta-aggregation sought to build an understanding of IHW insights on oral health and their potential role in this space.

2 | MATERIALS AND METHODS

This qualitative systematic review has been registered with PROSPERO (CRD42021287563) and the Joanna Briggs Systematic Reviews register (Appendix S1). A prior search of the PROSPERO register revealed no similar studies. This qualitative systematic review is reported in alignment with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines[40] and the Enhancing Transparency in Reporting the Synthesis of Qualitative Research (ENTREQ) statement[41] (Appendix S2).

2.1 | Positionality

Self-situation of researchers is essential in qualitative works, as researcher subjectivity influences the interpretation of the research outcomes. This review has been driven by aspirations to highlight the voices of IHW and to illustrate individual perspectives regarding oral health promotion. The primary reviewers (B.P and S.S) have been involved in various collaborations with ACCHS and have had opportunities to build valuable relations with IHW. A desire to synthesize existing perspectives of IHW regarding oral health within the literature was recognized with the aim to identify future oral promotion strategies and policy actions. Both the primary reviewers are non-Indigenous researchers: B.P has extensive qualitative experience with community-engaged scholarship in the context of Indigenous health in Canada and Australia, and S.S is an experienced oral pathologist with significant experience working with Indigenous populations in Australia. The supporting research team consists of Indigenous and non-Indigenous scholars with valuable experience in the field of Indigenous health research.

2.2 | Identifying studies for inclusion (inclusion/exclusion listed at end)

The reviewers used a pre-established search strategy,[42] which involved using terms (and their related variants) describing the population of interest, the phenomenon being researched, as well as the included study designs. Two investigators (B.P and S.S) independently screened the literature for eligible articles using PubMed, SCOPUS, Web of Science and EMBASE databases from inception until 26 October 2021. The search was tailored as per the requirements of individual databases (Appendix S3).

In the search for published studies, the reviewers utilized the option to run 'related' searches, which led to identification of similar studies. Manual bibliographic skimming for each study, relevant to our topic of interest, was performed, to ensure a thorough literature search. Titles and abstracts were independently screened by both reviewers, to ascertain eligibility with those considered relevant by either investigator proceeding to a full-text review. Both investigators fully screened all articles to evaluate the adherence to the predefined inclusion criteria:

- The study focused on IHW views, experiences, perspectives and barriers regarding oral health.
- Findings contained personal illustrations or first-person accounts of IHW experiences.
- The study was qualitative or mixed methods (with clear qualitative illustrations)
- Oral health was the subject of interest
- The publication was available in English
- The publication was available in hardcopy or in downloadable form
- The paper was published prior to 26 October 2021

Exclusion criteria

- IHW reflections on oral health training programmes
- Non-Indigenous perspectives on the involvement of IHW in oral health
- Quantitative studies

Any disagreements between the two reviewers were resolved by a third reviewer (L.J.). Although efforts to minimize publication bias were made, the reviewers do identify the limitation of exclusive English language literature, which could have resulted in loss of data recorded in Native languages. Additionally, the inclusion of all grey literature could have provided additional findings for the study and decreased possible impacts of publication bias.

2.3 | Critical appraisal

There are several validated tools for the purpose of appraisal of studies; this review used the JBI (Joanna Briggs Institute) System for the Unified Management, Assessment and Review of Information (SUMARI) critical appraisal tool.[43] The JBI tool was chosen due to its comprehensiveness, high sensitivity to validity and focus on congruity.[44] The JBI critical appraisal tool includes questions evaluating a wide range of factors ranging from agreement between research philosophies, methodologies and analytical findings to researcher positionality statements.[43]

2.4 | Data extraction and synthesis

Data were extracted in two phases, with the first phase using the JBI data extraction tool, which included study characteristics. The second phase included comprehensive extraction of identified data (illustrations, first person narratives) by the reviewers. Where community illustrations were collated together with IHW perspectives, only IHW perspectives were extracted and synthesized in meta-aggregation. The findings from the second phase were scored independently by the reviewers utilizing JBI SUMARI as 'Credible', 'Not Supported' or 'Unequivocal'; the final score for each finding was dependent on inter-reviewer agreement. The final synthesis of the findings was performed manually by reviewers, by writing all findings on a white board and labelling common phrases and concepts and generating categories. Common categories were grouped, and association with other themes was explored in the context of oral health promotion. The step of manual assortment of findings was performed to enable clear visualization and appropriate categorization of collected data; this also prevented repetition and overlap of similar concepts in different categories. These categories were transferred to the JBI SUMARI tool, and each finding was placed within the appropriate category. These categories were then placed to fit a conceptualized model with overarching synthesized findings, which clearly reflected and outlined the findings from each individual study.

3 | RESULTS

The systematic search identified 2052 articles, of which 196 were duplicates, leaving 1856 unique articles eligible for inclusion. Thirty-two articles were retrieved for full-text review; during this process, 22 were removed, primarily due to a lack of representation from IHW. A total of 10 articles were included in this qualitative systematic review (Figure 1).

3.1 | Study characteristics

The included papers were published between 2003 and 2021; seven studies were from Australia,[11,45–50] two were from the United States,[37,51] and one was from Canada[52] (Table 1). Included papers ranged in study design, from mixed methods[45] to semi-structured interviews studies,[11,37,50,51] and focus groups including yarning.[48–50,52] The methodology included content

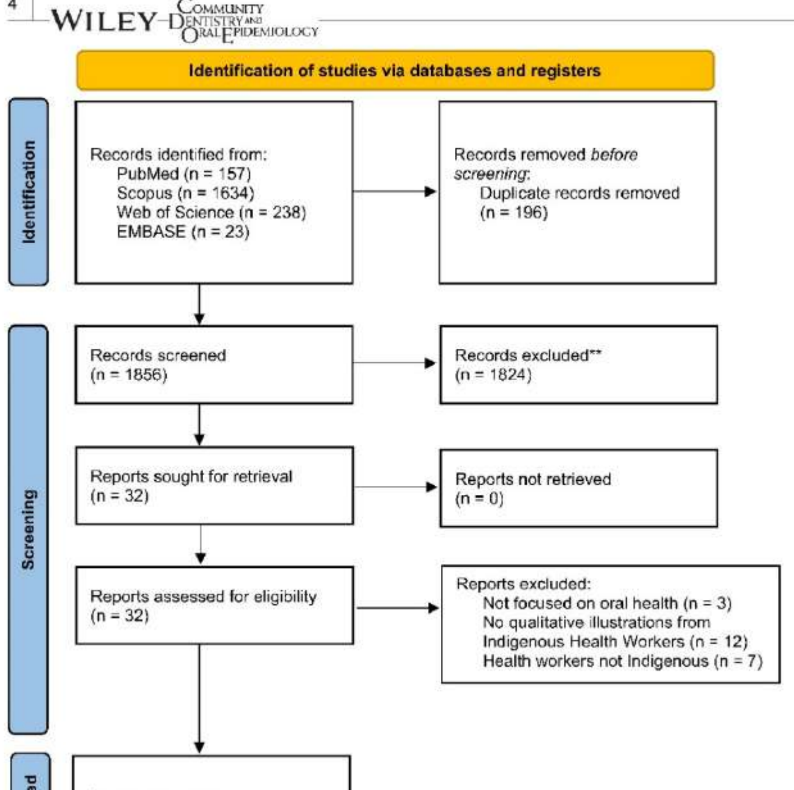

FIGURE 1 PRISMA flow diagram[40]

analysis[47,49–51] and thematic analysis.[11,37,46,52] IHW from the included studies represent Aboriginal and Torres Strait Islander communities,,[11,45–50] Alaskan Native communities[37,51] and First Nations communities.[52]

3.2 | Critical appraisal

The inter-reviewer score for the critical appraisals was 8.6, demonstrating a high level of agreement between reviewers (Appendix S4). There was poor performance across most studies with regard to researcher positionality and addressing the influence of researchers on study outcomes (Appendix S5). No studies were excluded solely on the basis of appraisal scores.[43]

3.3 | Meta-aggregation findings

From 181 illustrations, 22 categories were generated and aggregated into four synthesized findings (Appendix S6). The four synthesized findings include oral health challenges in community, systemic barriers limiting IHW ability to support oral health, avenues to increase IHW involvement in oral health care and benefits of IHW involvement in oral health (Figure 2).

3.4 | Oral health challenges in community

Unsurprisingly, due to IHW investment in community well-being, many of the findings related to oral health challenges in communities from IHW perspectives. Many oral health services were described as inaccessible for community members, due to transportation issues, long distances, waiting lists, costs and priority of emergency dental needs among services.[11,37,45,46,48,52] Many IHW expressed frustration about the waiting list for public dental services, citing a minimum of 12-month delay, which forced many community members to avoid dental services because they were not able to afford private care.[11,45,46,48] IHW explained how the high number of patients and limited available services meant that many patients only saw dental practitioners for treatment or pain management rather than prevention.[11,45,46] Providing transportation for patients was a core practice for many Indigenous health services[45,46,48]; however, this was not always built into mainstream dental services or was possible for services located a considerable distance away, even for dental emergencies, 'As far as an emergency, you could be stuck here for days... And that's another thing, we're landlocked, you know. If the weather's bad, no dentist. And everything is cancelled because they've gotta move on to the next village'.[37]

Limited knowledge about general oral health hygiene and diet was identified by IHW as consequential contributors to community

TABLE 1 Characteristics of included studies

Author	Methods for data collection and analysis	Country	Phenomenon of interest	Setting/context/culture	Participant characteristics sample size
Campbell et al.[45]	Mixed methods (online survey and semi-structured interviews)	New South Wales, Australia	Exploration of the oral health care experiences and activities of ACCHSs to inform policy and program decision-making	Aboriginal Community Controlled Health Services (Aboriginal and Torres Strait Islander communities)	Purposive sampling N# - 9
Chi et al.[51]	Semi-structured interviews and content analysis	Alaska, USA	Develop a conceptual model of dental care delivery in Alaska Native Communities centred on dental therapists	Alaskan Native communities	Snowball sampling N# - 19
Durey et al.[11]	Semi-structured interviews, focus groups and thematic analysis	Western Australia, Australia	Investigating Aboriginal Health Workers' (AHWs) perceptions of barriers and enablers to oral health for Aboriginal people	Aboriginal health workers (Aboriginal and Torres Strait Islander communities)	N# - 35
Kong et al.[48]	Yarning in focus groups, thematic analysis	New South Wales, Australia	Explore the perceptions and experiences of Aboriginal health staff towards oral health care during pregnancy	Aboriginal health workers (Aboriginal and Torres Strait Islander communities)	N# - 14
Kong et al[46]	Interviews, inductive thematic analysis	New South Wales, Australia	Explore whether oral health was an important consideration for Aboriginal and Torres Strait Islander women during pregnancy, whether and strategies that would be appropriate to use in a new model of care	Aboriginal and Torres Strait Islander communities	N# - 3
Kong et al.[47]	Participatory action framework, focus groups, content analysis	New South Wales, Australia	Develop and pilot test the model of care, Grinnin' Up Mums & Bubs, to train Aboriginal Health Workers to promote oral health among Aboriginal and Torres Strait Islander pregnant women	Aboriginal and Torres Strait Islander communities	N# - 7
Senturia et al.[37]	Semi-structured interviews and thematic analysis	Alaska, USA	Describe strengths and barriers to paediatric dental care for children living in remote Alaska villages from the perspectives of the community and the healthcare system	Alaskan Native communities	N# - 19
Shrivastava et al.[52]	Interviews, focus groups and thematic analysis	Quebec, Canada	Perspectives of Cree communities and primary healthcare providers regarding the barriers and enablers of relational continuity of oral health care integrated at a primary healthcare organization	First Nations communities	N# - 26
Vaughn et al.[49]	Focus group, content analysis	Northern Territory, Australia	Explore the oral health related worlds of carers of Aboriginal children on Groote, Eykndt	Aboriginal health workers (Aboriginal and Torres Strait Islander communities)	Purposive sampling N# - 6
Walker et al.[50]	Semi-structured interviews, focus groups and content analysis	Queensland, Australia	Explore factors operating at the level of the clinic and the community which influence the development of the oral health role of Indigenous Health Workers	Aboriginal health workers (Aboriginal and Torres Strait Islander communities)	N# - 21

(Continues)

dental needs,[11,37,46,48-51] 'Lack of education on the importance of teeth and... how to take care of teeth. It was kind of a mentality... Well, my parents have no teeth. My grandparents have no teeth. So, I-know-I'm-gonna-have-no-teeth type of thing[51]'. Limited oral health awareness related not only to knowledge about oral health-promoting behaviours, but also availability of oral health services. For instance, one IHW was not aware that there was a local Indigenous service that offered dental care.[46] Related to limited oral health awareness, some IHW reflected on the impacts of the loss of traditional knowledges, 'Yeah, and this is how it went off-track and the introduction of a Western diet, and when you think about why people choose the bottle over the breast and, you know, what they put in, it's because of what's going on...and you need to capture that from Aboriginal people. Um, some of that you can see how some people do know here, and how it's okay to regain that knowledge, because the same way why other knowledge hasn't been passed down, this is, you know, the same reason. So that, I think, is really important'.[48]

IHW reflected on the low priority of oral health[11,50] among more urgent concerns, 'I have got three holes in my teeth, cavities, and I cannot afford to go to the dentist. Because my money is going on things that I think are more important like my house, power, everything else, food'.[11] Movement of family members between different houses and sharing of resources was also related to ability of individuals to maintain oral hygiene practices, 'Something to do with lots of people sharing your house and not much private ownership of stuff. And even if you left your toothbrush in the bathroom, who do you know has used it? You can't presume because it is yours and you leave it somewhere that no one is going to use it or play with it or it is going to end up outside. So that is pretty hard for people'.[11] Normalization of poor oral health among community led to a mentality of no pain, no problem for some.[11,48,49] IHW reflected on the commonality of self-managed oral health pain among their patients, 'A lot of people I come across they are happy to just continuously eat pain killers like they are going out of fashion... I've met a lot of people in the community who go 'oh well, my gum is hurting and I am just going to take pain killers' where they should be replacing them with antibiotics'.[11]

IHW described the negative association of institutional racism and associated trauma with oral health services,[11,37,45,48] 'That [institutions] goes hand in hand [with racism]'.[48] One IHW related assimilation policies to confidence in accessing services and asserting one's dental needs or desires, 'Back in the day you weren't allowed to [talk to anyone]... Doesn't matter if you were Stolen (part of the Stolen Generations[1]) or not. Yeah, you just weren't allowed to. It was part of the white law at the moment. You know what I mean?[48]' Particularly, concerns of child removal prevented community members from bringing children in for routine checks, 'you could go in there with your child and you could go out without your child[11]'. Dental-related trauma was described as an intergenerational experience, where parents and grandparents shared their own dental experiences with others, 'You know people here have really strong memories.... People have horror stories of 40, 50 years ago of, you know dental work without anaesthesia and stuff. And so I think it does, it is, it does get passed down the whole historical trauma comes out'.[37]

Related to institutional racism, IHW identified aspects of mainstream dental services as culturally insensitive.[11,46-48,52] Little consideration for family needs at dental services was highlighted as a large challenge for parents needing to take children for dental care and the associated costs of bringing the entire family along for the day or having to find childcare.[11] IHW from northern Quebec stressed the importance of local languages in health services, noting that, 'Nobody has ever done any work on language in dental to look at what Cree terms are, equivalent for English terms[52]'. IHW shared experiences of dental providers not being understanding or empathetic of the complexities of oral health for Indigenous peoples, 'Aboriginal people, when they walk into the dentist, it is that shame factor and they think they are being judged by the dentist, you know, 'when was the last time you saw the dentist?' 'Do you brush your teeth? and "Your teeth aren't healthy". And these are adults – "And your gums aren't healthy" so the dentist is telling adults. And the adults are going home thinking "well, do I send my child there?"'.[11] Shame was described by IHW in terms of accessing oral health services and day-to-day behaviour for patients,[11,46,48] 'Some people that we spoke to did this [covers mouth with hand]. Covered their mouth when they were talking to us'.[48]

3.5 | Systemic barriers limiting IHW ability to support oral health

Limited oral health funding was identified as a barrier to IHW oral health support,[45,46,52] 'We just don't have enough funding to deal with the demand'.[45] Limited funding also translated to a lack of oral health resources, with IHW discussing the need for educational materials to share with community to increase awareness. Some IHW described their efforts to share oral health knowledge with families, despite limited training in this area, 'Well I do the teachings even if the pamphlets are not there, from what I remember, I do teach the parents to really work on the health of the child'.[52]

Workforce challenges identified by IHW included lack of staff funding, poor staff retention and the need for formal oral health training.[37,45,47,48,50] Stories of Indigenous health services training staff only for them to leave and go to a higher paying job were common, 'To pay people properly...that's an ACCHS struggle... If we want to keep someone who is competent and qualified we'd struggle because they really get very little money'.[45] IHW stressed the need for formal oral health training, 'I think it's true that you have a lot of Aboriginal health practitioners that work rurally. So maybe it could be something that could be put in with the training of the Aboriginal health practitioner'.[47]

Finally, inadequate models of care were discussed as systemic barriers to IHW support for oral health services, including service impermanence, differing models of care, a focus on acute problems

[1]The Stolen Generations is a term used to describe assimilation policies in Australia that forcibly removed Aboriginal and Torres Strait Islander children from their families from 1910 to 1970s, although similar policies and practices took place before and after these times.[53]

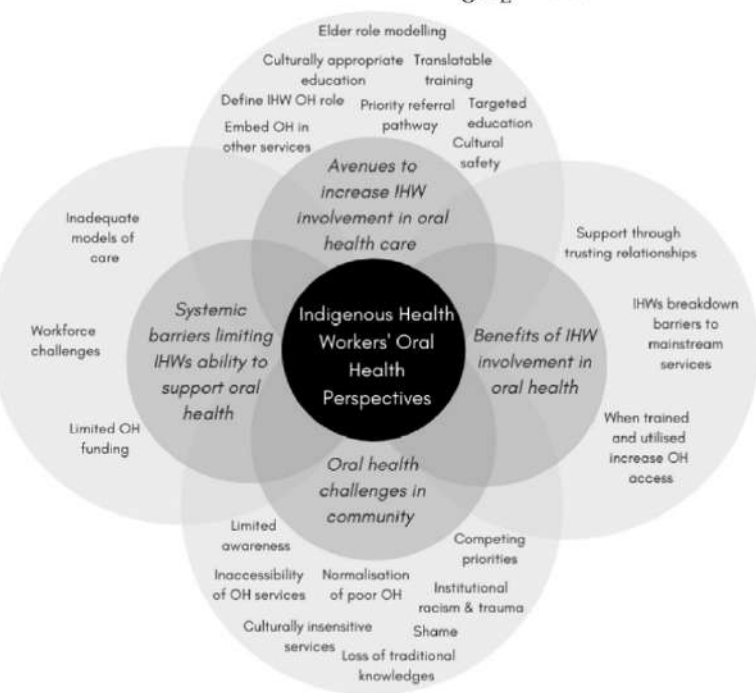

FIGURE 2 Conceptual model of Indigenous Health Workers' perspectives on oral health

and restrictions on qualifying for care.[11,45–48,52] Service impermanence where services irregularly come in and out of communities were described as disempowering for IHW and inconsistent with principles of ACCHS.[45] Many IHW did not qualify for public dental care because their income exceeded the eligibility threshold.[47,48] Not only were IHW frustrated in terms of their own access but also their patients' access, 'I wasn't eligible to go in the public [dental] system because I was working at the time, so therefore I did not have the Health Care Card… [for the public dental service] you have to [be] on either a Health Care Card or Pension Card. So for everyone else—even if you're working, like you could be working but still be low income, but still not be able to [be put on] cards, you can't access the dentist'.[46] The fragmented nature of public dental care and the tendency to focus on acute problems rather than preventive strategies was concerning for IHW. Differing models of care and understandings of well-being restricted IHW ability to support their patients' oral health, 'We obviously work under policies and guidelines, um - we're always competing with - what is culturally safe and appropriate versus policies that we've got [to] work under. So we're always adapting to make it work in regards to what we're allowed and what we know within ourselves as Aboriginal people what is actually appropriate to do'.[48]

3.6 | Avenues to increase IHW involvement in oral health care

Although many community challenges and systemic barriers were identified by IHW, several avenues to increase IHW involvement in oral health care were also discussed. Proposed solutions included targeted education, prioritization of cultural safety in oral health promotion, the creation of priority referral pathways, Elder role modelling, incorporation of oral health screening into other services, defining the IHW oral health role, culturally appropriate education and translatable training opportunities.

Providing relatable and targeted education or health promotion campaigns that were accessible to different groups, such as mothers, was important to IHW.[11,46,47,49] Considering oral health promotion as more than just paper pamphlets was discussed as critical to increase engagement, understanding and follow-through on knowledge. Culturally appropriate education, described by IHW as pictorial, grounded in local context, and delivered face to face, increased usefulness of oral health information for community members,[11,46–48] 'I find a lot of those pictures that really show abnormal to normal – they sort of hit home. And too much writing in a pamphlet - you just need something on a small pamphlet that is to the point'.[11] IHW stressed that face-to-face interactions were most effective, particularly in regional areas with unstable Internet connections.

The creation of a priority referral pathway, particularly for pregnant women, was discussed as a potential solution to some of the community challenges and systemic barriers,[46–48,52] 'So I think if you attach the model to your program, that could have several pathways. One into the AMS [Aboriginal medical service], because we do outreach there and we do different pathways and, you know, there's no wait for any Aboriginal child, so why can't we have that for our unborn child and mothers? And then you've got the voucher system, where if you're needing services [the AMS] can't provide, you can get a voucher…into private dental'.[48] IHW also discussed

opportunities to embed oral health screening into other services, including outreach services,[11] schools[11] and antenatal programmes.[48]

Prioritizing cultural safety in oral health promotion through employing local people and providing culturally appropriate care was another avenue described by IHW,[37,51,52] 'Our team believes that the DHA [dental health aides] should be local. They shouldn't be imported. Because we have that connection to our people… we just have a little bit more information than if they brought somebody in to do this job… so it's localized is mainly how they put these DHAs in this position. They have to be from here'.[37] Cultural safety was not only important for patient comfort but also enabled IHW to gather the necessary information to provide the most appropriate care, 'They don't give us much information when you just talk to them in English. But when you communicate in Cree, it's easier for them'.[52] Elder role modelling[11,48] was highlighted as critical in conveying the importance of oral health and preventive habits, 'If we say something, then their grandma says something, they're not going to go say what we say – they're going to listen to their [Elders]'.[48]

Defining IHW roles in oral health was useful for IHW to understand their scope of practices and to build on existing oral health strategies[11,37,48,50,51]; some IHW suggested the creation of a standalone oral health liaison position, 'Health liaison officers are all focused on diabetes and heart disease…where I think oral hygiene needs to have their own specific oral health liaison officers. If you had oral health liaison officers that actually went out into people's homes and out in to the community and have done these assessments and education, imagine how much easier it would be; they are in their home already. They're knocking on the door going into the home, how easy would it be to talk about oral hygiene? Because I know a lot of our mob don't talk about oral hygiene in their homes[11]'. Related to role definition, IHW detailed the need for simple and understandable oral health training.[47] Training that included translatable knowledge and resources was identified as confidence-building and increasing the likelihood of employing new knowledge in practice for IHW, 'I feel more confident to answer questions from now, whereas previously I suppose when it has arisen and they've asked me things that I didn't know I've been honest with them and said, I don't know but let me find out for you'.[47]

3.7 | Benefits of IHW involvement in OH care

Benefits of IHW involvement in oral health included supporting and trusting relationships, breaking down barriers to mainstream services and increasing access to oral health care. Trust facilitates rapport building with community members which was described as invaluable in helping someone along their health journey.[37,48] Acknowledging challenges an individual may have in attending dental appointments, such as making the appointment, travelling to the appointment or finding childcare were things that IHW made sure to include when assisting clients. IHW shared stores about how their relationships helped patients get back on track with a care plan, 'Often, at times, when they're in crisis and they don't answer the phone calls to the nurses, all it takes is one phone call from us and then we're back on board with them…when we contact them they're usually pretty honest with us about what's going on with them'.[48]

IHW also discussed their role in breaking down barriers with mainstream oral health services for community,[37,48,52] 'I guess we're that connector, we're the connecter with a system that is different traditionally to what some of our systems would be or would look like. So we help break down the barriers of, um, an institution which has historically been, um, one that's had a negative attachment to it from past policies and history'.[48] This role extended to advocacy, cultural interpretation and continuity of care for community. When trained and utilized in oral health, IHW directly increased access to oral health care for communities.[37,51] Although limited in scope of oral health practices, IHW helped with preventive care and facilitated the groundwork prior to community members visiting dentists, which allowed dentists to provide care for more complex needs.[51]

4 | DISCUSSION

This systematic review and meta-aggregation included IHW perspectives from 10 articles across three countries. IHW from the included studies highlighted oral health challenges facing their communities, systemic barriers limiting their ability to support oral health, benefits of IHW involvement in oral health and avenues to increase IHW involvement in oral health. Importantly, IHW resonated with the need to clarify their roles in oral health and the opportunities to benefit community experiences of oral health through their involvement. The two studies that had successfully employed IHW as oral health assistants noted an increase in accessibility to oral health care.[37,51]

The challenges communities face in accessing services and maintaining oral health highlighted by IHW in this review echo sentiments of previous works.[9,12,17,39] The involvement of IHW in oral health promotion and service delivery has the potential to address many of these challenges. For example, experiences of institutional racism and cultural insensitivity would be reduced by the inclusion of IHW in oral health care. Service accessibility would increase for community members by addressing service impermanence in rural areas[37,51] and increasing relationality between clients and service providers.[37,48] Studies included in this review noted a loss of traditional knowledges related to oral health. Inclusion of IHW in service delivery has the potential to re-introduce cultural values and knowledges into oral health experiences. Grandmothers and health knowledge keepers in a Canadian study with a Cree Nation utilized cultural childrearing practices to prevent early childhood caries, such as the use of traditional medicines in oral health, provision of traditional foods to children at a young age, promotion of swaddling and breastfeeding.[54,55] Culturally appropriate oral health promotion and education designed and delivered by IHW, such as the inclusion of Elders as role models,[11,48] is more likely to meet the needs of community members and would in turn, increase oral health awareness. Shame is a common experience when accessing dental services for many Indigenous peoples.[11,56] IHW could help address feelings of shame by providing basic dental care and cultural brokage between

their patients and non-Indigenous dental specialists.[37,48,52] Finally, by addressing common challenges to oral health experienced by community members, the normality and acceptance of poor oral health would be reduced. The responsibility to shift the experience and normalization of poor oral health does not solely lie with IHW but their involvement has the potential for profound impacts on community oral health.[37,39] One of the included studies highlighted the potential for a specific health liaison officer role for oral health.[11] The creation of a specific Indigenous oral health liaison officer position in health services would ensure funding for oral health is less sporadic and address some of the funding issues highlighted by IHW in this review.

There are many barriers to IHW involvement in oral health that are beyond the scope of IHW responsibility. One of the biggest systemic obstacles to incorporating IHW in oral health promotion and service delivery is limited training and poorly defined oral health roles.[11,37,48,50,51] Utilizing IHW in a more official oral health capacity with a well-defined scope of practice would increase the ability of communities to establish and maintain oral health, particularly in remote regions. Remote health personnel in Australia have emphasized the need to develop an oral health role for IHW not only because of the cultural benefits to Indigenous communities, but due to the high rates of oral diseases, the impact of oral diseases on general well-being and the benefits of optimal oral health on general health and well-being. Dental and non-dental health personnel have recognized the high costs of emergency dental care to health systems, the burden dental emergencies place on non-dental services in remote areas, the preventable nature of oral diseases, the problematic separation of oral health from other aspects of health and the consequential limited amount of oral health awareness in remote communities.[57] Previous works have demonstrated the power of co-designing oral health promotion training with IHW[47,58,59]; these projects have stressed the need for translatable and understandable training, similar to the findings of this review.

In circumstances where IHW utilization for oral health is not possible, Indigenous representation and leadership in oral health service delivery and provision in mainstream services remain critical to the success of these initiatives. Failing to embrace Indigenous participation and leadership in oral health will further compromise oral health outcomes for Indigenous peoples.[60] While benefits to IHW involvement in oral health were discussed in some of the papers included in this review, this was not the focus for any of the publications, and therefore, the range of benefits is likely understated. Previous works incorporating IHW in other areas of health have identified improved quality of care, provision of culturally safe care, increased awareness and increased appointment attendance.[25,28,29,32,33] IHW are uniquely positioned to evaluate the strengths and shortcomings of community-based oral health programming, which might include leadership in design, implementation, delivery and evaluation stages to ensure the highest benefit for Indigenous communities to improve community oral health.

At a policy level, the inclusion of dental care in universal or public healthcare funding models in Canada, the United States and Australia, and indeed globally, is necessary to begin addressing health inequities among the world's most disadvantage. Countries who fail to include dental services in their medical schemes must recognize the inadequacies of their models in meeting population needs. The World Health Organisation could include oral health as a Core Health Indicator and the United Nations and World Bank could integrate oral health within their health surveillance programmes.[61] While universal dental care is a necessary step in bettering oral health outcomes and experiences for Indigenous communities, it is necessary to highlight that even for health conditions or areas of care where universal coverage is provided, disease and mortality rates remain disproportionate for Indigenous peoples.[2,3,6,62] Therefore, the importance of Indigenous leadership and IHW in oral health promotion and dental care provision cannot be understated. A shift in funding provisions for oral health that supports Indigenous models of care, offers competitive salaries, and sufficient budgetary allotments for oral health education and resources in community-controlled health services is needed. Legislative changes that recognize the importance of IHW in oral health care and permit the involvement of IHW in care provision, would enable a more involved and structured oral health role for IHW, and would ensure formal oral health training for these workers.[37,45,47,48,50] Funding is also required to invest in cultural safety training for non-Indigenous dental teams and specialists that upskills health professionals in a way that increases their awareness of the colonial foundations of mainstream health systems and their ability to critique its limitations and advocate for change. Research programmes could co-design oral health promotion materials with Indigenous communities, as well as cultural safety training for non-Indigenous dental staff. Many programmes have begun this work,[47,58,59] but further advocacy and research that drive mandatory state or national level programmes, rather than initiatives that end with individual projects and funding, are needed.

This systematic review is, to the best of our knowledge, the first to collate IHW perspectives on oral health at a global level. The review complies with all relevant systematic review protocols to ensure transparency of processes and findings. The provision of avenues to address challenges to IHW involvement in oral health is a highlight of this review as it provides specific areas for future research and policy to address. Three of the four components of the conceptual model had illustrations from at least 80% of the included studies. The included studies are from three countries, with the majority being from Australia; this limitation emphasizes the need for more research centring IHW perspectives on oral health in other countries with Indigenous populations. Despite efforts to include all possible terms for IHW in the search string, no uniform definition for IHW exists, and as such, some papers may have been missed during the systematic search.

5 | CONCLUSION

Prioritizing IHW leadership in both community-controlled health services and mainstream oral health services would address many of the barriers to oral health experienced by Indigenous peoples. In order to implement a reflexive and culturally responsive approach

to oral health for Indigenous communities, there needs to be recognition of the limitations of mainstream oral healthcare models in their ability to meet the needs of Indigenous peoples. Acceptance of these inadequacies would create space to pursue work, with Indigenous leadership, that[1] determines the capacity of IHW to provide oral health care, and[2] explores opportunities to create specific oral health roles for IHW. Incorporation of IHW and Indigenous leadership in oral health will improve the quality of oral health care, strengthen oral health programming, raise awareness among communities and contribute to long-term sustainability of oral health.

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CONFLICT OF INTEREST

None to declare.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available in the supplementary material of this article.

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher's website.

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“Unfortunately for many Aboriginal people, of course, they’ve been in the situation of being herded on government reserves. Their own responsibility’s been assumed by Protectors of Aborigines and by government officials, and if you become part of that system, it’s always difficult to break out of it.” – Lowitja O’Donoghue

SECTION B

Methodology & Study Design

OVERVIEW

Section B details the methodologies and study design of this thesis. Chapter 4 provides details related to the study design, methodological approaches, and theoretical frameworks. Chapter 5 provides the Candidate's positionality statement. Chapter 6 details an approach to research termed Relational Yarning that was conceptualised alongside the research comprising this thesis.

4

Study Design

4.1 PREFACE

This Chapter will detail the background to this research project in Section 4.2, including the study design, and the recruitment strategies and study population. The aims and objectives specific to this thesis will be described in Section 4.3, and the theoretical frameworks used within this thesis will be discussed in Section 4.4. Although efforts have been made to minimise repetition between the details provided in this Chapter and those outlined in each manuscript, some may still exist.

4.2 BACKGROUND TO THIS RESEARCH

4.2.1 Ethical approval

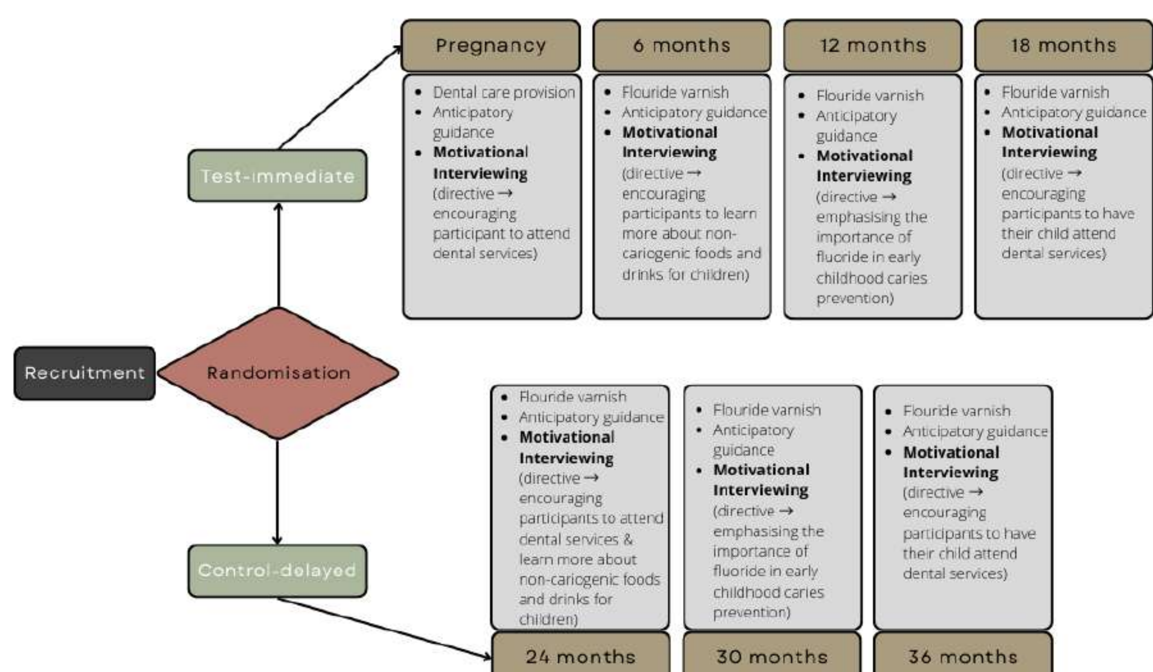
This study received ethical approval from the Aboriginal Health Council of South Australia Human Research Ethics Committee (04-09-362) and the University of Adelaide Human Research Ethics Committee (H-057-2010). All participants provide written and informed consent at each timepoint in the study.

4.2.2 Study Design

The research conducted in this thesis was part of the Australian arm of an international randomised controlled trial "Baby Teeth Talk," funded by the National Health and Medical Research Council of Australia (NHMRC ICIHRP Grant # 627350). This trial was led by the University of Adelaide and involved researchers from the Menzies School of Health Research at Charles Darwin University, University of South Australia, Ngai Tahu Māori Health Research Unit at the University of Otago, and the School of Dentistry at the University of Toronto. The aim of this project was to determine if the implementation of a culturally-appropriate Early Childhood Caries (ECC) intervention reduced oral health inequities and disease burden among Aboriginal and Torres Strait Islander children living in South

Australia. The research team hypothesised that exposure to the intervention would reduce dental disease burden among Aboriginal and Torres Strait Islander children and therefore, reduce oral health inequities between Indigenous and non-Indigenous children (1). Participants recruited to the study were randomly assigned on a 1:1 basis to the test-immediate group or the delayed intervention group using a computer-generated permuted block randomisation sequence, stratified by recruitment sites. The intervention included four components: (1) provision of dental care to the mother, (2) fluoride varnish application to children's teeth, (3) anticipatory guidance, and (4) motivational interviewing (MI) (Figure 1).

Figure 1. Study design schematic emphasising the sources of data collated for this thesis.



This thesis utilised the data captured during the MI component of the intervention. MI is a specific category of interviewing methodology that works to enhance intrinsic motivation for unmotivated or ambivalent individuals who either resist suggestions, do not consider behaviour change necessary, are unable to justify reasons for action, or have low adherence to health behaviours (2). The approach to behaviour change in MI is underpinned by the notion

that increased knowledge at the individual level is insufficient to elicit meaningful behaviour change and that increasing one's intrinsic motivation increases the likelihood of behaviour change (3). In this trial, each time point had a specific MI directive that the conversation focused on, and staff had a loose guide that highlighted key points to embed in the conversation. However, due to the principles of MI, the conversation was largely guided by the participants' knowledge and questions. At baseline during pregnancy for the test-immediate group, the MI directive was encouraging participant attendance to dental services; at 6-months, the MI directive focused on the importance of non-cariogenic foods and drinks for children; at 12-months, the MI directive emphasised the importance of fluoride in preventing ECC; and the 18-month MI directive encouraged dental attendance for children. The control-delayed group received three MI sessions, with the first session combining directives from baseline and 6-months. The detailed MI guides are provided in Appendix A.

This thesis also utilised both qualitative systematic review methodologies and scoping review methodologies to synthesise evidence related to (1) the experience of oral health for Indigenous Peoples globally, (2) the extent of Indigenous Health Worker (IHW) involvement in oral health globally, and (3) the impact of neoliberalism on Indigenous health outcomes. Further, historical and anthropological evidence are collated in Chapters 13 and 14 to further arguments and positions generated from findings related to empirical evidence analysed in earlier chapters.

4.2.3 Study Population

To be eligible to participate in this project, individuals had to be pregnant residents of South Australia, expecting a baby or babies of Aboriginal and/or Torres Strait Islander identity, or given birth to an Aboriginal and/or Torres Strait Islander baby or babies within the past six weeks. Recruitment strategies were largely based on stakeholder engagement in maternity

hospitals and mothers' groups across South Australia. Posters and information were provided to staff at maternity hospitals and ACCHOs, who helped spread the word about the project and provided referral forms to the team on behalf of any interested individuals. From there, snowballing was a key element to recruitment, as the team started meeting with mothers, word quickly spread to other family and friends who were eligible to partake (4).

Four-hundred and forty-nine mother-child dyads were recruited to the study between 2011-2012 (5). The proportion of participants recruited to this project represented approximately two thirds of the target population. For the purposes of this thesis, purposive sampling of the wider cohort was used to determine the inclusion of interviews for analysis. This purposive sampling was based on the fidelity scores of staff who conducted the interviews, where fidelity is understood as the extent to which MI was conducted as intended (6, 7). Fidelity of MI was conducted as a part of this project to ensure robust and sound methodological rigour, considering the success of MI is contingent on the interventionist's competency in eliciting participant statements of self-motivation (8). Therefore, all included interviews were conducted by the researcher with the highest MI fidelity score because these interviews constituted the majority of data collected, were more comparable in flow, and provided the richest data.

4.3 AIMS AND OBJECTIVES WITHIN THIS THESIS

4.3.1 Aims

The aims of this thesis were to (1) identify barriers, facilitators, and motivators to establishing and maintaining oral health for Aboriginal and Torres Strait Islander families, and Indigenous Peoples globally; (2) explore the impact of socio-political ideologies of neoliberalism on Aboriginal and Torres Strait Islander oral health and Indigenous wellbeing; (3) establish an evidence base related to Aboriginal and Torres Strait Islander involvement in oral health and;

(4) describe the importance of strengths-based approaches regarding Aboriginal and Torres Strait Islander oral health research and discourse. The chapters of this thesis that correspond with each aim are highlighted in Figure 2.

Figure 2. Pictorial representation of thesis aims in relation to chapters that address each aim.

Note: Chapters 4 and 5 relate to the methodology and positionality of the Candidate in relation to the aims of this thesis.

4.3.2 Objectives

The aims of this thesis were fulfilled through the following objectives:

- To utilise reflexive thematic analysis to identify barriers, facilitators, and motivators to establishing oral health for Aboriginal and Torres Strait Islander families
- To employ qualitative systematic review and meta-aggregation methodologies to explore experiences of oral health for global Indigenous Communities
- To use constructivist grounded theory to establish a conceptual model regarding the internalisation of neoliberal ideologies among Aboriginal and Torres Strait Islander mothers
- To conduct an audit of Aboriginal Community Controlled Health Organisation websites and social media profiles in South Australia to quantify and describe oral

health programming and promotion led by Aboriginal and Torres Strait Islander Communities

- To explore the ways that neoliberalism impacts Indigenous wellbeing through generative mechanisms
- To develop and articulate the processes of successful Community engagement in the context of Indigenous oral health research
- To consider the impacts of colonisation on oral health from a historical perspective
- To reflect on the ways Aboriginal Community Controlled Health Services resist neoliberal ideologies, strengthen self-determination, and create more equitable health experiences for Communities

4.4 THEORETICAL FOUNDATIONS

4.4.1 Indigenous Methodologies

Indigenous research methodologies are dynamic processes that emphasise cyclical perspectives, often providing alternative solutions to colonial and Western approaches to research (9, 10). A main aim of Indigenous methodologies is ensuring research is conducted in an ethical, reciprocal, and respectful manner (11). Through the application of convergence Indigenous methodologies, the research conducted in this thesis intended to privilege the comprehensive and holistic understandings that exist within Aboriginal and Torres Strait Islander traditional knowledge systems in partnership with Western research methods (12). Convergence Indigenous research methodologies are motivated by decolonising values, reconciliation pursuits, and aspirations of harmony through the prioritisation of Aboriginal and Torres Strait Islander ways of knowing, being, and doing in tailoring Western research methods to meet Community-identified needs (12, 13). The involvement of non-Indigenous researchers in the process of convergence Indigenous methodologies requires researchers to

approach their work as a learner due to the necessity of creating a sensitive, open-minded research environment that prevents misrepresentation, exploitation, and misinterpretation of Indigenous leaders, collaborators, participants, and Communities (14).

4.4.2 Critical realism

The research and analysis comprising the latter half of this thesis were conducted from the metatheoretical perspective of critical realism. Through the process of learning and identifying factors related to the experiences of oral health for Aboriginal and Torres Strait Islander Peoples in this thesis, it became apparent that the research questions being asked were missing a key piece to the puzzle that might not be empirically obvious or tangibly observed. As such, the pieces comprising Chapters 11, 12, 13, and 14 were conducted with the goal of progressing our understandings of the hidden but necessary preconditions that result in the empirical observations of disproportionate experiences of oral disease among Aboriginal and Torres Strait Islander Peoples. Critical realism understands social phenomenon as constituted by and consisting of layers of reality (15, 16). From this understanding, causality must be explored beyond the observable and empirical layers of reality to build an understanding of the complexities of social phenomenon. Critical realism aims to evoke change by identifying and comprehending the contingencies that elicit causal pathways for a given outcome, which for the purposes of this thesis is generally, inequitable experiences of oral health among Aboriginal and Torres Strait Islander Peoples.

4.4.2 Decolonising Theories

In alignment with convergence Indigenous methodologies and the socially focused aspects of critical realism, the underlying methodological approach to the works comprising this thesis were informed by decolonising theories (11, 17). Decolonising theories challenge the

hegemonic cultural outlook of dominant society, recognising the oppressive ways in which Indigenous Peoples continue to be disregarded by research, while Western knowledge is favoured (18). Decolonising theories denounce the ongoing impacts of colonisation on Indigenous Peoples and the related marginalisation from dominant culture, where dominant culture is understood to be aligned with colonial and neoliberal ideologies. Indigenous researchers have advanced a decolonising approach to research that reframes dominant paradigms to a more nuanced, liberationist understanding of research that recognises the historical, political, and social contexts in which research exists (11, 19). Fundamentally, decolonising theories privilege Indigenous leadership and voices by focusing on topics identified as important by Indigenous Peoples and Communities. Critically, decolonising theories recognise the variation of Indigenous worldviews, distinct to each Community and location, and highlights the need to embed the appropriate values and approaches as the core structure in any decolonising research pursuit (11, 20, 21). As is central to Indigenous methodologies and decolonising theories, I will next position myself as a non-Indigenous researcher engaging in Indigenous research (10, 18, 21) in Chapter 5.

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5

Positionality

5.1 PREFACE

This chapter consists of the Candidate's positionality statement that situates her as a non-Indigenous, white, female researcher in relation to the research conducted throughout her Candidature. This is critical component of the thesis as reflexivity has been a continuous journey embedded throughout the Candidature and is extremely important in positioning one's assumptions and values in relation to the work they pursue.

5.2 POSITIONALITY STATEMENT

"Scientists currently have to remove all traces of themselves from experiments, otherwise their data is considered to be contaminated. Contaminated with what? With the filthy reality of belongingness? The toxic realisation if we can't stand outside of a field we can't own it?"

Tyson Yunkaporta

Considering the historical unethical conduct and maltreatment of Indigenous Peoples in the name of research, both in Australia and around the world (1), in combination with the embracing of researcher subjectivity in qualitative research (2), it is critical to self-situate with regard to one's research. I would like to start the positioning of myself as a non-Indigenous white female researcher from Canada in relation to the work presented within this thesis by acknowledging the teachings I have had the honour of learning from Indigenous Peoples, Communities, Country, colleagues, and friends (many of whom I now consider family), throughout this journey. I would also like to thank these people for trusting me to share critical stories and for coming along on this journey with me, for without them, its completion would not be possible. I would also like to acknowledge Indigenous Peoples whom I have not met, but from who I have learned immensely about methodologies, ways of thinking, being, and doing, through both written and spoken word. The writing of my thesis

started with this chapter because of the centrality of reflexivity in qualitative methodologies, but more importantly due to the intricacies of non-Indigenous involvement in Indigenous research.

"I sit on a man's back, choking him and making him carry me, and yet assure myself that I am sorry for him and wish to lighten his load by all means possible, except by getting off his back."

Leo Tolstoy

Now, as is commonplace for Aboriginal and Torres Strait Islander Peoples, I will introduce who I am and where I come from. I was born on the ancestral lands of the Attawandaron/Chonnonton, the Anishinaabe, and Haudenosaunee peoples and the treaty lands and territory of the Mississaugas of the Credit on Turtle Island. These lands are now referred to as Guelph, within Ontario, Canada. I was born and raised in Guelph, a city of about 135,000 people within 100km of Toronto. I lost my father at a very young age and lived with my Mom and brother for the early years of my life. I truly believe this experience shaped the person I have become, the depth of emotion felt from such a young age instilled empathy and an indescribable 'knowing' within me, but also my Mother ensured that my brother and I understood the power of love and the importance of family in healing pain. I grew up across the road from my maternal grandparents, who played a big role in our lives growing up; we spent summers during my childhood camping, growing food, and swimming in the local lake. For me, school and education was something that I had control over as a child, something I could excel in, and therefore one less thing that my Mother had to worry about. I had an innate drive to protect my Mother in any way I could, so I focused almost all of my energy on school. Due to my privilege as a white, middle class person in Canada, I had access to education throughout my life, and as it was something I had always invested in, I proceeded to complete an undergraduate degree in Health and Life Sciences at Queen's

University in Kingston after high school. During this time I was exposed to the social determinants of health, concepts of equity, some of the true history of Canada's past, and I took a keen interest in nutrition and food systems. In the final year of my undergraduate degree, I started looking at graduate programs as I wasn't sure of what career I wanted to pursue as I neared graduation.

After living away from home for four years, moving back to Guelph was a welcomed opportunity. When I was visiting my family on Thanksgiving break of my final year of undergraduate studies, I met with a professor in the Nutrition department at my hometown university who was researching Indigenous food sovereignty. She ended up being my supervisor; I decided to work with her because we connected on a personal level, despite my admittedly limited knowledge of the intricacies of Indigenous health research. My Masters research involved moving to Vancouver Island for four months to work with a First Nations Community in the gardens alongside Elders. I am so grateful to have been provided the time and space to sit with and learn from these women. I am still in contact with all of them, and I cherish the foundational groundwork they did in helping me gain an appreciation of Indigenous ways of being, doing, and knowing. My biggest lesson during this time was the importance of listening, observing, learning, and then changing my own understandings of the world; a process I would now summarise as a decolonising of my own thoughts. I want to explicitly acknowledge that decolonising oneself is an ongoing, never-ending process; when we live in such a colonial society, I'm not convinced that full decolonisation is even possible, however that does not make it any less a meaningful pursuit.

My Masters was a very confronting and eye-opening experience; I didn't appreciate the growth at the time but reflecting now, I can see that every experience was necessary to bring

me to this point. I faced many obstacles during my Masters related to institutional barriers resulting from a system that does not appreciate alternative approaches to research, as evidenced by its inability to align with principles of evolving research within Community based methodologies. I almost dropped out of the program, twice, due to the hurdles and challenges I was failing to overcome. I am very grateful to my family and mentors who supported me through to the completion of this project. The eye-opening aspect of this experience related to the realisation of my own privilege and ignorance. I remember driving home from a day in the gardens when everything hit me like a ton of bricks: I was so privileged that I had been able to live in a country for over twenty years without understanding the reality of life for its First Peoples, historically and presently. I went to a Catholic school as a child, and we were never taught about residential schools and the removal of Indigenous children or the true history of Canada. I couldn't comprehend how so much had been hidden from me and how such a shameful history was so easily dismissed by dominant culture. I felt deep guilt about my complicity in this narrative. Later that week I was listening to a podcast, and I heard the quote from Dr Maya Angelou: *"Do the best you can until you know better. Then when you know better, do better."* This has been my guiding light since that day, no excuses, no blaming, just forward action that works to do better, incorporating every lesson along the way, no matter how uncomfortable these processes may be.

The only thing I know with confidence is that I don't know much at all. I am grateful that I did not come to this work as a 'knower,' and that by default and from experience I have always approached research as a 'learner' (1). There are a few more things that I know or believe to be true, that continue to guide my involvement as a non-Indigenous researcher in Indigenous research:

1. I will never understand the complexity of Indigeneity and it's not my place nor right to have this understanding.
2. It is a true privilege to learn from and work alongside my Indigenous colleagues, partners, friends, and family; I cherish their generosity in sharing time and space with me.
3. It is an immense responsibility to be a custodian of voices and stories of Indigenous Peoples. I must do all that I can to diminish opportunities for misinterpretation, however that may look in different circumstances.
4. I have an ethical compulsion to embed advocacy and translational outcomes related to increased health equity for Indigenous Peoples in all research endeavours.
5. All works must be led or co-designed by the Indigenous Communities that are engaging in the research journey; otherwise, we are complicit in the continuation of unethical, colonial, and exploitative research practices.
6. Self-determination must always be the bottom line – no research priority can ever overcome the right to self-determination of Indigenous Peoples.
7. It is my responsibility to continually interrogate my own intentions, desires, and place in Indigenous research.
8. I must use my own privilege to create spaces and opportunities for Indigenous Peoples, even when this means I must give up my own seat at the table.
9. There is no research without trusting and reciprocal relationships.
10. I must be cognisant of any inherent power I bring to a situation because of my positionality, and work to eliminate notions of power in my exchanges with others.

I did not have all of these 10 thoughts sorted out by the time my journey brought me to Adelaide and the Indigenous Oral Health Unit; I would probably refer to them more as

fragments of my thoughts because they are dynamic in nature and always evolving. These thoughts have developed over time and by listening. I would be remiss to not acknowledge the immense mentorship and guidance I have received from three of the strongest Indigenous women I know, my sister-in-laws Madison and Carleigh Cachagee and Joanne Hedges, our team's fearless leader. At the beginning of my Masters, I met my partner and the far-fetched reality of Indigenous wellbeing that I was studying slowly inched closer to home. As familial relations strengthened between us and our relationship became serious, I learned that I would come to have two Cree First Nations sisters. During the first year of my PhD, our eldest sister had her first daughter. Not soon after Sage's birth, the residential school graves in Canada were uncovered. Every news article I saw, I imagined it was my niece that had been taken from her mother. When I talked with Aboriginal and Torres Strait Islander Mums in the field and heard their stories about wanting what was best for their children, I understood their intentions for they were similar to my own. The implications of the findings of research and the ability to utilise research for meaningful and impactful change for Indigenous Communities, families, children became a strong desire embedded in all my pursuits.

I will never truly understand the implications of colonisation, assimilation, and all of the other horrific circumstances on Indigenous wellbeing but I feel much closer to these pursuits than I did when I walked onto campus the first day of my Masters. I am indebted to my sisters for allowing me to have a window into the implications of these policies on their own lives. My gratitude for Jo's leadership will never be sufficiently articulated. I cannot describe the impact that Jo has had on my development and growth as a human, as a woman, as a leader, and as a researcher. It is the honour of a lifetime to have Jo as such an integral part of my journey, I value every yarn, laugh, cuppa, success, and failure that we share because they all provide an opportunity for me to learn, to question my assumptions, to acknowledge my

privilege, and to do better by Community. All the fragments of my life shared in this positionality statement influence the way that I approach and engage in the work I do every day. Reflecting on my positioning is a daily practice that I interrogate both internally and externally with Indigenous and non-Indigenous colleagues. The work comprising this thesis has been conducted from this positioning.

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6

Methodology

Walking together: Relational Yarning as a mechanism to ensure meaningful and ethical Indigenous oral health research in Australia

6.1 PREFACE

This work outlines the opportunity that Relational Yarning holds for prioritising six key values identified as necessary to meaningful and ethical research with Aboriginal and Torres Strait Islander Communities. This is an important component to the thesis because the approach to meaningful and ethical research with Aboriginal and Torres Strait Islander Communities described in this piece informs all of the subsequent work presented in the thesis.

6.2 PUBLICATION DETAILS

Poirier B, Hedges J, Jamieson L. Walking together: Relational Yarning as a mechanism to ensure meaningful and ethical Indigenous oral health research in Australia. Australia New Zealand Journal of Public Health 2022. doi: 10.1111/1753-6405.13234

6.3 HIGHLIGHTS

- Relational Yarning enables the prioritisation of six core values: respect, relationships, advocacy, reciprocity, time, and gratitude.
- The methodology proposed in this work is flexible and can fit alongside various methodologies and research projects, while ensuring ethical and meaningful Community-informed pursuits.
- Continued exploration and documentation of best practices and methodologies in Indigenous research, such as this piece, are critical to shifting Western research paradigms to include and privilege Indigenous ways of knowing.

6.4 STATEMENT OF AUTHORSHIP

Statement of Authorship

Title of Paper	Walking together: Relational Yarning as a mechanism to ensure meaningful and ethical Indigenous oral health research in Australia
Publication Status	[X] Published ☐ Accepted for Publication ☐ Submitted for Publication ☐ Unpublished and Unsubmitted w ork w ritten in manuscript style
Publication Details	Poirier B, Hedges J, Jamieson L. Walking together: Relational Yarning as a mechanism to ensure meaningful and ethical Indigenous oral health research in Australia. Australia New Zealand Journal of Public Health 2022. doi: 10.1111/1753-6405.13234

Principal Author

Name of Principal Author (Candidate)	Brianna Poirier		
Contribution to the Paper	Conceptualisation of research question Data analysis Manuscript writing Editing and revisions Corresponding author for publication process		
Overall percentage (%)	75%		
Certification:	This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper.		
Signature		Date	13/07/2022

Co-Author Contributions

By signing the Statement of Authorship, each author certifies that:

i. the candidate's stated contribution to the publication is accurate (as detailed above);

ii. permission is granted for the candidate in include the publication in the thesis; and

iii. the sum of all co-author contributions is equal to 100% less the candidate's stated contribution.

Name of Co-Author	Joanne Hedges		
Contribution to the Paper	Orientation of research question formulation Revision of methodology Input on theory application Input regarding interpretation of results Revision of manuscript		
Signature		Date	13/07/2022

Name of Co-Author	Lisa Jamieson		
Contribution to the Paper	Orientation of research question formulation Revision of methodology Input on theory application Input regarding interpretation of results Revision of manuscript		
Signature		Date	13/07/2022

Please cut and paste additional co-author panels here as required.

6.5 PUBLICATION

Walking together: Relational Yarning as a mechanism to ensure meaningful and ethical Indigenous oral health research in Australia

Brianna Poirier,[1] Joanne Hedges,[1] Lisa Jamieson[1]

Abstract

Objective: Despite the colonial roots and modern presence of systemic racism within academic institutions, Indigenous researchers have successfully led a change in expectations of what constitutes 'good' research with Indigenous Communities. From a mixed Indigenous and non-Indigenous research perspective, this paper explores the processes that enable meaningful and ethical Indigenous oral health research.

Methods: This paper utilises Yarning as its methodology to capture our research process and identify our core values. The idea for this paper was a result of social and collaborative yarns, which were used as the framework for a final research topic yarn.

Results: We propose Relational Yarning as a mechanism to ensure the prioritisation of six core values in our research approach: respect, relationships, advocacy, reciprocity, time and gratitude.

Conclusions: We argue that these values are not only essential at the individual or team level but must extend to all institutions in which Indigenous research operates. Therefore, academic institutions, funding bodies and academic journals are compelled to mandate policies that disrupt patterns of symbolic violence and eliminate institutional racism.

Implications for public health: Our framework provides an opportunity for all researchers engaging with Indigenous Communities to facilitate meaningful and ethical research and prioritise culturally secure research environments.

Key words: Yarning, Relational Yarning, Indigenous methodologies, Community-engaged research, Indigenous health research

Despite the growing Indigenous leadership in the exploration and documentation of Indigenous knowledges, traditions, and practices; these understandings are often filtered through Western pedagogies and fitted to academic expectations of research outputs [1]. The following work is presented in a way that we feel honours the story we are sharing. It is important to note that this work is still confined to written English language and academic expectations, but we hope that utilising an unconventional format will encourage other researchers, authors, and journals to consider alternative ways of disseminating research as equivalent to Westernised academic standards.

Indigenous health research has historically been wrought with maltreatment, appropriation of knowledge, and disregard for ethical standards.[2-5] The power dynamics associated with the positioning of researchers as 'experts' have been "damaging, insensitive, intrusive and exploitive"[4] to Indigenous Communities. The normalisation of researcher dominance over Indigenous research participants is a form of racism, known as symbolic violence,[6,7] wherein Indigenous peoples are treated as inferior.[8] Power-driven relationships in research contribute to socialisation theories where the acceptance of such behaviour masks the underlying inequities within power relations.[7] Understandably, for many Indigenous peoples, research is a 'dirty' word.[5] While the colonial and racist foundations of academic institutions remain, there has been powerful resistance from Indigenous researchers and a shift in expectations for 'good' Indigenous research has begun.[5,9-12] Indigenous leadership and involvement in research is growing,[13] however, there remains extensive involvement of non-Indigenous scholars in Indigenous health research and many mixed-research teams, of which we are one. As is common practice for Aboriginal and Torres Strait Islander peoples (respectfully, subsequently referred to as 'Indigenous'), we will start with an introduction of who we are and where we come from.

Joanne Hedges

I'm a Yamatji woman from the mid north-western region of Western Australia. My grandmother was part of Stolen Generations. I grew up not knowing my Aboriginal grandmother or my maternal grandmother because they both passed away. I was born in Melbourne and moved to my mother's home town in regional Victoria when I was school age. I struggled at school, but for some reason I kept going; the transition from year 10 to year 11 was a big jump for me academically,

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so I didn't go back for year 12. I got a job in the local fruit processing plant for a bit before I moved to Melbourne. I was unemployed, so every day I got up and went into Centrelink ready for an interview, but I couldn't get a job. One day I saw a dental nurse traineeship which I was interested in because in my home town, I was president of the field hockey club, and the treasurer was a prosthodontist. When I had to get cheques signed for the club, I went to the treasurer's work where I saw her making false teeth. I finished the dental nurse traineeship and I ended up back working at the factory in my hometown. Shortly after, I got a call from my Auntie telling me the Aboriginal Health Services in Melbourne were looking for a dental nurse. I stayed in that job for 26 years and in that time, I had two boys. When they finished school, I wanted to do something for myself, so I moved interstate and got the job where I am now. I've been doing oral health research with Communities for almost 12 years. I feel like it's all part of my contribution to supporting Aboriginal Communities, wherever we are, having better health information and support. I did go to university in the end, something happened one day, and I thought, 'I think I have to do University.' I had a yarn with my partner, then with my boss, and decided I would do my Master of Public Health. It was hard work, working full time in the field and managing assignment deadlines. On graduation day, my Mum, my brothers, my two boys and my nephews came and one of my nephews said, 'I'm going to go to university!' I was the first one in my family to go to university and I won't be the last.

Brianna Poirier

I am a white, settler PhD candidate from Canada. I was born and raised in a town outside of Toronto where I lived with my mom and my brother. My maternal grandparents played a big part in our lives growing up, we lived across the street from them, and we spent summers during my childhood camping, growing food and swimming in the local lake. Due to my privilege as a white person in Canada, I had access to education throughout my life. In the final year of my undergraduate degree, I started looking at graduate programs and met with a professor at my home town university who was researching Indigenous food sovereignty. She ended up being my supervisor; I decided to work with her because we connected on a personal level, despite my admittedly limited knowledge of the intricacies of Indigenous health research. My Master's was a very confronting and eye-opening experience; I didn't appreciate the growth at the time but reflecting now, I can see that every experience was necessary to bring me to this point. I went to a Catholic school as a child, and we were never taught about residential schools and the removal of Indigenous children or the true history of Canada. I couldn't comprehend how so much had been hidden from me and how such a shameful history was so easily dismissed by dominant culture. I came to Australia after completing my Masters for an extended holiday, I met with a professor to coordinate a guest lecture, which turned into a job, and that job transitioned to a PhD and meeting Jo. I'm deeply appreciative of all Jo has taught me. It is amazing working in Community with someone so well-known and well respected. Jo's knowledge is incredibly valuable. This collaboration has provided us with space to reflect on the research processes that contribute to the meaningful and ethical work we do with Indigenous Communities in South Australia.

Through Yarning and reflecting on our experiences and stories, this paper aims to outline the opportunity Relational Yarning, alongside various research methods, holds for prioritising six key values we identify as necessary to meaningful and ethical research with Indigenous Communities. We utilise the term Relational Yarning, similar in principle to social or collaborative Yarning,[14] in reference to the yarns that happen alongside research as a by-product of spending time with Community for research purposes. These yarns are not central to the research project at hand, but we view them as necessary to meaningful and ethical Indigenous research processes. We would like to recognise and appreciate the diversity among Indigenous Communities and suggest our core values and approaches presented in this paper act as a basic framework to build upon as is necessary or appropriate for work in different Communities. We hope that readers gain a true sense and appreciation of the opportunities Relational Yarning holds to create 'circles of resistance' to power-driven research practices, which are necessary to reduce symbolic violence in academic institutions.[8,15]

The process (materials and methods)

The process of coming together as Indigenous and non-Indigenous researchers in this work is framed by conceptual understandings of intercultural spaces. As conceptualised by Nakata,[1,16], the Cultural Interface is a complex knowledge interface that supports Indigenous scholarship as a space for generating dispositions for ways of thinking yet to be considered that contemplate conditions of both Indigenous and Western knowledges.[17] Similarly, Bhabha's[18] conceptualisation of the third space seeks to enable the emergence of new positions that create new structures of authority and displace previous cultural essentialisms. Both these ideas of intercultural or liminal space suggest the need to centre rather than marginalise Indigenous knowledges and practices while addressing notions of power, allowing the creation of new meanings. Navigating these spaces of intercultural knowledge as Indigenous and non-Indigenous researchers is an ongoing process that continues to develop our experiences and expectations of best practices among our team.

This work utilised Yarning as its method of data collection; to yarn is to catch up, have a conversation and see how someone is doing; it is a generically-employed term for many Indigenous peoples in Australia. As a practice, Yarning is a reciprocal two-way strategy of sharing information and negotiating, which can facilitate culturally secure and impartial research.[19] Yarning reduces power dynamics and the formality of the researcher identity because it demands engaged interactions between parties where both people are learners and knowers.[14,19-21] The various processes of Yarning are as diverse as the Indigenous Communities across Australia but at its core, Yarning requires relationships, accountability and responsibility between people.[14,19,20] Storytelling and narratives are mechanisms for sharing information in Yarning and allow connection between individuals' experiences irrespective of place, time and culture.[12,22,23] Bessarab and Ng'andu[14] highlight four different types of Yarning that work together as a method for Indigenous research: social Yarning, research topic Yarning, collaborative Yarning, and therapeutic Yarning. Social Yarning refers to conversation guided by participants' interests and is a place for trust and relationships to be built. Research topic yarns have a specific purpose to gather information and stories related to a research question. Collaborative yarns occur between people who are exploring ideas while actively

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sharing information with each other to develop understandings. Therapeutic Yarning involves the sharing of intimate stories and the provision of support to help expand one's understanding of experiences in new ways.[14]

As a research team, both social and therapeutic Yarning have underscored our relationship, while at work, over shared meals, in Jo's garden, or over the phone. Social Yarning facilitated trust, sharing and relationship building with one another; our first meeting turned into a three-hour yarn about our life journeys. Therapeutic Yarning became more common as our relationship developed and we began supporting each other through various personal experiences we were navigating. Collaborative Yarning has been an ongoing process as a by-product of field work, but also in terms of discussing the idea, direction, and potential of this paper. We met on five occasions to identify and discuss themes and key areas of doing meaningful work with Indigenous Communities through brainstorming experiences and sharing stories together; through this process a rough outline was developed for our research topic yarn. The findings presented below are the result of a final research topic yarn which we audio-recorded and transcribed, wove into the pre-established framework and expanded upon with notes from previous social and collaborative yarns. The approach employed through this process follows notions of autoethnography, which is a qualitative method that questions the dominance of traditional science and research by advancing sociological understandings of personal experiences.[24] Autoethnography uses personal experiences to illustrate facets of cultural experiences that enables greater understanding of shared experiences and relational practices of a culture for both *insiders* (cultural members) and *outsiders* (cultural strangers).[25,26]

The process of bringing together the methodology of Yarning with components of autoethnographic approaches mirrors the process of Etuaptmumk ("Two-Eyed Seeing").[27] Two-Eyed Seeing is a Mi'kmaq research practice, pedagogy, and way of living that seeks to bring together our different ways of knowing to motivate both Indigenous and non-Indigenous people to provide the most benefit to Indigenous Communities. Importantly, Two-Eyed Seeing does not merge knowledges nor does it distinguish one approach as better than another; it aims to utilise the shared strengths of Indigenous and Western knowledge systems to solve besetting problems experienced by Indigenous Communities, particularly concerns regarding Community health.[28]

The Yarn (Results)

We propose Relational Yarning as a mechanism to ensure the prioritisation of six core values central to ensuring meaningful and ethical research: respect, relationships, advocacy, reciprocity, time and gratitude. Each core value is explored below, in an order that we felt best reflects our approach and stories. However, we would like to emphasise that one value is not more important than another and that our approach to meaningful and ethical research with Indigenous Communities is incomplete without the incorporation of all six core values.

Respect

Respect underpins all that we do as researchers in Indigenous oral health. Community welcome us into their homes, places of work and organisations; by sharing their time, beliefs and knowledges, we are compelled to reciprocate respect, and honour what is shared with us.

> *One of the things that is important in any Aboriginal Community is asking permission, 'Can I come and visit your Community?' I do that through the Aboriginal Health Services. It's always about courtesy to introduce myself what we're doing and how we're doing it.* (JH)

Respecting and acknowledging cultural ways and Community business is important in building trust. Our first stop on a field trip is always a local Community organisation, usually the Aboriginal Community Controlled Health Service (ACCHS), where we remind health workers that we are in town and ask about any Community ongoings. Related to this is also the importance of confidentiality in family business and maintaining neutrality as a researcher and an outsider.

> *It is really important to find out what cultural events are taking place, what family issues are happening. Understanding who it's appropriate not to see that trip because of family reasons or cultural reasons, that it's okay to leave things 'til the next time.* (JH)

> *Prioritising respect for Community rather than prioritising research. I think sometimes researchers forget that participating in a research project is not typically a priority for a participant, especially if something else is going on in their lives.* (BP)

> *In our Communities, we have big families, and part of being a researcher is about confidentiality. Anything that is said or done in a research appointment, stays in that appointment, because most of the participants have other family members in the project. I don't mention other family members. I pretend I don't know anything, and I hope I come across as I'm hearing something for the first time when in actual fact, I've heard it before.* (JH)

> *Participants are often welcoming us into their homes, which also touches on confidentiality. If you see something in their home, you have to remember you are only seeing a small piece of their story. It's important to not pass judgment and remain grateful that we have been welcomed into their homes. I think it's a strength of the research we do because we're able to connect to people more when we're in a space where they're comfortable. But you do need to respect the fact that they are letting us in to their lives and their homes.* (BP)

> *There's also reasons why a participant might not want you to go into their homes and we don't know why, and we have to respect that they want us to sit on the porch or meet at the Aboriginal Health Service.* (JH)

Working during the COVID-19 pandemic further highlighted the importance of respecting Community values and maintaining trust.

> *We have to respect how organisations want things to work. When COVID-19 came into play, organisations had to re-jig how their clients were going to come in, and if we were going to have a yarn with the participant at their organisation, they still made us feel welcomed, you know, they accommodated us even with COVID-19 around. Even though things were closed off, we adhered to their COVID-19 ways of doing business and they always made sure we had some way to talk with participants.* (JH)

> *We also made sure to respect what the organisations wanted to ensure everyone's safety, like going to the health services and getting temperature checks each morning. And then when we go to other Communities sharing what we've done in previous places, re-iterating our respect for them and our gratitude for allowing us to still come.* (BP)

Another important aspect of respect is respecting the Country on which we are visiting and conducting research.

> *I think one of my favourite things we do each trip is finding a nice spot on Country, away from the town, taking our shoes off and taking some time to honour where we are, pay our respects to those who have welcomed us, and those who have come before us.* (BP)

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Finally, a crucial component of respect is establishing ethical rights for the participant in our research projects.

One of the important things in doing Aboriginal research for me, is always explaining the ethical part of the project, if the participant understands their rights in the project, and that they can exercise their rights. I think that's another avenue to showing that Aboriginal participant that I am straight down the line, I want them to trust, and have that rapport that I hide nothing when it comes to doing research with the participant. (JH)

Ultimately, respect facilitates the trusting relationships that are so foundational to this work.

Relationships

Building on pre-existing relationships of trust is ideal for meaningful Indigenous health research, however, this is not always the case, particularly for novice researchers.

When I started, I knew nobody. It's about introducing yourself, who I am, what do I do, how I do, those sorts of things. It's immediately about that cultural introduction. I still do that today. Coming from another nation, it's those Aboriginal protocols that are there and are always important to the relationship. (JH)

Having Jo as a mentor and her facilitation of introductions to key Community members has been invaluable. Previously, I've navigated Community protocols and relationships on my own. It's really night and day because of the time she has taken to build trusting relationships in the Communities we work with. (BP)

Finding common ground is key to establishing relationships.

There was always this commonality that we know that oral health is not just what these dentists say. I could relate to not having the money for the dentist, and I could relate to the cultural barriers to dentistry and accessing care. (JH)

Being both white and Canadian, I do get questioned about why I do this work by Community. I think naming, discussing and validating the impacts of colonisation and relating on that level of understanding and the identification of wrongdoing has gone a long way for my relationships with participants and organisations. (BP)

We often work in participant homes and we believe it is important to extend our relationships to whoever we encounter in those homes. It is common practice for us to take brief field notes after meeting with participants to update information about family ongoings or anything that may help us maintain our relationships in future. We believe that researchers must see individuals beyond the role of a 'research participant' and that their relationships and interactions with participants should reflect this orientation in ways that each individual deems necessary or appropriate.

I built a trusting rapport, over time I was getting hugs goodbye, the kids would be jumping over me, older kids would be interested in what's going on. If I gave the participants a toothbrush, everybody got a toothbrush. It's about sharing and equity, knowing that everyone in the family is happy to brush their teeth. (JH)

I experience the depth of your relationships, not only from stories but sometimes people are disappointed when I'm the one that shows up, they often ask where you are. That's from having yarns, playing with kids, texting participants on their birthdays, many things that academic research does not typically prioritise. (BP)

Those yarns have been so rich that I cannot see a participant – because I'm not always the worker – and they can text me six years down the road and say Jo can you call me I've got a worry about something. It's nice to think that asking about how they are as Mum, how their children and family are, that I've been considered as someone they can fall back on to talk about dental health down the track. (JH)

Relationships are not only important with individual Community members, but also with organisations in Community.

Organisational relationships are what allow us to do this work. Organisations give us so much time, a place to meet, as well as helping us locate participants who we are having difficulties finding on our own. I think having relationships with the employees, not just the management, also ensures longevity of these relationships because when the manger changes, the employees vouch for us. (BP)

A key point throughout our yarn was the dynamic and evolving nature of relationships and the importance of being flexible and doing what Community members identify as best.

Advocacy

Numerous responsibilities come with conducting meaningful and ethical work with Community, in addition to conventional research responsibilities such as ethical conduct and obtaining written consent.

Advocacy is a critical part of doing Indigenous health research, particularly in the face of racism.

I've worked with international researchers that have been told to be careful going into someone's home and then I have to work, as an Aboriginal researcher, to discourage those assumptions. You also experience racism when doing research. One time, a non-Aboriginal researcher was interviewing an Aboriginal woman in a café and the owner said, 'I think you should leave (because the participant was Aboriginal).' They had paperwork, they were talking, and they had bought a coffee. The non-Aboriginal researcher was unsure what to do and the Aboriginal participant said 'let's go.' If that had been me, I would have sat there and made a scene. I didn't know about this until later, but I don't know if that participant wanted to continue with the project. (JH)

Advocacy also relates to advocating for participant health and rights in terms of accessing oral health services.

One time I took a participant to the dentist and there was a language barrier, English was a second language for the dentist. In the consultation, I could understand what the participant wanted for their tooth and the treatment plan the dentist was explaining. But it was about respecting what the participant wanted, and the participant ended up walking out. The participant and I had a yarn and decided that I would try to get the dentist to understand. As an advocate, I sat down with the dentist and you could see a change as the dentist realised the impacts of their language barriers, ultimately we agreed to a temporary filling, which aligned with the participant's wishes. It was a win-win for everybody; the dentist started to understand about his communication with Aboriginal clients, the Aboriginal participant was able to keep her tooth and I felt that I helped achieve some outcomes for both the participant and the dentist. (JH)

Another part of being an advocate is understanding ways that public dental services are not conducive for Aboriginal people. I once asked a participant if they wanted a dental appointment, they said 'yes' but could they use my phone. It turned out that the participant ended up on hold for about 10 to 15 minutes when they called the dentist, using up their phone credits. I wrote an email to the government services to request another structure for Aboriginal people to make appointments. You can now ring public dental services and leave a message and they'll call you back. There also used to be a lunch break and no one would answer the phones, that would never happen

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in a hospital, so why is it happening in a dental service? Now there's someone answering phones from nine to five. (JH)

Advocacy also relates to the institutions where we work.

Another part of advocacy is in the workplace, not everyone that's part of our research centre works with Indigenous populations. Sometimes there are frankly disrespectful discussions at the office. And while it may be easier to say nothing, I feel we have a responsibility to stand up not only practically for our participants like your stories Jo, but also taking the time to educate or correct somebody when they make racist comments. (BP)

And there's not a lot of Aboriginal people working in the university, so another part of the role is giving presentations at the university. In the way I do my presentations, I hope that those who are listening will learn something about Aboriginal ways of conducting business and sharing knowledge. (JH)

Reciprocity

We have the responsibility of reciprocity with Communities. Sharing knowledge from our projects with individuals and organisations is very important; not only findings, but also information that strengthens Community understanding of oral health conditions.

Yarning about results is really important. Yarning is not just about getting information. The yarn has to be about the back end and sharing the collective results. The results are knowledge and an opportunity for learning at an individual, Community and organisation level. I think it's really important to involve researchers in those yarns, you know, not just me as a data collector, but those who write up the statistical results, the chief investigators, we need to have a way that we can yarn with everyone involved in the project. Having an opportunity to casually yarn and show your gratitude to all of the participants is vital. (JH)

Many researchers don't see what's going on in Community. Yarning with participants provides so much more context to the work and those experiences and relationships help the team better represent the data because they have more of an investment in doing right by everyone who has taken the time to participate. (BP)

And then Indigenous research is done in a better way. (JH)

It is also important to talk about rationale for projects with organisation employees, sharing knowledge back to Community who might also be able to share it with those who are not participating in the project.

Research is a two-way collaboration. Relaying information to organisational staff about why oral health is important enables a relay of knowledge. For example, sharing the evidence of why getting pregnant Mums to the dentist is important, then some of the workers might think more about referring Mums that come to their services to the dentist. (JH)

If we don't take the time to do that then the workers might not necessarily know that information, sharing information helps strengthen relationships but it's important to reciprocate because of all the information organisations provide us with too. (BP)

Working with services has built a relationship where they now want to be part of the research. The investment they have is accessing the results and evidence and being able to take actions for the Community that are culturally significant to the way they do business. (JH)

Reciprocal learning was discussed in our yarn as a highlight and added benefit of working with Community.

I learn more about Communities and their cultural ways through the rich stories that participants tell you, everybody has a story. People make generalisations about our people; you should you never make a generalisation. Everyone is contributing to the family and Community in some way. All the stories that individuals share about protecting their land, their artwork, whatever it may be, that brings enjoyment to the job. (JH)

The learning is so much more than research. (BP)

Time

Establishing and maintaining relationships, sharing knowledge, advocating for participants and acts of reciprocity are necessary, yet time-consuming pursuits. Recruitment time compared to follow-up time varies quite a bit in our work; recruitment is typically based out of the local health services and multiple people are seen at the same time, whereas follow-up is often one-on-one in participant homes.

You've built the trust, so participants say, 'Now I know yous, I don't need to go to the health services I'll do this on my own with you at my home.' The trust and rapport are there, participants know what's going on because at the end of our last session, the research timeline was explained. There's a lot of different reasons why timing changes from recruitment to next visit. (JH)

Some research methods permit the flexibility of time and account for having a yarn in their development, whereas other methods such as questionnaires assume limited interaction between researchers and participants.

It's the time that it takes to have a yarn with participants, the project with motivational interviewing was good because it opened the door to getting out more information about oral health. Sometimes when we do research it's not conducive to the way that Aboriginal people want to do research, you don't want to just do paperwork, tick a box, I think the Yarning side of it is so critical to bringing out information that the participant wants to talk about and information that helps that participant make decisions for themselves or their child when it comes to oral health. (JH)

And often things might be discussed that seem irrelevant to the specific research question at that time, but that doesn't mean we can't consider ideas that come from yarns in future projects. If participants were just filling out a piece of paper, without those interactions and yarns, we would miss things that are important to Community. Giving participants time to yarn is beneficial all around, but it does take more time than just checking boxes and it's often at odds with funding allotments. Someone could collect twice as much data as me in a day, but maybe my yarns were longer, maybe the participant got more out of it. That should be the priority, but it's often not. (BP)

The time constraints, like you said, that the funding bodies put on these types of research, it's really about respecting participants' time. Maybe they can't see me today or next week because there's things going on in that participant's world. They still want to participate but it might not be for another four weeks. (JH)

Reframing 'bad' research days has been one of my biggest lessons working with you. Being okay with trying all possible avenues to finding participants and coming up empty. It's not a bad day or a failure – it's just a day that you didn't get anyone. But in academia we're so trained and focused on getting the results, analysing, and publishing, and then doing it all over again. But at what cost to the participants? (BP)

Gratitude

Gratitude is an essential mindset to have when working in partnership with participants and organisations in recognising their significant and voluntary contributions to projects. Verbally expressing gratitude to participants and organisations, as well as providing honorariums to participants and

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supporting organisations in identified areas of need are some of the ways we weave gratitude into our research approach.

> *I always go back to the Community and thank them, that organisation, for allowing me to be there.* (JH)

> *Yes, gratitude goes beyond the honorarium or acknowledgment sections of publications. Personally expressing gratitude in sessions with Community members and reminding them of the bigger picture and how their contributions will help Community. Also, gratitude to Country, going onto Country, expressing thanks for welcoming us to do this work.* (BP)

> *We have to be grateful for those Communities protecting Country and to have all of that in front of us when we visit, land, sea, sky. That's all about the strong spirituality that the Communities have.* (JH)

Yarning about the yarn (Discussion)

The goal of this paper was to reflect on our experiences and explore the possibilities that Relational Yarning, alongside various research methods, holds for prioritising respect, relationships, advocacy, reciprocity, time and gratitude in Indigenous Australian oral health research. Previous works have explored Yarning as a culturally secure methodology[14,19-21] and had success in employing Yarning across various disciplines[29,30]; this work is unique in that reflecting on our experiences has enabled us to articulate the strengths and possibilities Relational Yarning holds as a tool for adhering to core values when conducting Indigenous health research. Continuing to explore and document best practices and methods in Indigenous research supports the necessary shift in Western research paradigms to include and privilege Indigenous ways of knowing.[5,9,11,12] Impacts of colonisation and exclusionary research practices have silenced the stories of many Indigenous peoples in Australia and arguably some contemporary research processes continue to silence Indigenous voices.[21,31] The creation of space for meaningful and ethical Indigenous research is the responsibility of non-Indigenous researchers in elevating and privileging Indigenous voices.[21] In fact, failing to intervene as privileged, non-Indigenous researchers permits the continuation of racism and symbolic violence in academic institutions.[8]

Yarning is a relational process that encourages honesty and openness between people, which is foundational to any respectful and trusting relationship.[19-21] Yarning itself has no single definition due to its flexibility, which caters to various needs, topics and expectations; although three shared components have been identified as important to the Yarning process: voices, experience or knowledge, and relationships.[20] The formal process of Yarning is contingent on relationships, accountability and responsibility between people, Country and culture.[20,32] The significance of relationships is not unique to Indigenous cultures in Australia but has been identified by Indigenous researchers around the world as central to Indigenous ways of doing business and research.[5,9,23] Relationships are also the common denominator in some Western methodologies, such as Community-based participatory research, that have been identified as aligning with Indigenous values.[33] All aspects of Yarning directly correspond with building relationships, hence why Relational Yarning facilitates relationship building in our research processes. Additionally, Yarning prioritises self-determination for participants involved in research which resists notions of subordination in power-driven research relationships[12,21] and mirrors our core value of respect. While Yarning may be specific to Indigenous Communities in Australia, storytelling as a knowledge sharing process has been discussed by Indigenous scholars around the world as integral to Indigenous learning processes.[12,34-37] Arguably, relational processes of knowledge sharing through storytelling hold similar potential to prioritise the core values we identify as critical to meaningful Indigenous research. The values of advocacy, gratitude and reciprocity as our responsibility and commitment to participant accountability are necessary for successful Yarning.[20]

It is our hope that this work will go some way to influence the processes of oral health research with Indigenous Communities in Australia. Oral health has historically been an extremely biomedically focused discipline that relies on theories of disease at the individual level[38,39]; this approach has been critiqued for its lack of consideration for social determinants of health.[40] We believe that lack of consideration for relationality between patients and clinicians is another failure of this approach. The incorporation of practices of Relational Yarning, both in research and in clinical settings, will enable the development of relationships and patient knowledge that theoretically may address some of the commonly identified barriers to oral health for Indigenous Communities, such as lack of oral health knowledge and fear of dentist.[41-43] As proposed in this work, moving beyond the idea of 'patients' and 'clinicians' would allow the emergence of empathetic care that has the potential to overcome notions of shame experienced by some Indigenous peoples when accessing care.[44,45] While support for these shifts is needed at many levels, researchers, policymakers and clinicians not only have the opportunity, but we believe the obligation, to advocate for a more relational approach to oral health research and provision of dental care. For example, building in extra time for interviews or clinical examinations with research participants, or changing dental policies so patients can have longer appointment times would be one way to align with the core values outlined here and provide opportunities for Relational Yarning.

As Indigenous health researchers, we continually impact the lives of Indigenous peoples we encounter; Relational Yarning as an ongoing practice enables deeper understandings and respect for Indigenous cultures and peoples that is necessary for meaningful and ethical research conduct, but more importantly, relationships. White, privileged individuals know that Indigenous peoples experience disadvantaged health,[46,47] however, acknowledgement is insufficient. Non-Indigenous people and researchers must be willing to own their privilege, reflect on the processes that have enabled their advantage, and interrogate the systems and social order that continue to perpetuate the production of dominance and subordination between Indigenous and non-Indigenous people.[8] The values outlined in this paper align and overlap with existing frameworks, including those defined by the National Medical Health and Research Council of Australia,[48] the Lowitja Institute[49] and the South Australian Aboriginal Health Research Accord principles.[50] At their core, these shared principles require non-Indigenous researchers, as directed by Indigenous leadership, to take action to ensure ethical research, which includes challenging social norms within institutions and mandating culturally secure environments for research participants.

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Reflections (Conclusion)

This work reflects our pathways to prioritising respect, relationships, advocacy, reciprocity, time and gratitude in Indigenous Australian oral health research, at the individual level. However, we navigate these pathways within institutions that uphold policies and values that constrict the responsibilities that we have as researchers in Indigenous health. Therefore, we are compelled to acknowledge that these responsibilities extend to every institution involved in this work. In closing, we would like to reflect on how responsibilities may extend beyond individual researchers or small research teams. All universities engaged in Indigenous health research are responsible to hire Indigenous researchers and employees, to demand culturally secure environments for Indigenous students, to dedicate themselves to truth-telling, and to mandate the inclusion of Indigenous ways of knowing in the academic curriculum. Academic journals have a responsibility to honour alternative ways of presenting research, and to commit to publishing policies that prioritise Indigenous leadership, editors and reviewers. Funding bodies have a responsibility to fund research that not only aligns with Indigenous knowledges and reflects Community priorities, but that provides space and time to do meaningful and significant work in partnership with Indigenous Australians. Importantly, Relational Yarning and our core values work together to challenge symbolic violence, institutional racism, and ensure culturally secure environments for all research participants.

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“Let no one say the past is dead.
The past is all about us and within.”
– Oodgeroo Noonuccal (Kath Walker)

SECTION C

Results

OVERVIEW

Section C includes the results generated from the research undertaken during Candidature, and includes six chapters. Chapters 7, 8, and 9 detail barriers, facilitators, and motivators related to establishing and maintaining oral health for Aboriginal and Torres Strait Islander families, respectively. Chapters 10 and 11 focus on exploring the impact of neoliberalism on Aboriginal and Torres Strait Islander oral health as well as global Indigenous wellbeing.

7

Results

"What are we doing to our babies' teeth?" Barriers to establishing oral health practices for Indigenous children in South Australia

7.1 PREFACE

This study explores and collates participants' experiences to develop an understanding of barriers impeding parental efforts to establish oral health for their Aboriginal and Torres Strait Islander children. This is an important component to the thesis as it contributes to the understanding of the complex context of Indigenous oral health in Australia.

7.2 PUBLICATION DETAILS

Poirier B, Hedges J, Smithers L, Moskos M, Jamieson L. 'What are we doing to our babies' teeth?' Barriers to establishing oral health practices for Indigenous children in South Australia. BMC Oral Health 2021, 21, 434. doi: 10.1186/s12903-021-01791-x

7.3 HIGHLIGHTS

- Barriers to establishing and maintaining oral health were identified at the structural, knowledge, parental, and social level.
- Qualitative findings were explored in relation to participant socioeconomic position, as determined by self-reported demographic attributes.
- Recommendations from this analysis include increased oral health promotion in non-metropolitan areas, and utilisation of Community experiences in creating strategies that foster oral health and nutrition understanding.

7.4 STATEMENT OF AUTHORSHIP

Statement of Authorship

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Principal Author

Name of Principal Author (Candidate)	Brianna Poirier		
Contribution to the Paper	Conceptualisation of research question Data analysis Manuscript writing Editing and revisions Corresponding author for publication process		
Overall percentage (%)	75%		
Certification:	This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper.		
Signature		Date	14/07/2022

Co-Author Contributions

By signing the Statement of Authorship, each author certifies that:

i. the candidate's stated contribution to the publication is accurate (as detailed above);
ii. permission is granted for the candidate in include the publication in the thesis; and
iii. the sum of all co-author contributions is equal to 100% less the candidate's stated contribution.

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Signature		Date	14/07/2022

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Contribution to the Paper	Orientation of research question formulation Revision of methodology Input on theory application Input regarding interpretation of results Revision of manuscript		
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7.5 PUBLICATION

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BMC Oral Health

RESEARCH

Open Access

"What are we doing to our babies' teeth?" Barriers to establishing oral health practices for Indigenous children in South Australia

Brianna Poirier[1*], Joanne Hedges[1], Lisa Smithers[2,3], Megan Moskos[4] and Lisa Jamieson[1]

Abstract

Background: During the 1970s, optimal oral health was experienced more frequently amongst Indigenous children in Australia than their non-Indigenous counterparts. As a result of public health interventions targeting oral disease, oral health has improved for most children; however, Indigenous children today experience oral disease at alarmingly high rates. A history of colonisation, assimilation, racism and cultural annihilation has had profound impacts on oral health for Indigenous peoples; compounded by environmental dispossession and a shift from traditional diets to one of processed and nutrient-poor foods, often high in sugar.

Methods: This project aimed to identify factors related to the increased occurrence of caries in Indigenous children. Using purposive sampling from the larger project, this paper thematically analyses 327 motivational interviews to explore current barriers impeding parental efforts to establish oral health and nutrition practices for Indigenous children. Representation of socioeconomic positions of families were compared across themes, as based on maternal age, employment, residency and number of children in care.

Results: Findings resulted in a conceptual model of barriers that exist across knowledge, social, structural and parental factors. Major thematic results include: social consumption of processed foods, busy households, misleading nutrition marketing, sugar cravings and lack of oral health and nutrition knowledge.

Conclusion: A discussion of the findings results in the following recommendations increased oral health promotion efforts in non-metropolitan areas; utilisation of community experiences in creating strategies that encourage oral health and nutrition knowledge; and the extension of oral health initiatives and future research to include all family members.

Trial registration Australian New Zealand Clinical Trial Registry ACTRN12611000111976; registered 01/02/2011.

Keywords: Indigenous health, Oral health, Early childhood caries, Indigenous oral health, Nutrition knowledge, Oral health knowledge, Dental public health, Social determinants of health

Background

According to the United Nations, Indigenous peoples include all those "having a historical continuity with pre-invasion and pre-colonial societies that developed on their territories, who consider themselves distinct from other sectors of the societies now prevailing on those territories" [1]. Globally, Indigenous peoples experience a disproportionate burden of disease for many conditions,

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including obesity, non-insulin dependent diabetes, and dental caries [2]. A history of colonisation, government-enforced assimilation, racism and cultural annihilation has had profound impacts on Indigenous health and is reflected in health inequities sustained by Indigenous communities today [3–5]. The forcible removal of communities from traditional lands, loss of traditional customs and languages, and subsequent environmental dispossession is an additional contributing factor to poor health because it has resulted in a transition from nutrient-dense traditional foods, to processed, nutrient-poor Western foods that are high in sugar [6, 7].

In Australia, Aboriginal and/or Torres Strait Islander (respectfully, subsequently referred to as 'Indigenous') communities flourished for 65,000 years prior to European invasion and colonisation [8]. Economic and social discrimination, processed diets, infectious disease, environmental dispossession and child removal are some of the ways in which processes of colonisation and government policies have intentionally disrupted Indigenous health in Australia [9]. Despite the Australian government's considerable resources allocated to addressing health inequities between Indigenous and non-Indigenous Australians, disparities continue to escalate [10, 11]. In Australia, 61% of Indigenous children experience decay in their primary teeth compared to 41% of non-Indigenous children and Indigenous children are more likely to have untreated decay in at least one primary tooth (44%) than non-Indigenous children (26%) [12].

The deleterious impacts of poor oral health in children are well documented. Pain, speech difficulties, lowered self-esteem and difficulty eating or sleeping are common consequences of ECC [13]; evidence suggests that more severe consequences impact children's growth, development, concentration, education attainment, quality of life, failure to thrive and can be life-threatening in some cases [14–18]. While ECC can have serious ramifications on health, the disease is entirely preventable with limited sugar consumption, proper oral hygiene, regular dental visits and sufficient fluoride exposure [18–20]. Childhood dental disease is the strongest indicator for adult dental disease [16, 21] and the greatest impact on childhood oral hygiene practices is caregiver influence, underscoring the importance of prevention efforts aimed at young children within the family setting [18, 22, 23]. Varying degrees of success have been experienced with population-level interventions for oral health, with water fluoridation being one of the most successful interventions in reducing ECC to date [22, 24]. Despite fluoridation and educational programs for children and parents, barriers to oral health prevention persist for Indigenous communities as evidenced by the prevalence of ECC among Indigenous children [25].

In 2007, an Australian public service report detailed Indigenous health as a 'wicked' problem, difficult to solve and symptomatic of deeper concerns [26]. Present prevention strategies and policies do not consider the impact of issues, such as colonisation or structural barriers, that Indigenous peoples face in establishing good oral health [9, 27]. Developing contextual understandings of the environments in which these health inequities persist is necessary when addressing such vast disparities [28]. Qualitative research offers an opportunity to further explore the experience and context of poor oral health among Indigenous peoples that has been extensively documented by quantitative findings. Therefore, the aim of this paper is to explore the complex context in which Indigenous Australians experience oral health, collate and interpret participants' experiences and develop an understanding of current barriers impeding parental efforts to establish oral health practices for their Indigenous children.

Methods

Method

Motivational Interviewing (MI) is a psychotherapy intervention that encourages participants to identify, explore and resolve obstacles to behaviour change [29]. Contrary to traditional health education approaches, MI is an empathetic behavioural support method rooted in the notion that knowledge alone is insufficient to elicit behaviour change, and that intrinsic motivation increases likelihood of behaviour change. MI creates an exploratory atmosphere for participants to articulate personal values, capacities and motives for behaviour change; emphasising an individual's personal motivation for change [30]. MI has previously been used to elicit oral health behaviour change for parents and their children [31, 32]. Importantly, MI parallels cultural values of Indigenous peoples, including oral traditions of storytelling and yarning [33], respects self-determination and is better able to yield a holistic and contextual understanding of a given issue [34, 35].

Design

This project was nested within a randomised control trial of an ECC intervention designed and conducted in partnership with Indigenous families and communities in South Australia. The protocol [36], primary quantitative results [37], and cohort profile have been published [38]. At baseline, the trial enrolled 448 women pregnant with an Indigenous child across South Australia. Participants were randomly allocated to intervention or control (delayed intervention) groups. There were four components to the intervention, (1) provision of dental care to mothers during pregnancy; (2) application of fluoride

varnish to the teeth of children; (3) anticipatory guidance; and (4) MI. The findings presented in this paper are derived from the MI element of the trial. Motivational interviews were conducted with participants in the intervention group at baseline during pregnancy and when the child was aged 6-, 12-, and 18 months. The respective directives for each session were (1) encouraging dental care during pregnancy; (2) emphasising the importance of non-cariogenic foods and drinks for children; (3) emphasising the importance of fluoride in ECC prevention; (4) encouraging first dental appointment. Participants in the control group received MI at 24-, 30-, and 36 months, with the first session combining directives one and two.

Participants and sampling

For this qualitative analysis, we utilised purposive sampling of motivational interviews, based on the fidelity scores of trained staff who conducted the MI. Fidelity is defined as the extent to which an intervention is performed as intended [39]. Fidelity assessment of MI was completed to ensure sound methodological approach and scientific rigour in this trial [40]. The success of MI is contingent on interventionist competency and fidelity in eliciting participant statements of self-motivation and resistance to change [41]. Four trained staff conducted motivational interviews with varying compliance to the MI approach and different degrees of participant engagement. All included interviews for this analysis were completed by the single staff member that had the highest MI fidelity score. This decision was made because these interviews provided the richest data, constituted the majority of collected data and interviews were more comparable with one another than across interviews by other staff, which facilitated analysis. The staff with the highest fidelity score is a senior Indigenous researcher who utilised colloquial language and established trusting relationships with participants.

Analysis

It is important to acknowledge the assumptions one brings to qualitative research as they inescapably impact the interpretation of data and production of findings [42]. As a non-Indigenous researcher from Canada, the primary author took steps to familiarise herself with the data and the context in which it was collected prior to analysis. Local contextual and cultural understandings were enhanced through field work with the same communities and Indigenous health workers involved with this trial. Approximately one year was taken in reviewing, reading and listening to interviews. Understandings of data were extensively discussed with the senior Indigenous researcher who conducted the interviews (JH) and the project's primary investigator (LJ) prior to initiating analysis. Braun and Clarke's [42–44] framework for reflexive thematic analysis guided the analytic process. Reflexive thematic analysis embraces the unique subjective skills a researcher brings to the project and enables organic identification of themes [42]. Inductive themes, grounded in the data, were coded line by line with NVivo 12 software (QSR International Pty Ltd. Version 12.6.1) and without a structured codebook to provide space for engaged interpretation of data. Once all transcripts had been coded, the data was re-visited, and similar codes were aggregated for iterative thematic development. Typically, reflexive thematic analysis does not utilise summary topics in conceptual models [42], however due to the quantity of codes, themes and transcripts analysed, as well as the multi-faceted context of Indigenous oral health, they are employed here to make sense of the ways in which barriers exist for participants.

The data from 357 interviews and 227 participants provided a unique opportunity to explore how socioeconomic positions might contribute to oral health experiences for carers. Subgroup comparisons were based on maternal age, residential location, number of children in care and employment status. These characteristics were chosen because the Australian Institute of Health and Welfare estimates that 34% of the health gap between Indigenous and non-Indigenous Australians is attributable to social determinants of health including income, employment and overcrowding [45] and in 2018, Indigenous mothers in Australia were most likely to be aged between 20 and 24 (31%) [46]. The NVivo software attribute feature was utilised to assign characteristics to participant transcripts and thematic codes. Matrices were utilised to compare the relationships between participants and themes, demographics and participants, and demographics and themes. Subsequent analysis determined how many participants within each demographic subgroup discussed a given theme (Fig. 1).

Results

Respondents discussed a number of factors that create barriers for participants to establish oral health practices. These included knowledge factors, parental factors, structural factors and social factors (Fig. 2). The findings below are presented in order of highest to lowest frequency that respondents mentioned a particular theme: knowledge factors (3232), parental factors (1632), structural factors (902), and social factors (623). Findings represent discussions from 357 interviews with 227 parents or carers of Indigenous children aged 6–36 months from across South Australia (50.7% of baseline sample). Participant characteristics varied across the included demographic measures of employment, number of children

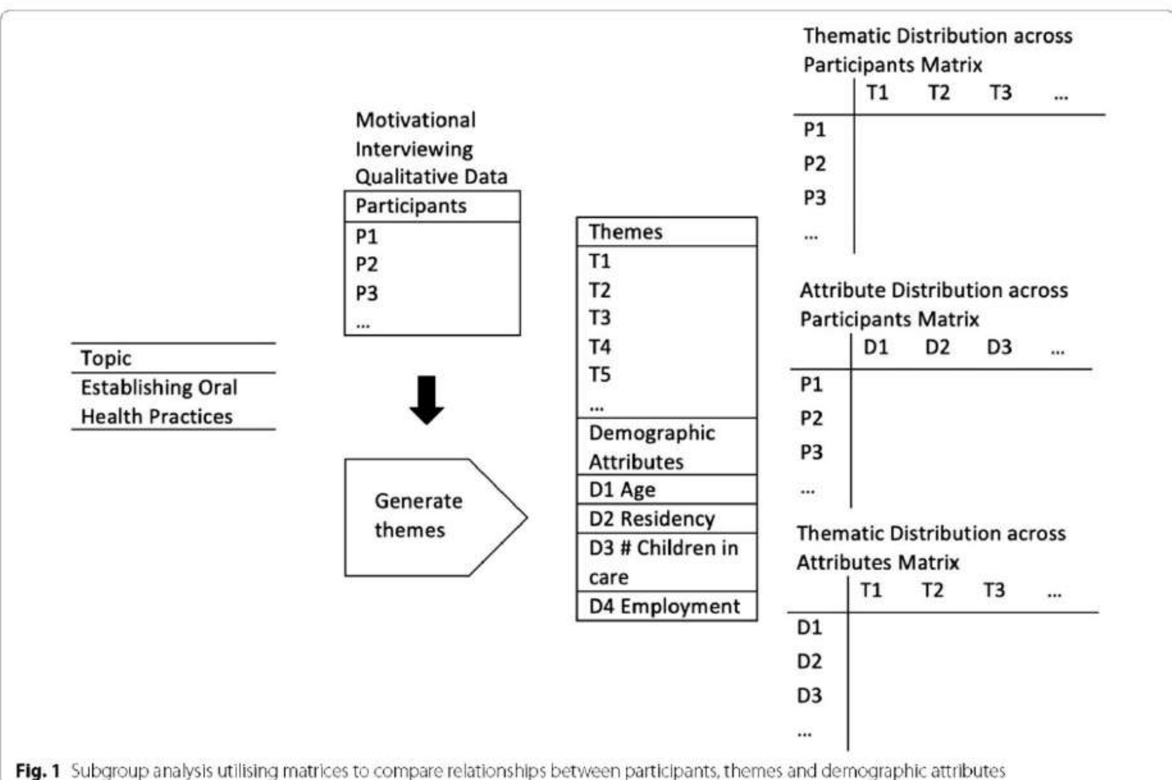

Fig. 1 Subgroup analysis utilising matrices to compare relationships between participants, themes and demographic attributes

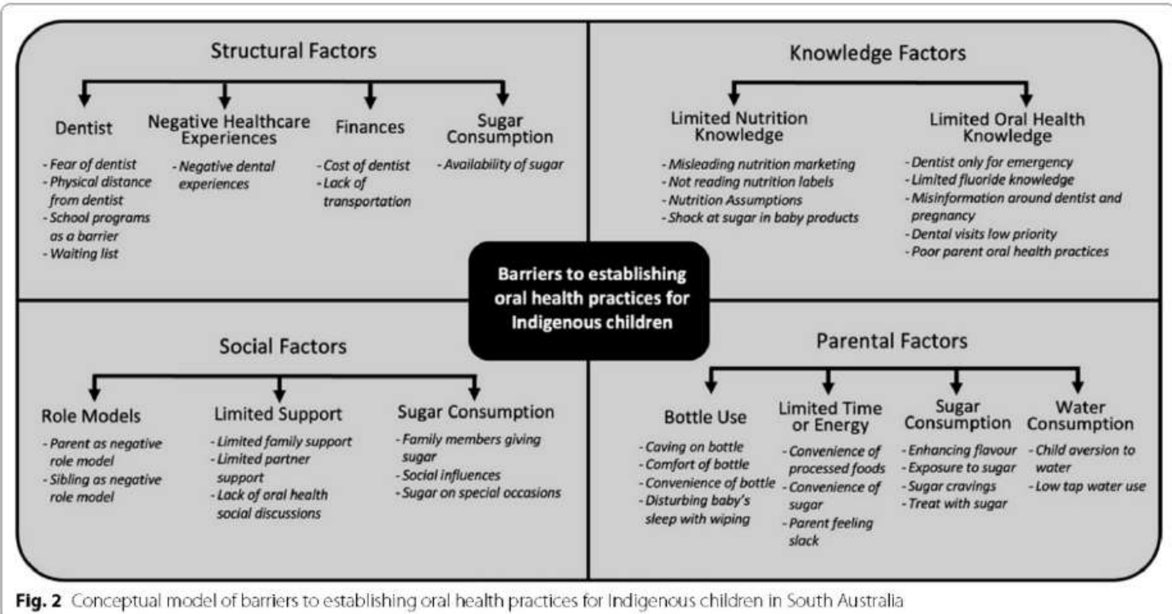

Fig. 2 Conceptual model of barriers to establishing oral health practices for Indigenous children in South Australia

in care, residential location and maternal age (Table 1). The majority of the sample were older than 25 (66.1%), had 1–3 children in their care (67.6%), were unemployed (69.6%) and resided in metropolitan areas (56.8%).

Knowledge factors

Knowledge was discussed by participants as critical to ensuring strong oral health practices for their children, with many individuals desiring more education or knowledge in specific areas. Limited nutrition knowledge was a prominent theme across all interviews and all participants. Generally, there were a lot of misconceptions about what is healthy for children, "He does have chocolate but I only give him the Kinder Surprise chocolate because it's got more of the milk in it." Further discussion with parents revealed that a lot of this confusion was confounded due to misleading nutrition marketing and resulting nutrition assumptions:

> *[Baby food is] advertised [as being] good for your baby and healthy for your baby and a lot of them claim ... it's pure fruit, no added sugar... That's a bit sad because a lot of Mums especially when you're shopping, you're busy, you go well this is supposed to be healthy for my baby, it's on special, I'm going to chuck it in my trolley. And not realising that it could be doing more harm than good.*

Many parents cited front of pack marketing as a key information source in terms of nutrition decisions made for their children. When parents were asked to order baby food from highest to lowest according to sugar content, almost all parents who did not read the nutrition label ranked items based on nutrient claims included on product packaging, specifically 'no added sugar.' Many carers were taken aback when they discovered that the baby food with the 'no added sugar' claim was the highest in sugar: "[That]'s disgusting. They shouldn't be able to make things like that, they should have a big sign on the front, [with] 'high sugar content,' like they do with smoking."

Limited oral health knowledge concerning topics such as when children should have their first dental visit, when to start using a toothbrush and how much toothpaste is safe for children was common: "Can you brush his teeth too much? Is there a limit to how many times we can brush their teeth during the day?" Many parents were confused or did not have the correct oral health knowledge:

> *(Interviewer): How would you go about getting the bugs and sugar off his teeth after he's had a bottle and he's sleeping? (Mum): I really don't know. I would just assume that the saliva will wash it away when he's sleeping.*

Fluoride knowledge was highly varied, with some parents identifying fluoride as cancer-causing, a whitening agent or a caffeine source. The initial interview for the intervention group occurred during pregnancy and many mothers had misinformation around dental visits during pregnancy, worrying that it could put their baby in harm's way. Once this was clarified and mothers understood that dental visits were safe, many were willing to go, even if they had not been in years.

Poor parent oral health practices, as a result of limited oral health knowledge, were discussed as a barrier to establishing child oral health. Some parents shared that they cannot expect their children to brush their teeth or reduce sugar consumption when their own actions contrast these expectations. Some parents identified dental visits as low priority because "it's something I've never done" or "I just don't feel like it." Other parents discussed oral health as a lower priority amongst competing obligations. This notion provides insight to the practice of only using dental care for emergencies:

> *I think we'll probably just [go to the dentist] when he starts to get holes in his teeth or if his teeth are hurting or something fell out or if he's fallen down and [lost] his tooth and probably then I would take him to the dentist. That's what I did with all the other ones. When they start to get holes or they need something done to their teeth that's when I take them to the dentist.*

Shock at amount of sugar in baby food, misleading nutrition marketing and nutrition assumptions were

Table 1 Participant characteristics

	Participants (N = 227) N (%)
Maternal age	
16–24	77 (33.9%)
25+	150 (66.1%)
Children in care[1]	
1–3	142 (67.6%)
4+	68 (32.4%)
Employment[2]	
Full time	20 (9.5%)
Part time	44 (20.9%)
Unemployed	147 (69.6%)
Residential location	
Metropolitan	129 (56.8%)
Non-metropolitan	98 (43.2%)

[1] N = 210 (data not available for all included participants)

[2] N = 211 (data not available for all included participant)

the knowledge factors discussed by the highest number of participants; these themes were mentioned most frequently by metropolitan families, families with one to three children and unemployed parents (Additional file 1).

Parental factors

Parental factors relate to barriers associated with self-identified habits, feelings, or justifications contributing to debilitating oral health habits. The majority of parents identified sugar consumption as detrimental to their child's oral health, and then utilised concepts including flavour enhancement, sugar cravings, and treating with sugar as justification for exposing their child to sugar. Parents commonly described adding sugar to cereal or water for children to "make it taste better." Sugar cravings were discussed in terms of parent addiction as well as children; children would often cry or throw a tantrum until parents succumbed to the child's demands. Some parents justified giving sugar because of their cravings: "You can't expect them to give up because I'm addicted to Coke, you know, so, just give it." Using sugar to spoil children was common, even for children who were not yet on solids: "I only give her honey on the dummy every now and then because I like just to give her treats but it's not all the time."

Many parents were actively trying to wean children from night-time bottles, more so due to worries about choking or misalignment of teeth, rather than dental decay prevention. Numerous parents talked about caving on bottle removal attempts, often because of the comfort associated with the bottle:

> *It seems to be her comfort thing for her bed. Like she's got a blanket but... Well she's got a room full of toys too but she seems to like just to lay down and drink a bottle and just play with my hair. And that's how she goes to sleep. So I don't really want to take it away from her because that's her comfort thing.*

Convenience of bottles was another barrier to reducing bottle reliance: "It's bad, but there's nothing I can do about it unless I don't want to get any sleep." A lot of parents were hesitant to wipe their baby's teeth after feeding because they worried they may disturb the baby's sleep. Limited time or energy was another barrier; some parents mentioned they had been feeling slack and brushing teeth, making food at home or other preventive behaviours were not their primary concern.

> *He's very full-on, so [I] just feed him and then do my washing and then after the washing he's probably in something, doing something and it's just too full-on to be able to [read nutrition labels]. If it had on the front of the packaging how many tablespoons of sugar, I'd probably think a second about getting him certain things, but it doesn't. People don't have time to read that. The mums that I know... they just go for what's easy.*

The convenience of processed foods and sugar were discussed as a factor of limited time and the easiest option, especially when at sporting or social events and when travelling: "I have tried a few of these [baby foods] when we're travelling because they made it quite handy to keep in the esky and just whip it out to give her something." For parents who identified low water consumption in their children, the two primary barriers were child aversion to water and low household tap water use. Some households used rainwater as their primary source of water usually due to access and taste preference.

Limited time or energy, exposure to sugar and comfort of bottle were the parental barriers discussed by the highest number of participants; these three themes were cited most frequently by families in non-metropolitan areas, families with one to three children, unemployed parents, and older parents. (Additional file 1).

Structural factors

Physical distance from dental providers as well as long wait times were structural barriers for families, with mothers waiting between eighteen months and eight years for a public dentist appointment. Many participants discussed a fear of dental visits as a barrier to booking and attending appointments. Several parents were under the impression that school dental visits, common in primary schools across Australia, were sufficient in place of regular dental check-ups. This assumption prevented parents from taking their children for dental visits and waiting until the child was at least 5 years old and eligible for the school programs. While this program intends to facilitate strong oral health, it created confusion for participants around when to access dental services for their children:

> *In kindy they take [kids] to the dentist and stuff. I just thought when they go to kindy they usually send home a note saying there's a dentist coming, is it alright if they can see you? The dentist comes and if the dentist says there's any problems that's when I'll take them to the dentist. I never thought about taking her before... I thought all kids just went to the dentist when they went to school.*

Financial limitations were discussed in terms of the cost of dental care and transportation to appointments. When participants were informed about funding schemes or offered transportation to dental visits, many that had

previously been unable to go were happy to attend. Parents cited previous negative healthcare experiences as a barrier to pursuing preventive healthcare and these experiences directly influenced parental perceived negative reaction of children at their first dental visit. Specific stories of negative dental experiences were shared, and a few parents discussed experiences of racism:

> *I've noticed with when you go to doctors and all that ... like dentists, especially being a black woman they don't talk to you, they talk to the secretary, or whatever it is, about you. And then you've got to remind them hello, I'm sitting in the room you know, you've got to kind of put your foot down... I think that they think that I don't know what ... they're talking about, you know... I want to be treated with the proper respect that everybody else gets because you can see it when you walk into the doctors they look at you like oh, another black person.*

The structural component of sugar consumption related to the sheer availability of sugar. The industrialisation of food production has rapidly transformed the food landscape for communities, especially for those in rural and remote areas, where reliance on processed foods have increased due to limited access to fresh foods. Parents expressed being overwhelmed at the availability of sugar and exhaustion at navigating which foods are healthy for their families: "It's terrible. It's just in everything, sugar's in everything. And like I said, you know, some things you think there's not much sugar in them, [but] it's you know right at the top [of the ingredient list]."

Parent perceived negative reaction of child at dental visits, availability of sugar and financial limitations were the structural barriers cited by the greatest number of families, lack of transportation was only mentioned as a barrier by unemployed parents and experiences of racism when accessing health services was only mentioned by employed parents (Additional file 1).

Social factors

Social factors were concerned with community and social environments in which oral health exists. Limited family support was a barrier for parents who needed help with transportation or babysitting for dental visits. Some parents touched on the difficulty of maintaining oral health when extended family assist with childcare but do not respect their routines. Parents with limited partner support described the burden of responsibility for all aspects of their children's lives, which often resulted in a lowered priority for oral health. Limited partner support was also discussed as poor communication or respect between parents regarding oral health routines. Lack of oral health social discussions at parent support groups or among friends was commonly discussed.

Household role models, including parent and sibling negative influence, were identified as barriers to establishing oral health practices for children. Parents identified themselves as a negative influence with regard to sugar consumption, saying that they couldn't justify limiting their children's sugar when they were addicted. Many parents described letting older children have sugar, which frequently resulted in the taunting of younger child or sneaking them lollies. Sugar consumption was heavily impacted by social settings and special occasions. Family members giving sugar was the most common theme within social factors; parents expressed frustration at family members disobeying their wishes and overriding their efforts to restrict sugar consumption. Parents suggested that giving sugar was a way for relatives to show their love, but many families dismissed the potential impacts on the child's health. Some parents even talked about staying at home more often to control sugar consumption: "When we go to my mum and dad's it's like because my other nephew is there and they've got [sugar] ... and baby [goes], what's that? So that's why we try and stay home."

Family members giving sugar was the social barrier cited by the highest number of participants, across all subgroup characteristics. Younger parents and those in non-metropolitan regions frequently discussed the barrier of negative sibling and parental role model. Families in metropolitan regions most frequently discussed sugar on special occasions and a lack of social oral health discussions (Additional file 1).

Discussion

Indigenous oral health inequities in Australia are well documented [4, 15, 16, 18, 22, 47–49]. However, few projects have highlighted Indigenous voices and documented personal perspectives, providing context for the experience of Indigenous oral health in Australia [27, 50–53]. This project is unique in that it employed an open-ended approach to discussion, through the use of MI, and provided space for participants to ask questions and direct the conversation [30]. The results emphasise the multi-faceted circumstances in which Indigenous oral health exists for new mothers and their children – with identification of barriers across parental, structural, social and knowledge factors. Many findings from this project reinforce previously identified barriers to oral health for Indigenous communities including: availability of sugar [18, 51], inaccessibility of oral health care [15, 27, 54], racism [27, 52, 55], poor parent oral health practices [53, 56, 57], lack of accessible transport [27, 52, 57], limited time and energy [50], competing health priorities

[27, 50, 51], waiting times [27, 52], financial limitations [27, 50–52, 55, 58], school dental programs [50, 52], limited oral health knowledge [27, 53, 54] and limited nutrition knowledge [51, 52].

Findings of self-identified poor parent oral health practices, fear of dentist, waiting lists, physical distance from dentist, financial limitations, negative health care experiences and limited oral health knowledge work together to tell an important story that parents shared during this project. The impact of these factors results in low dental attendance and lack of emphasis on prevention, which is alarming because regular dental visits increase the probability of diagnosing, managing and limiting oral disease [59]. Similarly, Butten et al. [51] found a lack of prevention efforts amongst Indigenous mothers in Queensland due to the complex interplay of financial, personal and structural factors. The availability of school dental programs shaped parents' perceptions of child oral health needs in this project, which limited prevention efforts as parents did not identify a need to take children for dental visits earlier; for many five-year-old children, it is too late for preventive actions and restorations are needed. Indigenous mothers in Queensland utilised school dental programs for older children, but many did not take their pre-school children for dental visits [50]. Regular dental attendance and prevention efforts underscore healthy trajectories, behaviours and improved quality of life for children [59–61]. Indigenous children have the highest rates of dental surgery under general anaesthesia and the occurrence is increasing; in Australia, Indigenous children have twice the rate of hospital-based dental surgery under a general anaesthetic compared to non-Indigenous children [47]. The high cost, risks and logistical implications of dental surgery, as well as recurrence of disease provides precedence for the prioritisation of prevention over treatment of ECC [13]. Additionally, prevention is the most cost-effective mechanism to addressing ECC, with research suggesting that fifty dollars is saved on restoration procedures for every dollar spent on prevention [62]. Findings from this project are representative of carers with children 36 months and younger; Indigenous mothers from Queensland have described the increased difficulties experienced when trying to maintain oral health routines as children age, which further stresses the importance of establishing good oral health habits at a young age [50].

Limited parental oral health knowledge impacts a child's oral health due to the close relationship between caregiver oral health and child oral health [18]. Both parent tooth brushing habits and attitudes or knowledge towards oral health have been associated with ECC development in children [63, 64]. Limited oral health knowledge directly impacts child health as poor maternal oral health is related to adverse birth outcomes [65]. This trial encouraged pregnant mothers to attend dental appointments and to take children around 18 months of age. Limited oral health knowledge persisted among participants who attended dental appointments, highlighting the importance of sustained awareness efforts and behaviour change programs for oral health prevention. Dental services are not covered for adults under Medicare, the public funding system, in Australia; while a public dental service exists, they are stipulated by eligibility criteria and often have long wait times and private options require large out-of-pocket fees [66]. Our findings highlighted common misinformation around dental visits during pregnancy. Current evidence-based guidelines recommend that women seek dental care early in pregnancy and identify the importance of midwives in facilitating this, however access for many pregnant mothers remains low [52, 67]. Previous research suggests that lack of referral knowledge and competing health matters are barriers to prioritising oral health for midwives in Australia [68] and limited oral health training exists for Aboriginal Health Workers [27]. Mandating oral health education for all health professionals has been suggested as a way to increase accessibility of oral health [50]. The importance of culturally appropriate, ongoing and informal dissemination of oral health information has been noted elsewhere [52, 54] and the lack of social oral health discussions identified by participants in this project reinforces the need for community-level education and health promotion.

Knowledge factors also extended to nutrition knowledge in our project. Misleading nutrition marketing, nutrition assumptions, shock at amount of sugar in baby food and not reading nutrition labels were all findings related to limited nutrition knowledge. Limited knowledge in conjunction with other factors such as limited time or energy, convenience of processed foods, financial limitations and availability of sugar, resulted in a constrained ability of parents to make healthy food choices. For the majority of parents in our project, nutrient claims were the primary source of nutrition information and largely influenced food decisions. Many parents were upset once they realised the nutrition assumptions that they had made due to misleading marketing. Similarly, Indigenous mothers in Queensland identified that they had 'done the wrong thing' by giving children milk or juice because they believed it was healthy. The concept of a 'health halo' has been reported in previous research and occurs when nutrient or health claims lead to consumer interpretations of a product being healthier than it actually is [69]. In our project, one parent suggested using warning labels for high sugar content, similar to cigarette packaging; a First Nations participant in a Canadian

study suggested the same idea: "...[T]he same scope of thinking [like] they do with cigarettes: they should put [warning labels] on the candy bars" [54]. The relationship between these factors underscores the importance of nutrition education for parents and consideration of the impact that nutrient claims on baby foods have on nutrition assumptions and food choices. Stronger regulation for claims using nutrient profiling has previously been called for in Australia due to consumer tendency to infer health benefits as highlighted in our findings [70].

In this study, sugar consumption included was related to availability, social influences, limited parental nutrition knowledge, flavour enhancement and convenience of sugary foods and drinks. It is well understood that dietary factors, specifically sugar consumption, increase the availability of fermentable carbohydrates required for acid formation and ECC development, while simultaneously increasing host susceptibility due to the influence of prenatal and infant nutrition on enamel development [56, 71]. The misconception that baby teeth are less important than permanent dentition was cited as rationale for exposing children to sugar, this perception has previously been identified as a barrier to preventive care in young Indigenous children [50]. Many parents in our project talked about the availability of sugar as a barrier to decision making because "it's everywhere." Similarly, Indigenous mothers from Queensland identified lower sugar exposure during their own childhood, when compared to their children, because processed foods were not as common [50]. The transition from traditional diets to Western diets, due to processes of colonisation and a loss of traditional foods, has been explored and identified as a contributing factor to a variety of health inequities experienced by Indigenous peoples globally [7]. Sugar consumption is influenced by many factors within the home, school and wider community environments [18, 72]. Even when parents are attempting to limit consumption, they cannot control what happens in schools or with other family members. Beyond an increase in knowledge, healthy food choices need to be possible within a given environment and when education efforts do not consider environmental influence, they are ineffective at initiating behaviour change [73].

The subgroup comparison provided insight into how different socioeconomic positions influence barriers to establishing oral health practices for Indigenous children. Lower socioeconomic status is directly related to oral health disparities in Australia [68] and, indeed, globally [74]. One of the largest trends was that families living in non-metropolitan areas were more likely to identify barriers across all subgroups than those living in metropolitan areas. This finding highlights the need for holistic, targeted dental public health efforts in rural and remote communities across South Australia. Parent employment status, children in care and maternal age impacted frequency of barrier identification in various ways. The subgroup comparison highlights barriers for families of different demographics and has the potential to inform future policy, research and interventions for specific subsets of the population.

Strengths and limitations

This paper adds to the limited qualitative research on Indigenous oral health in Australia and highlights Indigenous voices that illustrate the challenges carers face in optimising oral health for their children within Westernised environments. The structural barriers identified by parents are part of a system that has historically excluded Indigenous voices despite their direct impact on Indigenous health [75]. A strength of this project is the use of MI as the conversational methodology respected through Indigenous traditions of yarning, and provided the space and time for participants to engage in conversations [30]. The variation in prominence of themes is representative of participant's experiences due to the structure of MI where the interviewer is positioned as a knowledgeable person accessible for participants to engage with on topics, rather than prioritising topics and questions with a structured guide. Additionally, this project is unique in that socioeconomic positions were compared to identify how barriers exist for families in different situations. A limitation of the study is that baseline measures for age and employment used for subgroup comparisons reflect maternal characteristics rather than the entire household. Additionally, the majority of interviews were conducted with mothers at baseline occurred during pregnancy, however future projects would be more impactful by prioritising paternal participation and engaging the whole family, as aligned with cultural understandings of holistic health.

Conclusion

Despite the barriers shared by participants and discussed here, parents understood the importance of oral health and desired the best possible outcome for their children's teeth. Policymakers, researchers and public health professionals are urged to consider the barriers experienced firsthand by Indigenous peoples and prioritise Indigenous partnerships when addressing oral health disparities. Our recommendations from these findings include an increased focus on oral health promotion efforts in non-metropolitan areas; the utilisation of community experiences and needs in creating useful strategies that encourage oral health and nutrition knowledge; and the extension of oral health initiatives and future research to include all family members.

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Abbreviations
ECC: Early Childhood Caries; FT: Full-time; Metro: Metropolitan; Non-metro: Non-Metropolitan; MI: Motivational Interviewing; PT: Part-time; UE: Unemployed.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12903-021-01791-x.

Additional file 1. Participant comparison by demographic characteristics within knowledge, parental, structural, and social factors.

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Authors' contributions
BP, JH, LGS, MM and LMJ contributed to the conceptualisation of this analysis. BP interpreted and analysed the data. JH collected data; JH and MM aided in data analysis. Writing and original draft preparation were done by BP. Writing review and significant editing were performed by JH, LGS, MM and LMJ. All authors read and approved the final manuscript.

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Availability of data and materials
The datasets analysed during the current study are not publicly available due to confidentiality concerns but are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate
This study was conducted in accordance with the World Medical Association Declaration of Helsinki 2013. The project received ethical approval from the Aboriginal Health Council of South Australia (04-09-362) and the University of Adelaide Human Research Ethics Committee (H-057-2010). Written informed consent was obtained from all participants.

Consent for publication
Not applicable.

Competing interests
The authors declare that they have no competing interests.

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8

Results

Child-, Family-, and Community-Level Facilitators for Promoting Oral Health Practices among Indigenous Children

8.1 PREFACE

This study aimed to bring together stories of parental strength and to identify factors that facilitate the establishment and maintenance of oral health for Aboriginal and Torres Strait Islander children. This is an important component to the thesis as it provides actionable strengths-based suggestions to enhance the experience of oral health for Aboriginal and Torres Strait Islander peoples in Australia.

8.2 PUBLICATION DETAILS

Poirier B, Hedges J, Smithers L, Moskos M, Jamieson L. Child-, family- and Community-level facilitators for Indigenous childhood oral health. International Journal of Environmental Research and Public Health 2022. doi: 10.3390/ ijerph19031150.

8.3 HIGHLIGHTS

- The findings are presented in alignment with Fisher-Owens and colleagues' comprehensive conceptual model, where individual, family, and Community influences on children's oral health are considered.
- The results emphasise the importance of considering facilitators beyond an individual child to include family and Community-level facilitators; key results include familial ties, learning from previous experiences, positive oral health beliefs, generational teaching, helpful Community resources, and holistic health care.
- The findings highlight the necessity of robust oral health prevention efforts for Indigenous Communities that consider overall wellbeing in conjunction with biomedical measures.

8.4 STATEMENT OF AUTHORSHIP

Statement of Authorship

Title of Paper	Child-, Family-, and Community-Level Facilitators for Promoting Oral Health Practices among Indigenous Children
Publication Status	[X] Published [ ] Accepted for Publication [ ] Submitted for Publication [ ] Unpublished and Unsubmitted work written in manuscript style
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Principal Author

Name of Principal Author (Candidate)	Brianna Poirier		
Contribution to the Paper	Conceptualisation of research question Data analysis Manuscript writing Editing and revisions Corresponding author for publication process		
Overall percentage (%)	75%		
Certification:	This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper.		
Signature		Date	14/07/2022

Co-Author Contributions

By signing the Statement of Authorship, each author certifies that:

i. the candidate's stated contribution to the publication is accurate (as detailed above);

ii. permission is granted for the candidate in include the publication in the thesis; and

iii. the sum of all co-author contributions is equal to 100% less the candidate's stated contribution.

Name of Co-Author	Joanne Hedges		
Contribution to the Paper	Revision of methodology Input on theory application Input regarding interpretation of results Revision of manuscript		
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Name of Co-Author	Lisa Smithers		
Contribution to the Paper	Revision of methodology Input on theory application Input regarding interpretation of results Revision of manuscript		
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Name of Co-Author	Megan Moskos		
Contribution to the Paper	Revision of methodology Input on theory application Input regarding interpretation of results Revision of manuscript		
Signature		Date	14/07/2022

Name of Co-Author	Lisa Jamieson		
Contribution to the Paper	Orientation of research question formulation Revision of methodology Input on theory application Input regarding interpretation of results Revision of manuscript		
Signature		Date	14/07/2022

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Contribution to the Paper			
Signature		Date	

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Contribution to the Paper			
Signature		Date	

Name of Co-Author			
Contribution to the Paper			
Signature		Date	

8.5 PUBLICATION

International Journal of
Environmental Research and Public Health

Article

Child-, Family-, and Community-Level Facilitators for Promoting Oral Health Practices among Indigenous Children

Brianna F. Poirier [1,*], Joanne Hedges [1], Lisa G. Smithers [2,3], Megan Moskos [4] and Lisa M. Jamieson [1]

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Abstract: Despite the preventive nature of oral diseases and their significance for general wellbeing, poor oral health is highly prevalent and has unfavourable ramifications for children around the world. Indigenous children in Australia experience disproportionate rates of early childhood caries compared to their non-Indigenous counterparts. Therefore, this paper aims to collate parental experiences and generate an understanding of facilitators for Indigenous childhood oral health. This project aggregated stories from parents of Indigenous children across South Australia who were participants in an early childhood caries-prevention trial. This paper explores facilitators for establishing oral health and nutrition behaviours for Indigenous children under the age of three through reflexive thematic analysis. Fisher-Owens' conceptual model for influences on children's oral health is utilised as a framework for thematic findings. Child-level facilitators include oral hygiene routines and regular water consumption. Family-level facilitators include familial ties, importance of knowledge, and positive oral health beliefs. Community-level facilitators include generational teaching, helpful community resources, and holistic health care. Recommendations from findings include the following: exploration of Indigenous health workers and elder participation in oral health initiatives; inclusion of Indigenous community representatives in mainstream oral health discussions; and incorporation of child-level, family-level, and community-level facilitators to increase support for efficacious oral health programs.

Keywords: Indigenous peoples; oral health; dental caries; public health dentistry; motivational interviewing

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1. Introduction

Childhood oral health is fundamental to overall health and supports essential functioning, enables painless eating, speaking, socialising, and smiling, and strengthens quality of life and self-esteem [1–3]. The impacts of poor oral health in children are well documented [4–7]. Presence of early childhood caries (ECC) is an indicator of social disadvantage and an early measure of deprivation-related poor health [8]. Despite the significance of oral health to general wellbeing, ECC is the most prevalent chronic disease globally, affecting 60–90% of children [1,9]. The World Health Organisation has called for widespread community efforts and government support to address the prevalence of ECC, especially in disadvantaged communities [10,11].

Across unique geographic locations, cultures, and histories, Indigenous peoples experience strikingly similar poor oral health outcomes [12], related to the impacts of colonisation, assimilation, discrimination, and marginalisation [13,14]. The cultures of Aboriginal and Torres Strait Islander peoples (respectfully, subsequently referred to as "Indigenous") in

Australia are among the oldest thriving in the world [15]; prior to colonial invasion, there were at least 260 distinct language groups with unique histories, cultures, and spiritual traditions across the continent [16]. With colonisation in Australia came Indigenous suffering through removal from traditional lands, restriction of language use, child removal, ecological destruction, marriage regulation, and suppression of participation in cultural activities [13,17]. Factors contributing to oral disease for Indigenous peoples in Australia are rooted in the social devastation caused by colonisation [18]. The social determinants related to colonisation are compounded by changes to diets and lifestyles and underscored by a lack of understanding and prioritisation of Indigenous cultural values in health care [17,19]. Despite the legacy of colonisation and the preservation of colonial structures in societal and health systems, Indigenous peoples in Australia continue to be resilient [20].

Dental public health efforts to improve childhood oral health in Australia are not reflected in Indigenous children, as evidenced by high oral disease burden, high rates of dental surgery requiring anaesthesia, and low rates of dental visits [21–25]. Prevention of ECC has historically depended upon individual adherence to behavioural messages, such as tooth brushing and reducing sugar consumption; however, it is increasingly acknowledged that messaging alone rarely results in sustained behaviour change [26]. The Australian government has acknowledged the disadvantage of Indigenous communities and the strong evidence equating Indigenous health disparities to the overwhelming impacts of trauma and marginalisation, as results of government policy [18]. Improving Indigenous childhood oral health is a mandate of the Australian government's oral health plan [27]. The 2012–2013 Australian Aboriginal and Torres Strait Islander Health Survey reported that 80% of individuals aged 2 years and over who identified needing to go to the dentist did, approximately half the respondents brushed their teeth twice daily on a regular basis, and only 14% had never seen a dentist [28]. Through the development of their Aboriginal Oral Health Program, the South Australian Dental Service has observed a significant increase in the number of Indigenous children accessing dental care over the past 10 years, from 2895 children in 2006 to 4717 in 2016 [29].

It is imperative that the exploration of Indigenous children's oral health is framed by Indigenous experiences, beyond the traditional biomedical focus of oral health [30,31]. The greatest impact on childhood oral health practices is caregiver influence, highlighting the importance of family participation in ECC prevention [32–34]. Prioritising parent perspectives helps generate an understanding of the factors that facilitate oral health for children [35], which can include connection to family, community, country, culture, identity, and spirituality [30]. It is widely acknowledged that oral health disparities are driven by multifaceted circumstances [13,36,37]; as such, consideration for the diverse factors that impact overall child wellbeing is necessary. Qualitative research provides the flexibility that is required to capture factors important to participants, but few qualitative works explore parental perceptions of the range of factors that improve oral health for children and instead focus more specifically on tooth brushing or oral health attitudes [38–41].

Dominant discourse in Australia centralises notions of failure on the part of Indigenous communities to thrive. Resilience literature underscores the importance of highlighting a more holistic narrative of Indigenous wellbeing, challenging stereotypes, and substantiating the immense individual and collective strength in defiance of continuous obstacles [42,43]. While disease outcomes remain highly disproportionate for Indigenous peoples across the country and in South Australia, focusing on improvements and the positive outcomes of oral health can help motivate, rather than discourage, Indigenous communities [44,45]. To date, the majority of research in Indigenous health has employed a deficit approach [46]. This paper aims to utilise a strength-based approach [46] through the prioritisation of Indigenous voices, the collation of parent stories of strength, and the exploration of parent-identified facilitators for Indigenous childhood oral health.

2. Materials and Methods

2.1. Study Design

This project is part of a randomised control trial of an ECC intervention that prioritised collaboration and partnership with Indigenous communities and families across South Australia (Trial Registration: Australian New Zealand Clinical Trial Registry ACTRN12611000111976). The findings from this analysis have been reported in alignment with the Consolidated Criteria for Reporting Qualitative Research (Supplementary Material S1) [47] and the Consolidated Standards of Reporting Trials (Supplementary Material S2) [48]. The protocol [49], primary quantitative results [50], and cohort profile [51] have been published. The trial enrolled 448 women, pregnant with Indigenous children at baseline, who were randomly allocated to intervention or control (delayed intervention) groups. The intervention had four elements, including: (1) dental care provision for mothers during pregnancy; (2) fluoride varnish application for children; (3) anticipatory guidance; (4) motivational interviewing (MI). The findings in this paper are from the MI component; MI is an empathetic behavioural support method that encourages identification, exploration, and resolution of obstacles to change behaviours [52]. This psychotherapy intervention is rooted in the notion that intrinsic motivation increases the likelihood of behaviour change, and that knowledge alone is insufficient to elicit behaviour change. Notably, MI respects the cultural values of Indigenous peoples, such as the oral traditions of yarning [53] and self-determination, yielding a more holistic understanding of a given issue [54,55]. MI has been successfully utilised to elicit oral health behaviour change for parents and children [56,57].

In this trial, MI occurred at baseline and when the child was aged 6, 12, and 18 months for the intervention group. The respective directives for each motivational interview were: (1) supporting dental care during pregnancy; (2) discussing the significance of non-cariogenic drinks and foods for children; (3) emphasising the role of fluoride in ECC prevention; (4) encouraging the child's first dental visit. The control group had interviews when the child was aged 24, 30, and 36 months; the first interview combined directives (1) and (2). Due to the patient focus of MI, there were no set questions for each session; however, guides were developed in partnership with MI training facilitators and included prompts, key messages, and activity guidelines for each interview. Each session guide was piloted by interviewers prior to trial commencement. These data were collected from February 2009 to May 2013. All interviews were audio recorded and transcribed verbatim at the end of data collection. Interviews varied in length from 20 to 90 min.

2.2. Ethical Approval

The project received ethical approval from the Aboriginal Health Council of South Australia (04-09-362) and the University of Adelaide Human Research Ethics Committee (H-057-2010). Procedures for confidentiality were adhered to and informed written consent was obtained from all participants.

2.3. Participants and Sampling

Interviews were purposively sampled for this analysis due to the variation in MI delivery and fidelity scores across the four trained staff involved in the interview component. Successful MI is contingent on interventionist competency in eliciting statements of self-motivation from participants [58]. Fidelity assessment of MI was conducted to measure the extent to which the intervention was performed as intended and to ensure methodologic rigour in this trial [59,60]. All interviews included in this analysis were completed by the single staff member with the highest MI fidelity score—a senior Indigenous researcher who worked to establish reciprocal and trusting relationships with participants. These interviews had the richest conversations and were more comparable with one another, providing the highest quality data to answer the research question.

2.4. Data Analysis

Reflexive thematic analysis embraces researcher subjectivity and acknowledges that researchers are embedded in project design and analysis, and that findings are inescapably influenced by researcher interpretation [61]. As such, it is critical to acknowledge the assumptions and perspectives one brings to research. The primary author is a non-Indigenous researcher from Canada who has been working with the same communities and Aboriginal Health Workers (AHW) involved in this trial, actively taking opportunities to enhance her contextual and cultural understandings of the environment in which the experiences highlighted through this work exist. Both the senior Indigenous researcher (J.H.), who conducted the interviews, and the trial's primary investigator (L.J.) have been working with Indigenous communities in SA for over a decade.

Reflexive thematic analysis, as detailed by Braun and Clarke, guided this analysis [61–63]. Significant time was spent in an initial phase of reading, listening, and reviewing each interview multiple times to ensure researcher closeness with the data [64]. During this time, the primary author noted initial ideas from each interview. Extensive discussions of data and initial thoughts took place between the primary author, the senior Indigenous researcher (J.H.), and the primary investigator (L.J.) prior to thematic analysis. Following the data immersion phase, the primary author inductively coded the data line by line in NVivo 12 software (QSR International Pty Ltd. Version 12.6.1, Melbourne, Australia) to identify features of the data relevant to the research question; the entire dataset was given full consideration. After all transcripts had been coded, the primary author reviewed all of the codes and similar codes were aggregated into themes. At this stage, an initial thematic map was created to help the researchers consider the relationships between themes, as suggested by Braun and Clarke [64]. Any themes that did not have sufficient data to support them were discarded. Refinement of themes happened in relation to the thematic map, as well as the entire dataset, to ensure representation of all interviews; any final coding needed to ensure data coverage was performed at this time. Next, themes were clearly defined and labelled, not only in relation to specific findings but also in relation to the overall story of the dataset. Finally, during the report production phase, illustrations from transcripts were chosen that exemplify the nature of each theme.

2.5. Fisher-Owens' Conceptual Model

Due to the immersion of oral health behaviours in complex daily life [65], ECC prevention cannot singularly focus on individual behaviour or biology, but must also consider the wider psychosocial, environmental, and corporate determinants of oral health [11]. These determinants are considered in Fisher-Owens and colleagues' comprehensive conceptual model, where individual, family, and community influences on children's oral health are considered [11]. While atypical in reflexive thematic analyses [61], a modified version of the Fisher-Owens and colleagues' model [11] was utilised as a framework for this analysis because of the opportunity it provided to consider a more extensive understanding of the diverse environments in which oral health exists. Each level of the Fisher-Owens and colleagues' model considers five domains: genetics and biology, social environment, physical environment, health-influencing behaviours, and medical and dental care [11]. This potential use of this model was considered after thematic development and prior to report production due to its alignment with the patterns identified in the data. Some domains within each level did not relate to the findings; therefore, a modified framework was employed that considered social environment, physical environment, and health-influencing behaviours.

2.6. Consideration of Socioeconomic Positions

Factors of employment, income, and education relate to broader socioeconomic and historic environments and influence oral disease, as well as utilisation of oral health services for Indigenous peoples in Australia [2,66–68]. Participants were classified according to socioeconomic position (SEP) to provide context for views expressed during the motivational

interviews, and because approximately 34% of the health gap between Indigenous and non-Indigenous Australians is attributable to social determinants of health [69]. SEP considers diverse elements of economic and social wellbeing in relation to class position [70]. SEP influences oral health impacts through various mechanisms due to its relationship with resource access, disease consequence, and ability to benefit from new knowledge [71]. Utilising five measures—including maternal education, health care card status, car ownership, ability to pay a AUD 100 dental bill, and regional measures of socioeconomic advantage and disadvantage—families were classified as either high SEP or low SEP. All measures were dichotomised and families that had at least three of the possible five high SEP factors were categorised as such, any families with less than three were categorised as low SEP (Table 1).

Table 1. Categorisation of SEP measures.

Original Measures	Dichotomised	Categorisation
	Health care card status	
Yes	Yes	Low SEP
No	No	High SEP
	Maternal education	
No school	High school or less	Low SEP
Primary school		
High school	Trade or University	High SEP
Trade/TAFE		
University		
	Car ownership	
Yes	Yes	High SEP
No	No	Low SEP
	Difficulty paying AUD 100 dental bill	
Not hard at all	Minimal difficulty (Not hard at all, Not very hard)	High SEP
Not very hard		
A little bit hard	Some difficulty (A little bit hard, Very hard, Could not pay)	
Very hard		Low SEP
Could not pay		
	Index of relative socioeconomic advantage and disadvantage (IRSAD)	
Decile 1–10	Decile 1–5	Low SEP
	Decile 6–10	High SEP

Eligibility for public dental services in Australia is defined by Centrelink, a Commonwealth Department of Human Services agency, which includes a health care card program that assists cardholders with medical fees [72]. Health care card status is contingent on low family income, among other criteria; therefore, card status was employed as a proxy indicator of family income for SEP categorisation, rather than maternal income [72]. The index of relative socioeconomic advantage and disadvantage (IRSAD), based on family postal area from the Australian Bureau of Statistics 2011 census of population and housing, was included as a measure of environmental impact. The IRSAD considers both advantage and disadvantage, encapsulating information about social and economic environments of households within an area [73]. Further, maternal education is related to food knowledge and food choice, which directly impacts child nutrition [74].

3. Results

Findings from 327 interviews with 226 carers from Indigenous communities across South Australia are presented in the order of the highest to the lowest number of participants that discussed themes within each of the following categories: family-level influences ($N = 224$), child-level influences ($N = 204$), and community-level influences ($N = 194$) (Figure 1). In this sample, 28.9% of families were categorised as high SEP, as determined by maternal education, health care card status, ability to pay a AUD 100 dental bill, car ownership, and IRSAD by postal area (Table 2).

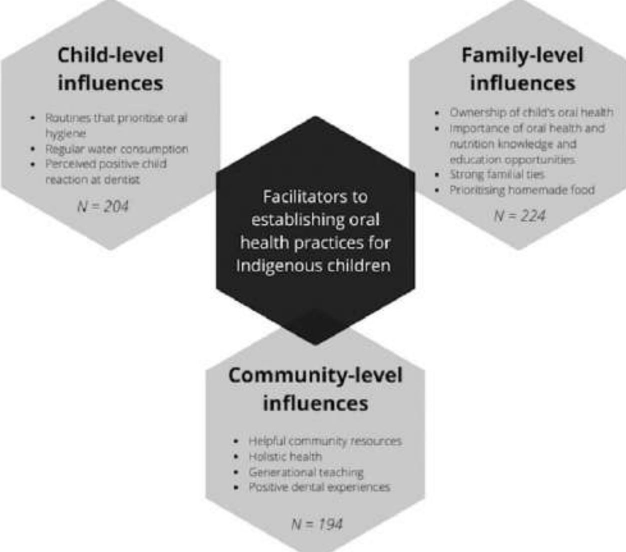

Figure 1. Conceptual model of facilitators to establishing oral health practices for Indigenous children in South Australia.

Table 2. Participant characteristics.

Measure	Overall Sample ($N = 226$) [1] N (%)
Health care card status	
Yes	176 (80.0%)
No	44 (20.0%)
Maternal education	
High school or less	151 (67.7%)
Trade or University	72 (32.3%)
Car ownership	
Yes	122 (54.7%)
No	101 (45.3%)
Difficulty paying AUD 100 dental bill	
Minimal difficulty	49 (22.0%)
Some difficulty	174 (78.0%)
IRSAD	
Decile 1–5	200 (90.9%)
Decile 6–10	20 (9.1%)
Socioeconomic Position (SEP)	
High SEP	63 (28.9%)
Low SEP	155 (71.1%)
Mean Maternal Age in Years (SD)	28.5 (6.65)

[1] Note: Data not available for each participant in each category; where five measures were not available, socioeconomic position was not categorised.

3.1. Family-Level Influences

3.1.1. Ownership of Child's Oral Health

Parent ownership of their child's oral health facilitated personal responsibility for parents who identified oral health as a central component of their role as a parent; when discussing why one father ensures his child brushes his teeth every day, he replied: *"Because it's my duty, it's my duty … I've got to step up to the plate, don't I?" (P20; Low SEP father).* Parent ownership of their child's oral health related to parent initiative and determination. Initiative and determination facilitated oral health for children because parents took steps to learn new information, which prepared them for their child's evolving oral health needs, such as wiping baby teeth after feeds, making dental appointments, and introducing a toothbrush. Rationale for wanting to learn more was succinctly explained by one mother, as follows: *"Yes, always wanting to learn more about, you know, the nutrition and the wellbeing and how what I do as a mum can affect that with my kids" (P37; High SEP mother).* Even within motivational interviews, parents exemplified a desire to take action; once learning something new, parents wanted to implement their knowledge as quickly as possible and began brainstorming ways in which they could:

> *"I probably will give less juice and yes, wow, yes, maybe try and rethink some choices like, because … when you go out to places and you get kids meal deals and various things, you get the juice, like you pick that one, but I'll pick differently in future".* (P161; High SEP mother)

Ownership of child's health related to an appreciation of the importance of the dentist and the life-long importance of teeth. These beliefs facilitated oral health for children because these notions underscored the importance of oral health for parents and elevated priority of oral health related behaviours and routines, *"You know, you only get two sets of teeth in your life. I don't want her to have dentures before she's 20, you know" (P10; Low SEP mother).* Parents discussed learning from previous experiences as a facilitator to prioritising the importance of their children's oral health. Both personal experiences and observation of friends and families' experiences taught parents how individual behaviours can impact oral health outcomes; this notion held true for both positive and negative experiences. For example, some parents were very proud of their healthy teeth; therefore, they wanted the same outcome for their children. Meanwhile, other parents identified personal oral health problems and were adamant to avoid this outcome for their children:

> *"Well like I said, I've got [dental caries] in my mouth, so I don't want my kids to have them, because they're horrible. I've got yucky teeth, and that's from growing up where I didn't brush my teeth because nobody told me I had to brush my teeth. I just don't want that [for them] because my teeth are all falling out and it's horrible".* (P124; High SEP mother)

3.1.2. Oral Health and Nutrition Knowledge and Education Opportunities

The importance of oral health and nutrition knowledge and education opportunities were frequently discussed: *"(Interviewer): So, knowledge is power? (Interviewee): Yes. I wish we had a lot more" (P18; Low SEP mother).* Those with knowledge shared stories about going out of their way to share their understanding with others and strengthen their family health. Accessibility to education and correct knowledge varied among participants. Many parents cited nutrition education as a result of a health condition, such as diabetes mellitus, or previous dieting. In particular, the ability to read nutrition labels and knowledge about the impact sugar has on one's health resulted from disease-related education: *"That's why I've been really cautious on what he does have and don't really agree with him having too many sweet things at all just for like family diabetes issues as well. Not only like teeth" (P21; Low SEP mother).* Regardless of the source of knowledge, parents agreed that correct knowledge and access to education was one of the most important things to ensuring oral health and general wellbeing.

"Like I said to my doctor ... it's being educated. When you have that education and understanding, you can change things in your life. Where beforehand I didn't have that understanding of what foods are good and some foods that you'd always considered good, turn into sugars and you eat them and all that, so education [is the most important] I think". (P20; Low SEP mother)

Associations between individual health behaviours and potential outcomes heavily increased awareness for participants and facilitated healthy behaviours. Associations included the relationships between bottle, fluoride, sugar, water, general health, and oral health. Many parents cited correct information shared during initial motivational interviews in subsequent sessions:

"Yes, because you told me about that, so that's just made me aware of, you know, letting him sleep with a bottle, because the milk just lays on their teeth, and see I never knew that ... because the first boy, he was on the titty all the time, and then when he come off, he was just on water, see, so, he had no problems with his teeth, but [this child] just wanted bottle all the time". (P33; Low SEP mother)

Parents were quick to identify unhealthy practices in other parents, in particular with regard to giving children sugar and dental surgery, justifying their judgment by assessing the lack of prevention efforts other parents made. These comparisons facilitated oral health of children because parents were hyper-aware of their own actions in comparison with those they observed in others:

"Just sad, you know, kids going to have to go under a local anaesthetic to get their teeth out ... the parents should, you know, should know better, not to ... Like I said, they need tough love, you know, not to give in straight away. A lot of kids do cry to get their way, but that's where I just, no, I'm not going to give in to you, you can cry, chuck a tantrum all you want". (P64; Low SEP mother)

3.1.3. Strong Familial Ties

Dynamic and supportive relationships in the home, between parents and children, as well as between parents created an environment conducive to the establishment of oral health practices for children, *"We all go. My whole family goes. If [my sons] got an appointment my whole family will go" (P8; Low SEP mother)*. Parents appreciated when they were able to communicate expectations with their partners and they were supported in attaining oral health goals. Familial ties provided parents with readily available help and unwavering support: *"Me and [my wife's] brother and sister, we all work together, all as one. Yes, we all work as one. And we just all go together, support one another" (P4; Low SEP father)*. This support extended to oral health practices; parents expressed deep gratitude for family members that respected or shared their values with regard to their child's oral health. Family members who assisted with appointment transportation, maintained oral health habits, and encouraged reduced sugar consumption facilitated oral health for children. Some parents even mentioned that once they had clarified the impact sugar can have on children's teeth, grandparents began giving toys and games to their grandchildren, instead of lollies. Family support was discussed for many as *"just how it is"* and something that was important to teach to children:

"Family have helped in getting us to where we are now. So it's like looking after babies and everything like that. It is like a necessity basically that we teach our children and in that way they can teach their children and so on, and so on and so on. So it does play a big role in healthy teeth". (P18; High SEP mother)

Strong familial ties related to positive household role models, both in terms of parent influence and sibling influence. Siblings were primarily described as aiding with tooth brushing and dental visits as younger children would follow their example. Parents discussed limiting their own sugar and changing their dietary patterns for the benefit of their children's health:

"Well even with me, I've gone on a diet myself, so I've cut out the cool drinks and the juice . . . so I've been more on the water myself. So maybe the kids are seeing that too, because all I'm doing is drinking water, so they'll end up grabbing my water bottle and, you know, if it's got a pull top then they're drinking that. So that's good". (P110; High SEP mother)

3.1.4. Prioritising Homemade Foods

Parental effort to establish oral health and nutrition behaviours included the prioritisation of bush tucker at home and limiting sugar or processed food consumption. Many participants reflected on the influence their parents and grandparents had on their eating habits: *"We rarely had packaged stuff growing up, I think . . . My mum's not so big on ingredients but just like growing up, we never had pre-packaged stuff. It was always healthy whole food" (P2; Low SEP mother)*. Parents who made most of their food at home stressed the importance of knowing exactly what they are giving their child as well as a decreased reliance on processed foods, often high in sugar. The ability to read and understand a nutrition label, as well as having sufficient time for shopping, further facilitated healthy food choices for parents. Some parents discussed the impact sugar had on their children's health and behaviour and made efforts to limit sugar consumption by watering down SSB and treating with something other than sugar, such as toys or stickers.

"I don't give into lollies, I don't give into that. They do have their odd ice-cream every now and then, but not every time . . . Yes, so it's not always about lollies or soft drinks, or things like that. I give them treats in other ways, like buying them a toy, or you know going to the street, go to the beach, going to the playground, and things like that". (P64; Low SEP mother)

3.2. Child-Level Influences

3.2.1. Routines That Prioritise Oral Hygiene

Parents discussed routines as fundamental to establishing oral health-promoting behaviours for their children at a young age. Routines were deemed important for parents to prepare their children for the future, *"They're not looking after baby teeth they're not likely to look after adult teeth, you've got to start the routine early" (P20; Low SEP mother)*. Parents identified routines as a mechanism to avoid unnecessary dental procedures, potentially saving money. Routines were also discussed in terms of decreased child reliance on night-time bottle feeds. Older siblings were mentioned as helpful in decreasing bottle use because their example helped children *"grow up a lot quicker."* Enjoyable and fun tooth brushing enticed children to adhere to routines; strategies mentioned by parents included colourful and themed brushes, using phone applications with brushing songs and dances, enlisting the help of older siblings, praise, or the use of a sticker chart.

"I think it's just the toothbrush I bought for him, it's a little Batman light up one, it's lights up for [the time] that you have to brush for and as soon as it stops you stop brushing, yes, so I think that's what it is, the toothbrush, he likes it". (P70; Low SEP mother)

3.2.2. Regular Water Consumption

For many children, water was initially introduced on hot days to quench thirst, or when children were sick. Many parents identified the importance of water for their child's health, especially in terms of reducing sugar-sweetened beverage (SSB) consumption, and tried to increase water availability for their children. Parents believed that water was important for the entire body: *"Well I know it can strengthen your teeth and your gums . . . It helps your liver. Everything like that. It's more or less a cleanser for your body, your whole body" (P17; Low SEP mother)*. Some parents struggled with resistance to water from children and noted if they had prioritised water consumption earlier, the process would have been made easier.

> *"He's been looking for the water ... we've got one of those water fountains, you know, that you can go on press and it'll come out. We've been finding water on the floor, because he's going and standing underneath it and drinking it. His dad growled him, and I said don't growl at him, you encourage him, he's drinking water, you know, that's the best thing for him".* (P10; High SEP mother)

3.2.3. Perceived Positive Child Reaction at The Dentist

Perceived positive child reaction at the dentist was mentioned by parents as a facilitator to attend child's first dental appointment. This perception was grounded in children's previous health care experiences, reactions, and behaviours. Some parents shared stories about previous positive experiences with other healthcare professionals: *"He sits really still and he's very co-operative [at the doctor] ... it's just new to him and when it's new to him he's just like really quiet and observing and he doesn't run amok" (P175; High SEP mother).* Positive parent perceptions eased worries or apprehensions, facilitating dental appointment attendance.

> *"Well he just loves being the centre of attention. I guess being the second child he always ... The first ones always try to get all the attention and I think him being up in that chair with the dentist and everyone focused on him, I think he will like it".* (P57; High SEP mother)

3.3. Community-Level Influences

3.3.1. Helpful Community Resources

The majority of community level factors that parents discussed as facilitating improved oral health for children were grounded in relationships with others, such as helpful community resources and sharing oral health information with others. Helpful community resources mentioned by parents included the Aboriginal Community Controlled Health Services (ACCHS), AHW, midwives, dental services, hospitals, parenting classes, Mum groups, online sources, friends, and school programs. In particular, home visits from the Child and Family Health Service (CaFHS) nurses were cited as extremely accessible and useful, with many parents discussing the approachability of this service and emphasising their ability to discuss any concerns or questions during visits. Additionally, some parents discussed the usefulness of various community services in bridging the gap between community members and health services, especially with regard to improving the accessibility of dental services for community members. Some communities provided transportation to the dentist or had a community liaison to provide support for parents before, during, and after appointments.

> *"If you want your dental work ... [the support person] can go with you and pick you up and take you to a dental clinic ... You know, for the fella's that have got really bad teeth ... I suppose she explains to the dentist beforehand that, you know, like be prepared more or less, like don't say this is this ... You know, don't let these fella's walk in and be like oh my God you didn't brush your teeth, because obviously they haven't ... She prepares them so you don't feel bad about not looking after your teeth".* (P19; Low SEP mother)

School programs were discussed as helpful by parents, not only in terms of dental services provided at schools but regarding food school policies, which included the provision of nutrition information and the restriction of certain items, such as packaged foods and SSB. Specifically, water only policies in kindy and daily tooth brushing at day care helped parents strengthen existing efforts at home. Some parents talked about having certain processed snacks, typically ones high in sugar, sent back home because they did not follow nutrition guidelines, which influenced parent shopping:

> *"[The school] keep[s] carrying on about the packaged foods and things so that's helped us with our snacks and things like that I'll get other things ... because [some snacks have] higher sugars and higher salts ... And even though they might be labelled school snacks not necessarily healthy so being quite conscious since we've come to this school it's helped to you know, open our eyes up a bit more. As in the packaging's and yes, so we tend to*

read and they'll be like but it's in the school snack aisle. I'm like yes but look what it says here in the little bar of how high the sugar actually is in this and the school's going to go you can't eat that". (P40; Low SEP mother)

3.3.2. Holistic Health

The prioritisation of holistic health within healthcare systems was identified as a facilitator by participants. One mother discussed the importance of the whole body and variety of life factors that are considered when she utilises ACCHS, in comparison with the singular treatments she has experienced with other health professionals. Another Mum described feeling lost after having her teeth removed: *"I was attached to my teeth, the teeth were attached to me" (P46; Low SEP mother)*. Other parents mentioned the importance of the whole mind, body, and spirit when considering oral health efforts, especially the interconnected relationships between oral health and child self-esteem. Participants heavily valued the holistic approach to healthcare accessible through ACCHS, as well as the trusting and supportive relationships that AHW prioritised with their patients.

"I go [to the Aboriginal health workers] a lot. Like, even if it's got nothing to do with health, when I need, just, to chat about something, I will go there ... So they're good not just for health but for everything, whereas, when you go to the doctors it's not really the same". (P26; Low SEP mother)

3.3.3. Generational Teaching

Generational teaching heavily influenced parental oral health beliefs and in turn, children oral health habits, including nutrition, teeth cleaning, breastfeeding, dental visits, water consumption, and the conceptualisation of the importance of teeth. Parents established the importance of elders and ancestors in their oral health journey: *"Always listen to the elder ones. They always know the best" (P21; Low SEP mother)*. Many participants talked about the importance of maintaining generational teaching for family health in generations to come. An underlying notion within the concept of generational teaching was the effort to preserve connection and longevity that has been disrupted for generations:

"It was good that my mum and dad were so concerned with our oral health, you know, that's why I'm so with my kids ... Yes, well, I want our line to stay strong. Do you know what I mean? For generations my family was always wiped out, and then it was only in my mum's generation that we've just sort of started to come back together". (P2; High SEP mother)

Generational teaching also related to experiences of knowing family or community members with poor oral health. Parent observations of family members with poor oral health influenced their oral health understanding and was often a learning experience for what not to do with their own children. Many parents mentioned siblings or cousins who relied on sugary drinks in baby bottles. Some participants used older family members with rotten or missing teeth to encourage oral health with their children:

"[The kids] understand that, you know, you've got to look after their teeth otherwise ... Because my Dads got all falsies and I try and explain to them, oh you'll have no teeth when you're old. You'll look like your Poppa". (P63; Low SEP mother)

3.3.4. Positive Dental Experiences

Positive dental experiences facilitated recurring dental visits, central to the establishment of oral health. Past parental experiences, as well as experiences with children, impacted frequency of dental visits: *"I like the dentist, I want a good memory of the dentist. So I want my kids to have good memories of the dentist so that they look forward to going to the dentist in the future" (P91; Low SEP mother)*. Some parents discussed having older siblings help ease early dental experiences and others noted how much their children enjoyed receiving stickers and new toothbrushes at the end of appointments. Many parents utilised the dentist as a source of reassurance that they were on track with their child's oral health:

"I've actually got in mind now I want to make a dentist appointment so I can see how [his] teeth are going. I'm quite curious. Then I can get some more information too" (P18; High SEP mother). Parents identified the importance of being comfortable with the dentist as a facilitator to attending appointments, many wanting a dentist that regularly works with children:

> *"I know, you know, [the dentist] can detect things that I can't see and catching anything, you know, at an early stage would be good. And it gets her used to it too, you know, she won't be scared of the dentist when she goes in kinder or school or whatever. She'll know that going to the dentist is a good thing not a scary thing like other kids"*. (P131; Low SEP mother)

4. Discussion

This research sought to collate parent experiences and generate an understanding of facilitators for improved Indigenous childhood oral health in South Australia. The results emphasise the importance of considering facilitators beyond an individual child to include family and community-level facilitators. Key results from this analysis include familial ties, learning from previous experiences, positive oral health beliefs, generational teaching, helpful community resources, and holistic health care as facilitators for parents in this project. Oral health interventions have had varying success in Indigenous communities due to fragmentation from other areas of health, counterintuitive to the multifactorial nature of ECC [13,36,75,76]. The findings presented in the conceptual model align with the previous literature, in that they emphasise the necessity of robust oral health prevention efforts for Indigenous communities that consider overall wellbeing in conjunction with biomedical measures. Through prioritisation of Indigenous voices, this paper highlights the ways that research could drive future public health policy agendas—strengthening the parent-identified pathways to good oral health for their children.

4.1. Family-Level Influences

Parental knowledge was critical to establishing oral hygiene and healthy nutrition practices for families in this project. Findings highlighted that some mothers had developed food literacy skills as a result of dieting or education related to a health condition, such as diabetes, rather than through preventive oral health programming. Parent and carer nutrition knowledge impacts child oral health due to food provision responsibilities and the influence of dietary patterns established early in life on dietary behaviours later in life [77,78]. Through prioritisation of bush tucker and foods made in the home, parents in this study limited reliance on processed and sugary foods. Approximately half of the families in this study live in non-metropolitan areas where food costs have remained significantly higher than in metropolitan areas for over 20 years [79]. Particularly for individuals of lower socioeconomic position, this seriously impacts their ability to decrease their reliance on cheaper food options, which are often ultra-processed and of low nutritional value [80].

Parents' oral health beliefs and understanding of consequences related to poor oral health have previously been identified as facilitators to maintaining oral health practices for children [81]; similarly, formation of associations between parent actions and health outcomes during motivational interviews generated a deeper understanding of consequences for parents and a readiness to take action in our trial. Related to parent knowledge was parent judgment or observation of other children's teeth and subsequent comparisons related to their own child's oral health. This pattern of parent observation has been noted elsewhere [81,82]. While learning from personal mistakes or observing others' mistakes can teach parents what not to do, it does not necessarily teach them the necessities for oral health in children. Given the centrality of parent knowledge to child oral health, as well as the desire from parents of Indigenous children here, in Queensland [83] and in Western Australia [82], for more practical advice and education, there may be a gap in oral health education provision and community needs.

4.2. Child-Level Influences

Routines that prioritise oral hygiene were identified as essential to maintaining oral health behaviours for parents in this study. Regular water consumption was discussed by parents as important not only regarding fluoride exposure but also reduced sugar consumption. Just under half of the families included in this project live in non-metropolitan areas, where many houses rely on un-fluoridated rainwater. Routines that include enjoyable brushing time and reduced reliance on bottle use have previously been identified as critical to childhood oral health [77,81,84]. The use of fluoride varnish for children in this project provided an opportunity to further strengthen parental knowledge about the importance of brushing children's teeth with fluoridated toothpaste for the prevention of ECC. Currently, fluoride varnish application is restricted to dental professionals in SA, despite its value in preventing ECC [85]. Researchers in New South Wales have successfully demonstrated that Indigenous dental assistants can effectively and safely apply fluoride varnish for children in schools; these findings have the potential to better oral health for Indigenous children across Australia [86].

4.3. Community-Level Influences

While parents in our study identified positive dental experiences and compassionate practitioners as facilitators for dental service utilisation, these services are not easily accessible or available for all parents. Holistic health care and helpful community resources, such as ACCHS, AHW, and CaFHS nurses, were extremely important to parents in our project, especially those in regional areas with intermittent access to dental professionals. While many Indigenous peoples in Australia have priority access to dental care through the publicly funded system, various barriers prevent regular utilisation of mainstream preventive care [5,21,67,87]. Research with communities across Australia suggests that ACCHS reduce a number of barriers to preventive care, notably through increasing affordability and offering an appropriate model of care for Indigenous Australians [88]. Participants from a community-controlled midwifery program in Sydney [89] and a cardiac rehabilitation program in Perth [90] emphasised the flexible approach to care provided by ACCHS, as well as the availability of transportation, provision of informal child care, continuity of care, foundation of relationships and trust, and the utilisation of culturally appropriate information. Additionally, ACCHS works to counteract impacts of institutional racism that Indigenous peoples face when accessing mainstream health services [91]. Our findings support these notions; participants indicated they were more likely to access ACCHS because of existing supportive relationships and provision of holistic health care.

Exploring alternative options for preventive oral health may increase accessibility for families and communities, such as the utilisation of AHWs in oral health promotion. Limited attention has been given to the potential for AHW involvement in oral health promotion in SA. Although the SADS have identified the importance of AHWs in oral health, utilising AHWs in a more official capacity could help address the challenges of maintaining oral health where services are not regularly available [92]. Training of community members as dental assistants has been effective in Alaskan Native communities and has been suggested for Canadian Inuit communities [93,94]. Community members in Alaska have been successful in bridging the gap between oral health professionals and communities, and providing more consistent and culturally competent care, especially in remote areas which have traditionally had sporadic access to dental care. In New South Wales, AHWs have been successful in facilitating oral health education programs for children and parents [95] and have self-identified their potential to facilitate similar programming for mothers during pregnancy [96]. Utilisation of AHWs for oral health provision builds on familiar and trusting relationships, which have been identified by both Indigenous parents and AHWs as imperative to service utilisation, attendance to appointments, and comprehensive identification of patient needs [97–99]. While the Indigenous oral health workforce is growing, there remains potential to strengthen Indigenous oral health in Australia by

formalising the utilisation of AHWs in oral health promotion and dental assistance at a national level.

The prioritisation of Indigenous partnerships in dental services would honour the significance of culturally determined understandings of illness and prevention and enhance cultural safety for Indigenous peoples accessing services [100,101]. Due to the fundamental gap in mainstream service provision, the focus on strengthening cultural competence among dental students and professionals has increased in recent years [102]. Culturally responsive engagement that acknowledges and works within the historical context and current experiences of Indigenous peoples would enhance the success of any oral health intervention [103].

Generational teaching, particularly from parents, grandparents, and elders, heavily influenced parent oral health beliefs and practices in our project. Previous research has demonstrated benefits to all aspects of wellness from Indigenous elder participation in educational and health-focused initiatives [104]. Elders play a key role in communication and knowledge transmission in communities and their opinions and advice are highly regarded on practical, spiritual, and moral grounds [104]. While some older participants from Tynan and colleagues felt they had missed opportunities to protect their own teeth, they exhibited concern for younger generations and wanted to ensure prevention awareness and better oral health outcomes for them [92]. Benefits have been observed not only for those involved in elder-informed projects, but to the elders themselves and the wider community, impacting cultural, environmental, and economic areas [98,105]. Elder involvement in community-based oral health prevention initiatives would help facilitate holistic oral health, beyond biomedical measures, and foster traditional connections and environments for children to thrive in [103].

4.4. Strengths and Limitations

This paper adds to the limited strength-based qualitative research on facilitators for improved Indigenous oral health in Australia. The utilisation of MI, importantly, respects Indigenous traditions of yarning and enabled participant engagement throughout the research process. The findings are unique in that they are framed within Fisher-Owens' conceptual model for childhood oral health, which considers child-, family-, and community-level influences. While the unique directives for each interview may have influenced findings, the trusting relationships between the interviewer and participants and the MI skills exhibited by the interviewer enabled a free-flowing conversation and topics ranged widely between participants. The number of interviews and participants included in this analysis makes it unlikely that any significant issues were missed and the timing of interviews from 6–36 months of age gives good coverage of a variety of stages in first 2 years of life. A limitation of this paper is that MI is a behaviour change methodology—some findings may have manifested because of the intervention itself; nevertheless, participants identified these factors as benefits from participating in the project and facilitators for their children's oral health. It is unlikely that the results discussed here would be the same from another interviewer; the variation in interviews across the staff conducting the MI was immense, hence the decision to include the interviews with the greatest depth and best quality to answer the research questions. Additionally, the dataset is from 2009–2013; therefore, findings do not consider the impact of oral health policy changes that have happened since data collection. Due to baseline recruitment occurring during pregnancy, the majority of all the interviews were conducted with mothers, despite the critical role of fathers, families, and communities in strengthening holistic oral health behaviours.

5. Conclusions

The facilitators to better oral health of Indigenous children exist across child-, family-, and community-level influences. Prioritisation of community knowledge and experiences enables greater insight to factors that facilitate oral health and can contribute to the development of parent oral health understandings. Oral health professionals, researchers, and

policy makers are encouraged to build upon facilitators identified by Indigenous peoples and centralise Indigenous leadership and partnerships in oral health service delivery and prevention programming. Future research should explore the perspectives of AHW regarding the incorporation of oral health programming through ACCHS, as well as dental professionals, regarding the feasibility of enhancing culturally accepted methods of care for Indigenous patients. Our recommendations from these findings include the following: (1) an exploration of AHW and elder participation in community oral health initiatives and mainstream dental services; (2) an inclusion of ACCHS representatives in mainstream oral health discussions and planning in South Australia; (3) an incorporation of child-level, family-level, and community-level facilitators, reflective of holistic understandings of health, to increase support for efficacious oral health programs.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/ijerph19031150/s1, S1: COREQ (Consolidated criteria for Reporting Qualitative research) Checklist. S2: CONSORT 2010 checklist of information to include when reporting a randomised trial.

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Institutional Review Board Statement: The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the University of Adelaide Human Research Ethics Committee (H-057-2010) and the Aboriginal Health Council of South Australia (04-09-362).

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Data Availability Statement: The data presented in this study are available upon reasonable request from the corresponding author. The data are not publicly available due to conditions of ethics approval.

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9

Results

Aspirations and Worries: The Role of Parental Intrinsic Motivation in Establishing Oral Health Practices for Indigenous Children

9.1 PREFACE

This study explores intrinsic motivations identified by parents of Aboriginal and Torres Strait Islander children with the intention for these motivators to enhance the effectiveness of future oral health prevention efforts. This is an important component to the thesis as it moves beyond the notions of barriers and facilitators to identify intrinsic motivations that can contribute to behaviour change.

9.2 PUBLICATION DETAILS

Poirier B, Hedges J, Smithers L, Moskos M, Jamieson L. Aspirations and Worries: The role of parental intrinsic motivation in establishing oral health practices for Indigenous children. International Journal of Environmental Research and Public Health 2021, 18, 11695. doi: 10.3390/ ijerph182111695.

9.3 HIGHLIGHTS

- Findings suggest that aspirations and worries related to child oral health, child general wellbeing, child appearance, and Community health trends underscored parental motivation.
- The findings highlight the relationship between parental motivations and the social and emotional impacts of oral health on children wellbeing.
- Observations of Community trends motivated parents to establish oral health practices for their children, signifying the awareness and centrality of Community wellbeing to individual wellbeing for Aboriginal and Torres Strait Islander Communities in this project.

9.4 STATEMENT OF AUTHORSHIP

Statement of Authorship

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Principal Author

Name of Principal Author (Candidate)	Brianna Poirier		
Contribution to the Paper	Conceptualisation of research question Data analysis Manuscript writing Editing and revisions Corresponding author for publication process		
Overall percentage (%)	75%		
Certification:	This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper.		
Signature		Date	14/07/2022

Co-Author Contributions

By signing the Statement of Authorship, each author certifies that:

i. the candidate's stated contribution to the publication is accurate (as detailed above);

ii. permission is granted for the candidate in include the publication in the thesis; and

iii. the sum of all co-author contributions is equal to 100% less the candidate's stated contribution.

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Signature		Date	

9.5 PUBLICATION

International Journal of *Environmental Research and Public Health*

Article

Aspirations and Worries: The Role of Parental Intrinsic Motivation in Establishing Oral Health Practices for Indigenous Children

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Abstract: Aboriginal and Torres Strait Islander (respectfully, subsequently referred to as Indigenous) children in Australia experience oral disease at a higher rate than non-Indigenous children. A history of colonisation, government-enforced assimilation, racism, and cultural annihilation has had profound impacts on Indigenous health, reflected in oral health inequities sustained by Indigenous communities. Motivational interviewing was one of four components utilised in this project, which aimed to identify factors related to the increased occurrence of early childhood caries in Indigenous children. This qualitative analysis represents motivational interviews with 226 participants and explores parents' motivations for establishing oral health and nutrition practices for their children. Findings suggest that parental aspirations and worries underscored motivations to establish oral health and nutrition behaviours for children in this project. Within aspirations, parents desired for children to 'keep their teeth' and avoid false teeth, have a positive appearance, and preserve self-esteem. Parental worries related to child pain, negative appearance, sugar consumption, poor community oral health and rotten teeth. A discussion of findings results in the following recommendations: (1) consideration of the whole self, including mental health, in future oral health programming and research; (2) implementation of community-wide oral health programming, beyond parent-child dyads; and (3) prioritisation of community knowledge and traditions in oral health programming.

Keywords: Indigenous peoples; oral health; dental caries; public health dentistry; motivational interviewing

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1. Introduction

Dentistry was originally established as a surgical specialty, with generations of dentists trained in highly invasive, operatively based treatments, grounded in biomedical theories of disease at the individual level [1–3]. The futility of this biomedical approach, which largely ignores social determinants of health, has been critiqued over the past century [4,5]. Not only has the surgically focused dental approach failed to generate significant individual or population benefits [2], it is also a considerable economic burden, even for high-income countries [1]. The necessity for a paradigm shift from therapeutic to prevention approaches has been acknowledged and is arguably an ongoing process [6]. Oral health, as a public health approach to dentistry, values prevention and attempts to tackle foundational causes of oral disease, particularly upstream determinants and structural drivers of inequity [1]. While oral health professionals are taught to provide education for all patients, provision

of education and overt recommendations are seldom sufficient for sustained behaviour change [7,8]. Many prevention and disease management approaches still rely on patient cooperation and compliance with preventive strategies [9], which at best are challenging to implement, and at worse are ignored [6]. Oral health policies, such as water fluoridation, and clinical measures, such as topical fluoride application, have addressed biological domains of oral health at a population-level prevention effort [10,11]. However, employing behaviour change theories in oral disease management provides an opportunity for increased adherence to prevention strategies at an individual level [12].

Evidence-based behaviour change models, while critical for the success of oral health promotion programs, have only recently been employed in dentistry [11,13–16]. The basis of this approach is grounded in psychological theories that aim to change behaviour to maintain or strengthen oral health [12]. Behaviour change interventions and strong communication between parents and oral health practitioners have been shown to promote health decision making regarding Early Childhood Caries (ECC) risk-related behaviours [15]. Theories utilised in oral health have ranged from the Health Belief Model [17], Theory of Reasoned Action [18], concepts of self-efficacy from Social Cognitive Theory [19] to Stages of Change from the Transtheoretical Model [20,21], among others. Often, a shared goal of these approaches is increased oral health literacy and self-efficacy due to an abundance of evidence identifying low literacy as a risk factor for oral diseases [22]. Conversely, Motivational Interviewing (MI) is an approach that works to enhance intrinsic motivation for ambivalent or unmotivated individuals who do not consider behaviour change necessary, resist suggestions, have low adherence to health behaviours, or are unable to justify reasons for action [23]. In contrast to other oral health education approaches, MI is an empathetic and supportive method underpinned by the notion that knowledge is insufficient to elicit behaviour change and that intrinsic motivation increases the likelihood of behaviour change [24]. The traditional use of imparting knowledge and advice can bring about change in health-related knowledge but techniques such as MI have shown promise in promoting adaptive health behaviours and reducing maladaptive behaviours, particularly where motivation and ambivalence are barriers to change [25].

MI was originally developed to address substance use disorders in 1983 [26] but has since been expanded to target a range of health conditions, including oral health [27–29]. Empathetic listening is a defining feature of MI, which places importance on authentic understanding of a patient through practitioner listening, rather than informing [27]. MI ascertains that individuals know what is best for themselves and suggests that practitioners need to work individually with patients to determine the most effective strategies for behaviour change [30]. The goal of MI is to understand the need for behaviour change from an individual's perspective, through principles of empathy, rolling with resistance, pointing out discrepancies, and supporting self-efficacy [27,31,32]. The technical hypothesis underpinning MI is an implicit causal chain, through what is known as "change talk," where patients verbalise arguments for change; the relational hypothesis of MI is the client–counsellor relationship and the therapeutic skills of empathetic understanding [25,31]. There are a combination of relational and technical influences and a variety of pathways through which MI can facilitate behaviour change [25]. Technical techniques that can improve behaviour change through MI include those that elicit participant arguments for change, reduce arguments for not changing, explore values, and those which look to the future [32]. Relational techniques include reframing, shifting focus, emphasising autonomy, overshooting, and coming alongside [32]. MI creates an exploratory atmosphere for participants to articulate personal values, capacities, and motives for behaviour change; emphasising an individual's personal motivation for change [24]. The recognition of misalignment between oral health values and poor oral health behaviours creates an internal force for clients that supports behaviour change [33]. For an individual to change, one must be confident in their abilities and believe that change is valuable, therefore employing interventions that bolster psychosocial strengths for parents can be effective in achieving optimal oral health for children [34–37]. Environments supportive of one's autonomy,

ideally established through MI, where motivation and encouragement are provided and personal choices are respected, foster intrinsic motivation. Intrinsic motivation is the most autonomous form of motivation because the desired behaviour is not contingent on external forces and is therefore more likely to be sustained, even throughout changing circumstances [38].

Aboriginal and/or Torres Strait Islander (respectfully, subsequently referred to as 'Indigenous') children in Australia experience significantly higher levels of ECC than non-Indigenous children both nationally and in South Australia, across all age groups [39,40]. Consequences of poor oral health during childhood impact pain, self-esteem, growth, development, quality of life, speech, education attainment, eating, concentration, and sleeping [41–46]. Despite the serious ramifications of ECC, this disease is preventable in nature and can be managed with limited sugar consumption, oral hygiene, fluoride exposure, and dental visits [46–48]. ECC is the strongest indicator for oral disease during adulthood [44,49]. Parent influence is instrumental in defining childhood oral health practices underscoring the importance of ECC prevention efforts focused on parent beliefs, attitudes, and self-efficacy within the family setting [46,50–52]. Importantly, MI parallels cultural values of Indigenous peoples, including oral traditions of storytelling and yarning [53], respects self-determination and is better able to yield a holistic and contextual understanding of a given issue [54,55]. MI has previously been used to elicit oral health behaviour change with Indigenous mothers and children [15,28,49,56], as well as with non-Indigenous mothers, reducing both occurrence and severity of child carious lesions [14,28,56–58]. Published evidence on MI in oral health has largely reported on the effectiveness of MI as a technique to reduce clinical measures of ECC rather than an exploration of participant-identified motivators that facilitate health promoting behaviours directly contributing to decreased ECC occurrence and prevalence. Investigation of parent-identified motivators will enhance understanding for oral health practitioners, policy makers and researchers of existing motivations and potential pathways which can be capitalised upon to further strengthen parental motivation for good oral health. The wider research project aimed to ascertain the impact of MI on parental oral health behaviours; this paper aims to explore intrinsic motivations identified by parents of Indigenous children during motivational interviews, which can be employed to enhance effectiveness of future oral health prevention efforts.

2. Materials and Methods

2.1. Design

The findings presented in this paper are derived from the MI component of a randomised controlled trial of an ECC intervention. This trial was designed and carried out in partnership with Indigenous communities and families across South Australia. At baseline, 448 women pregnant with an Indigenous child were enrolled and randomly assigned to control (delayed intervention) or intervention groups. The intervention had four components, (1) dental care provision during pregnancy; (2) fluoride varnish application for children; (3) anticipatory guidance; and (4) MI. The protocol [59], primary quantitative results [60] and cohort profile [61] have been published. Motivational interviews were conducted with the intervention group at baseline and when the child was 6-, 12-, and 18 months; parents in the delayed intervention group received MI when the child was 24-, 30-, and 36 months. The directives for each motivational interview were (1) dental care during pregnancy; (2) importance of non-cariogenic drinks and foods for children; (3) importance of fluoride for ECC prevention; and (4) child's first dental appointment (Supplementary S1). At the end of each interview, parents completed a worksheet where they indicated their primary goal from the session, how they were going to achieve their goal, supportive individuals who they were going to share their goal with, and tactics to overcome challenges that could prevent them from achieving their goal. The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the University of Adelaide Human Research Ethics Committee (H-057-2010) and the Aboriginal Health Council of South Australia (04-09-362).

2.2. Participants

This qualitative analysis employed purposive sampling of motivational interviews based on MI fidelity scores of trained staff who conducted interviews. Fidelity is the degree to which an intervention is executed as intended, through concepts of competence and adherence [62]. Fidelity of MI was assessed for this trial to ensure scientific rigour and sound methodological approach [63] due to the contingency of MI success on interventionist competency in eliciting self-motivating statements from parents [64]. Four staff were trained in MI and conducted interviews with parents with varying degrees of fidelity and success. The decision to only include interviews completed by the individual staff member with the highest fidelity score in this analysis was made because these interviews contained the richest data, were best able to answer the research question, and the interviews were comparable with one another. The staff with the highest fidelity score is a senior Indigenous researcher who facilitated the establishment of trusting relationships and employed colloquial language, which strengthened relationality.

2.3. Analysis

Reflexive thematic analysis embraces the subjective skills and unique experiences one brings to a project, acknowledging that these factors inescapably impact data interpretation and identification of themes [65]. The primary author is a non-Indigenous researcher from Canada, who spent significant time familiarising herself with the data and the context in which it was collected prior to analysis. Working with the same communities and Indigenous health workers who participated in this project enhanced local contextual and cultural understandings. The senior Indigenous researcher (JH) who conducted the interviews and the project's primary investigator (LMJ) have extensive experience working with Indigenous communities and health services across South Australia, these relationships facilitated recruitment, retention, and engagement. Interviews were conducted in English, audio-recorded, and transcribed verbatim. Braun and Clarke's reflexive thematic analysis framework guided the analytic process [65,66]. NVivo 12 software (QSR International Pty Ltd. Version 12.6.1, Doncaster, Australia) was used to facilitate the management and analysis of the qualitative data. Interviews were coded inductively, without a structured codebook to provide space for organic identification of themes, grounded in the data. The primary author continuously liaised with the researcher who conducted the interviews to ensure meaningful interpretation that reflected participant experiences. Upon completion of coding, all data points were reviewed, and similar codes were further explored and collated for an iterative thematic analysis process.

3. Results

Parents discussed several motivators for establishing oral health practices in their children, which generally related to either aspirations or worries. Findings presented below represent discussions with 226 parents of Indigenous children aged 6–36 months, from 357 interviews.

3.1. Aspirations

Aspirations for parents broadly related to their child's general wellbeing, as well as oral health (Figure 1). All parents desired to do what was best for their child's health, regardless of their abilities, knowledge or circumstances, and often shared examples of prioritising their child's health over their own health. Parents demonstrated pride when discussing their efforts for their child's wellbeing as well as talking about their aspirations for their child's future.

> *"I'm very proud, they've got very good education, like, you know, they speak really well ... I live for my kids and their education and health is my number one priority, I don't give a crap about anyone else's but these two are my driven force."*

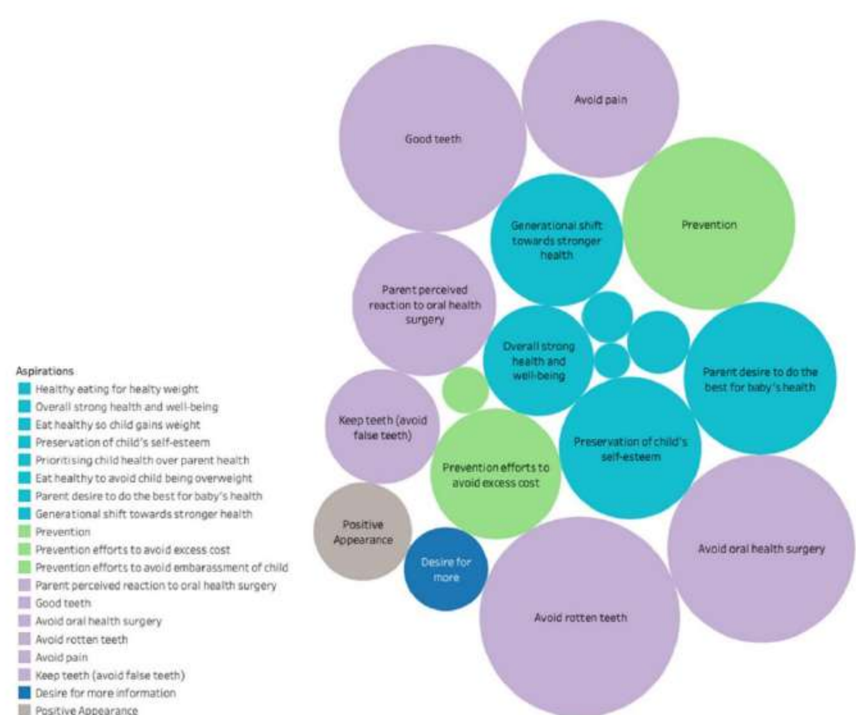

Figure 1. Parental aspirations contributing to intrinsic motivation. Note: The size of each bubble corresponds to the number of parents that discussed a given theme. Where more than one bubble has the same colour, the colour relates to general categories: purple with oral health, turquoise with general health, green with prevention, and grey with appearance.

Aspirations for their child's health included overall health and wellbeing, healthy eating for a healthy weight, generational shift towards stronger health and a preservation of child's self-esteem. Parents were willing to take the necessary steps to ensure that their children had as few health problems as possible and many parents considered oral health to be an essential part of the child's overall wellbeing: "*I want to be better for him because it's his health, his health is his teeth and you know, [what's] best for him, that's all I want.*" Aspirations for healthy eating habits, in relation to healthy child weight was mentioned by some parents both in terms of gaining weight for underweight children as well as preventing the child from being overweight later in life. Aspirations for wellbeing also related to family longevity and strength, some parents discussed this in terms of the destructive impacts colonisation has had on their family line, and they had a strong desire to rebuild and maintain family health: "*Yes, well I think Aboriginals have been dated to be one of the first people that would die quicker and everything but so many years earlier than different nationalities so that's a real battle . . . just to keep our race alive.*"

Where parents identified poor health or unhealthy habits in themselves or in relatives, parents were determined to initiate a generational shift towards stronger health for their children: "*My children are going to have a better life and upbringing than I did and that's the most important thing for me.*" This also held true for parents with significantly older children who had witnessed the consequences of certain choices manifest as health difficulties; these parents were ready to take the necessary steps to prevent this from happening with their younger children. For some, a generational shift was a way for them to ensure their children "*[don't] have to go through what I went through with my teeth.*" Many parents reflected on a lack of emphasis on oral health-related behaviours during their own childhood and highlighted a desire to prioritise oral health behaviours for their children: "*My Mum didn't*

encourage me enough when I was a child to brush my teeth, so I try to encourage the kids more than I got encouraged when I was a child."

Parents emphasised the relationship between good oral health and mental wellbeing, aspiring to preserve self-esteem for their children. This association was grounded in personal experiences: *"To be honest, I'd like to be able to smile properly without wanting to hide all the time."* Parents discussed the centrality of teeth to child confidence, self-image, and the ability to smile or laugh without embarrassment. Some parents also touched on the likelihood of teasing or bullying at school if their child had 'rotten teeth.' The desire to preserve self-esteem directly related to the very common aspiration of a positive physical appearance for children. Parents shared experiences of having difficulties securing employment or intimate relationships, which they partially or fully attributed to poor oral health. Parents did not want poor appearance, as related to oral health, to create preventable barriers for their children. Ultimately, oral health supported self-esteem and happiness for parents in this project and facilitated the best opportunities for children, which all parents inherently desired.

> *"[If my kids have no fillings, they'll] feel very pretty about themselves . . . pretty inside and outside and that's something that every girl needs to feel. They need to feel secure about themselves and everything and if there's a lot of Aboriginal girls out there with missing teeth, they don't like it . . . not one little bit they don't like it and not even the boys like it. Because we are very emotional people when it comes to our bodies and our hearts and our souls and everything you know, Aboriginals do care, in the end they do care, they might not show it but they do, yes."*

In terms of child oral health, parents wanted clean teeth for their children, and to avoid oral health surgery, unnecessary pain, rotten teeth, and false teeth. Parents in this project expressed a desire for strong, white, or beautiful teeth for their children. For many, oral health was synonymous with general health and wellbeing; therefore, parents rarely distinguished the desire for health and the desire for healthy teeth as separate aspirations: *"Because I want him to have the best start with his health as well. Because I know once you have a lack of good hygiene with your teeth, that leads to other things. So that's what I look ahead to when I think about him and his teeth."*

Parents equally discussed the desire for healthy teeth and the desire to avoid rotten teeth. Many parents learned about the impacts of poor oral health from personal experiences: *"I had a lot of trouble with my teeth and I don't want that for her."* Parents also observed the impact of tooth decay from other people's experiences: *"I don't want his teeth to rot, it's the last thing I want. I've seen it a lot and it's not nice . . . poor kids, feel sorry for the kids because it's got to be painful."* Avoiding pain for children was one of the drivers for parents who aspired to avoid tooth decay. The desire to 'keep teeth' and avoid false teeth was discussed frequently, especially considering the very young age of children. Parents wanted children to have teeth that lasted for a long time and wanted to avoid false teeth before children were the age of 20 or 30 years, but for many, false teeth seemed to be an inevitable end point. Parents identified oral health surgery as scary, traumatic, and dangerous, especially for young children. There was a lot of hesitancy and discomfort for children to go under anaesthesia and many parents discussed the desire to prevent tooth decay, to avoid "unnecessary" surgery through oral health promoting behaviours at home: *"If you took the time to give them the right healthy diet, and look after their teeth, and got them to brush, and everything else, and if you looked after your own teeth, they wouldn't [need surgery]."* In addition to the desire to avoid pain and other varying consequences associated with oral health surgery, many parents perceived negative child reactions to surgery as well as personal guilt or feelings of failure, which further fuelled the desire to avoid oral health surgery.

Parents highly valued prevention, identifying that the consequences of poor oral health, such as pain or surgery, are often *"not necessary,"* with many asserting that *"if [dental caries are] preventable, then I'll do whatever I can, you know, to prevent that."* Parents were motivated to take any necessary steps to strengthen prevention efforts for their children, including changing their own diets, modifying shopping habits, increasing personal oral

health behaviours, and prioritising regular dental appointments for themselves and their children. For many, prevention was discussed as necessary for child wellbeing: "*We don't want things that are preventable getting in the way of them doing whatever they want in their lives.*" Not only was prevention seen as critical for child oral health and general health, but parents also prioritised prevention in terms of avoiding excess health costs as well as avoiding embarrassment for their children as a result of poor oral health: "*The more I clean his teeth now the better they'll be in the future and less trips to the dentist. Less money spent.*"

The majority of parents discussed a strong desire for more information regarding tangible steps they could take to further strengthen oral health efforts at home. Some parents talked about the dentist as a source of information and oral health education, while others felt constricted by appointment times. Desire for more information also extended to nutrition knowledge, while information pamphlets were helpful to some, others wanted a more hands-on experience such as help with grocery shopping.

3.2. Worries

Similar to aspirations, worries for parents generally related to child wellbeing and oral health as well as parental guilt, and negative appearances (Figure 2). Worries related to child health include child eating practices, community health concerns, as well as sugar consumption. Some parents discussed stress related to inadequate consumption of fruits and vegetables for their children, which motivated them to try new recipes or ways of incorporating fresh produce without children noticing, such as blended into pasta sauce. The child's eating practices also related to concerns of high sugar consumption, and one mother discussed worries of high salt consumption. These worries motivated parents to change the accessibility of certain foods for children as a mechanism to limit exposure and prevent over-consumption.

> "*I don't really know what a lot of foods have in them as such. That's why I kind of worry about a lot, because I know a lot of the foods that he eats, he really shouldn't eat. Like, a lot of them I've cut down on. Like he hardly ever eats chocolate any more except for the chocolate milk... So I'm trying to keep as healthy as I can [with] beans, peas, corn and zucchinis and pumpkin, and he eats it all.*"

Concerns about widespread community health problems also contributed to parental worries for child wellbeing, especially regarding diabetes and obesity. Parents discussed high prevalence of diabetes in their families and communities: "*Diabetes is a big thing in communities. That's another worry to look out [for] . . . [There's] a high percent of kids being obese these days too.*" Awareness of the pervasiveness of chronic conditions motivated parents to make lifestyle changes for their children: "*Sugar runs very highly in my family, diabetes especially. I've cut down on bringing soft drinks in the house because [my partner] was really addicted to it and then [my child] got addicted to it as well. So now we don't have it as much as we used to.*"

In terms of child oral health, parents worried about poor oral health, community oral health concerns, fear of the dentist, and pregnant mothers were concerned about the impacts of their oral health on the baby in utero. Parents worried about the impacts of tooth decay and gum problems for their children, which often related to a lack of correct oral health knowledge and a fear of doing the wrong thing for their children's teeth. One parent also mentioned concern about the long wait time for her child's dental appointment. Interviews with pregnant mothers revealed a lot of misinformation around dental visits during pregnancy, and a lack of understanding around the impact of maternal oral health on baby health. Many mothers were willing to take the necessary steps to limit the impacts of their oral health on baby health once made aware of this connection. Worries about poor oral health motivated parents to prioritise prevention efforts and establish oral health practices for their children: "*I reckon [the dentist] would say that [his teeth are] pretty good actually. He doesn't eat lots of bad stuff, he mainly eats healthy stuff . . . I've always been paranoid about my kids, I don't want my baby to be put under [general anaesthetic] because of something that I've fed him.*"

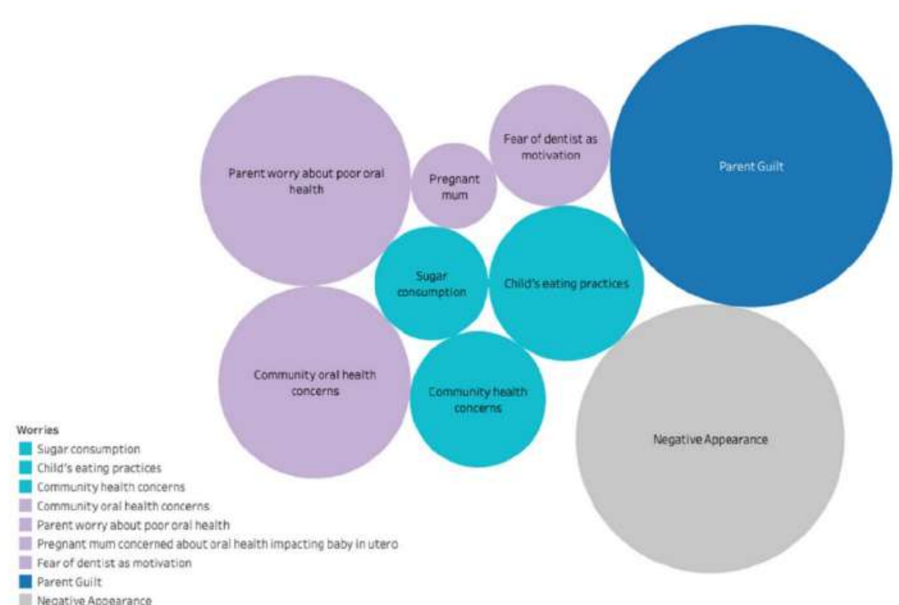

Figure 2. Parental worries contributing to intrinsic motivation. Note: The size of each bubble corresponds to the number of parents that discussed a given theme. Where more than one bubble has the same colour, the colour relates to general categories: purple with oral health, turquoise with general health, and grey with appearance.

When discussing oral health surgery and tooth decay, many parents described the immense guilt they would feel if their child required surgery: "*I'd feel so guilty if she [needed oral health surgery]. Especially if it was something that could have been prevented like, by just caring for them.*" Some parents worried their children might fear the dentist when they are older and therefore prioritised regular dental checks to establish a good relationship with the dentist: "*His dad doesn't want him to have teeth the way that he has them … which is very decayed right now because he's too scared to go to the dentist. He doesn't want [our son] to have that fear.*"

Community oral health concerns motivated parents in a similar way as general health concerns. Concerns related to the commonality of tooth decay and oral surgery in communities: "*You hardly never seen a black fellow smile mainly because they've got hardly no teeth in their heads or anything like that no more.*" Parents discussed limited attendance to dental appointments by relatives and neighbours: "*I mean most people I know and everything... I don't think they take their kids to the dentist.*" Community oral health concerns and parent observations motivated a prioritisation of adherence to dental appointments for parents and establishment of oral health practices for children at a young age:

> "*This is one thing that I worry about, that she's going to have bad teeth because I've got bad teeth that run[s] in my family … When we went for a hospital appointment [we were told] one of the leading diseases is gum disease, for Aboriginal people, so I get really funny because that's something that I was funny about growing up, was having bad teeth. So, yes, just to make sure that everything was okay, we decided we would take her [to the dentist] just to check that, yes, she's where she's supposed to be.*"

Negative appearance was the most frequently mentioned worry, with parents discussing the potential impact a negative physical appearance, as a result of poor oral health, would have on their children's future. Some parents were worried about cosmetic implications of oral health, such as overcrowding of teeth or visible fillings, while others were motivated by the deeper implications of a negative self-image or shame associated with physical appearance of teeth. Negative physical appearance also related to parent

embarrassment, many saw this as a visual indication of poor parenting: *"Yes, because I see other kids sometimes . . . and I just think it's horrible . . . it would be embarrassing for me if I let my child have teeth like that."* A few parents also discussed the ramifications of bad breath and confidence in talking to other people.

> *"I just think overall, like personal appearance, you know, when they get older . . . I think part of me is my teeth. And if you have rotten teeth, you're not really confident. You know what I mean? Like you don't want to smile. You got stinky breath. You don't want to breathe on people. You can't eat certain things because your tooth breaks and falls out or, you know, all sorts of reasons, especially oral health."*

4. Discussion

The aim of this paper was to explore factors motivating positive oral health and nutrition practices for parents of Indigenous children in South Australia. Findings suggest that aspirations and worries related to child oral health, child general wellbeing, child appearance, and community health trends underscored parental motivation. Within aspirations, parents desired a positive appearance for their children, to preserve child self-esteem and to keep their child's teeth. Parental worries related to child pain, negative appearance, sugar consumption, community oral health concerns and rotten teeth. The findings highlight the relationship between parental motivations and the social and emotional impacts of oral health on children wellbeing.

Dental fear and anxieties have been associated with poor oral health for some time [67]. For parents in this project, dental fear was a motivator in terms of early exposure to dental services for children, in attempt to increase comfort and avoid experiences of fear. The relationships between poor oral health, quality of life, and self-esteem are evident in the literature [68,69]. In Australia, psychological distress has previously been associated with poor self-rated oral health for Indigenous peoples [70]. Experiences of shame in relation to poor oral health have been explored among Indigenous families in Western Australia, where participants described covering their mouths when laughing, staying home, and avoiding the dentist [71]. The stories shared by parents in this study are unique in that they provide narrative to parental perception and awareness of the potential ramifications of poor oral health on child mental wellbeing, particularly confidence and self-esteem, which often stemmed from personal experiences. Due to the recognised link between oral health and mental health, researchers and organisations in Australia have begun exploring an integrated approach to oral health and mental health [72–74]. One social worker in Western Australia highlighted the visible difference she observes in her clients, *"When people do actually get oral health managed and seen the difference that it makes is phenomenal . . . People are smiling. They look at themselves in the mirror more and then they take more pride in themselves and then they think of their opportunities"* [72]. Our findings acknowledge how parental experiences frame the importance of oral health prevention in strengthening social and emotional wellbeing for children.

Parents in this project were motivated to prioritise preventive oral health behaviours for their children due to worries of poor oral health, embarrassment of children. These motivators stemmed from personal experiences of oral health or observations of family and community oral health, similar to previous research with different Indigenous communities in Australia [75,76]. Previous research on child tooth brushing has also reported potential consequences of poor oral health, as a result of previous parent experiences, as motivating for parents [77]. Parents in this study mentioned prevention in terms of avoiding future oral-health related costs. Indigenous parents in Queensland have previously expressed concerns for the future of their children's oral health due to personal experiences of inability to afford corrective treatment for oral health problems and tooth loss [75]. The importance of prevention to parents in this study contrasts previous reports of low prevention efforts among Indigenous peoples in Australia [49,78]. It is plausible that various barriers to accessing preventive services, such as cost, family responsibilities, waiting times, and distance [79,80], prevent parents from accessing oral health care despite the strong desire to

take preventive steps exemplified by parents in this study. Future research should explore mechanisms to increase availability and accessibility of prevention services for Indigenous families and communities that aligns with Indigenous Australian values and aspirations. The desire for a generational shift towards stronger health for parents in this study related to findings of the Canadian extension of this trial, wherein grandmothers and local health knowledge keepers in Manitoba helped facilitate a similar shift by utilising culturally based childrearing practices for child oral health. Some of the practices employed and explored included traditional medicines in oral health, feeding children traditional foods from a young age, and the role of swaddling in healthy deciduous teeth development [81]. The importance of culture and intergenerational relations to parents in this project, parallels the importance of including community knowledge and traditions in oral health programming [81–83].

Discussions around community health and oral health concerns highlight parental awareness of community health trends, which have been extensively documented in the literature [39,40]. This finding is unique in that community health was not a discussion topic for interviews and multiple parents framed their child's experience of oral health in the broader community context. Potentially, oral health programs and public health campaigns have contributed to increased parent awareness of community health. Observations of community trends motivated parents to establish oral health practices for their children. Children in this study were aged 3 years or younger and parents regularly discussed a desire to keep children's teeth and avoid tooth loss. This finding alludes to the commonality of tooth loss and is similar to concerns expressed by Indigenous parents in Queensland who identified tooth loss as a common experience [75]. Indigenous parents of young children in Western Australia have also conveyed concern for the state of children's oral health, *"You see a lot little kids who have rotten teeth"* [71]. Participants from a rural community in Queensland described community suffering due to oral disease as both frequent and ongoing [76]. Fatalistic mindset regarding tooth loss and normalcy of dental extraction in Indigenous populations has been noted both in Australia and New Zealand [75,84]. A linear relationship between the number of missing teeth and annual income exists in Australia, and globally [85–87]. Despite the range of communities involved in this project, there was a consensus of community health concerns across the entire state. However, in contrast to previous research, poor oral health was not described as inevitable by parents in this project, although it was a major concern, parents remained hopeful and motivated that establishing oral health practices could prevent poor outcomes for their children.

Strengths and Limitations

MI enabled the identification of intrinsic motivators for parents in this study and the clinical measure of dmft was significantly reduced for children in the intervention group in comparison to the delayed intervention group [60]. While MI is typically employed to fulfil behaviour change objectives, thematic analysis of interviews has provided a unique opportunity to identify parent motivations for establishing oral health and nutrition practices and added to the limited qualitative research on Indigenous oral health in Australia. Endeavours to improve oral health for Indigenous children need to be culturally appropriate, non-judgmental, and informative [83]. For this project, MI fulfilled those needs by respecting oral traditions of yarning and facilitating active parent engagement. The number of interviews and families, as well as the timing of interviews from 6 to 36 months of child age, make it unlikely that any significant motivators were missed. The importance of the relational style and behaviour of the interviewer is central to both MI as well as Indigenous research. The relationship between the interviewer and participants is critical for garnering honest and open conversations. Therefore, it is unlikely that interviews would be reproducible by researchers without cultural sensitivity and the desire or ability to develop trusting relationships with participants. The time and cost of intensive MI training and fidelity assessment is a limitation of this approach. Due to baseline recruitment during pregnancy, the majority of conversations included in this analysis are with mothers,

despite the notable importance of fathers, families, and communities in developing and maintaining child oral health.

5. Conclusions

Generally, aspirations and worries related to prevention, child health, child oral health, community health and child appearance for parents in this project. Findings highlight the relationship between parental motivation and the emotional and mental impacts of oral health on children. The influence of community health on parent understanding of child health in this project underscores the importance of community-level interventions in future programming. Oral health interventions typically focus on family, school, or clinical settings; co-designing programs held on Country that incorporate all community members, from young children to Elders, has the potential to not only strengthen community oral health knowledge but also oral health status. Oral health professionals, policy makers, and researchers are encouraged to utilise the motivators explored here to centre Indigenous voices and understandings of oral health in future work. Our recommendations from these findings include: (1) consideration of the whole self, including mental health, in future oral health programming and research; (2) implementation of community-wide oral health programming, beyond parent–child dyads; and (3) prioritisation of community knowledge and traditions in oral health programming.

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10

Results

Oral health promotion and programming provided by Aboriginal Community Controlled Health Organisations in South Australia

10.1 PREFACE

This study identified oral health promotion information and oral health programming, with a specific focus on dental caries prevention, provided by ACCHOs in South Australia. This is an important component to the thesis because it describes the work being done by ACCHOs, a previously unexplored topic in South Australia, and establishes a foundation for future advocacy in this area.

10.2 PUBLICATION DETAILS

Poirier B, Tang S, Haag D, Sethi S, Hedges J, Jamieson L. Oral health promotion and programming provided by Aboriginal Community Controlled Health Organisations in South Australia. Health Promotion Journal of Australia, 2022. doi: 10.1002/hpja.640.

10.3 HIGHLIGHTS

- ACCHOs shared information related to oral health and nutrition information on 31 occasions and facilitated twelve programs related to oral health between 2013 and 2021.
- Oral health programs primarily focused on dental care provision, while all the nutrition programs focused on healthy eating. Information shared in relation to oral health and nutrition included oral health promotion, service availability, and educational resources.
- Despite the limited oral health funding and training received by ACCHOs in South Australia, findings from this study illustrate the significant leadership and advocacy of ACCHOs in relation to oral health promotion for Community members.

10.4 STATEMENT OF AUTHORSHIP

Statement of Authorship

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Principal Author

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Contribution to the Paper	Conceptualisation of research question Data analysis Manuscript writing Editing and revisions Corresponding author for publication process		
Overall percentage (%)	75%		
Certification:	This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper.		
Signature		Date	14/07/2022

Co-Author Contributions

By signing the Statement of Authorship, each author certifies that:

i. the candidate's stated contribution to the publication is accurate (as detailed above);

ii. permission is granted for the candidate in include the publication in the thesis; and

iii. the sum of all co-author contributions is equal to 100% less the candidate's stated contribution.

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RESEARCH ARTICLE

Oral health promotion and programming provided by Aboriginal Community Controlled Health Organisations in South Australia

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Abstract

Background: Aboriginal Community Controlled Health Organisations (ACCHOs) play a critical role in supporting Aboriginal and Torres Strait Islander health in Australia. This article aims to identify and describe oral health programming and promotion provided by ACCHOs in South Australia.

Methods: All ACCHOs in South Australia were identified through the Aboriginal Health Council of South Australia. A targeted search strategy was designed to include the websites and social media pages (Facebook, Twitter, Instagram) for each organisation. Program characteristics were extracted and summarised, and oral health promotion content was analysed utilising content analysis.

Results: Twelve programs were identified across the 12 ACCHOs in South Australia. Of these, seven focused on oral health and five focused on nutrition. Oral health and nutrition information shared online by ACCHOs was extracted and aggregated into oral health and nutrition categories, which included reminders about visiting services, advocacy statements, oral hygiene messaging, appointment availability, education resources, and upcoming community-based activities.

Conclusions: The evidence explored highlights the integral role ACCHOs play in oral health promotion and service delivery. It is critically important that ACCHOs are involved in development and implementation of oral health services to ensure programming reflects community knowledges and is effective in improving oral health equity.

KEYWORDS
aboriginal community controlled, dental public health, health services, indigenous health promotion, oral health

1 | INTRODUCTION

The core purpose of Aboriginal Community Controlled Health Organisations (ACCHOs) is to minimise the disparity in health between Aboriginal and Torres Strait Islander peoples and non-Indigenous Australians[1]; a mandate supported by the Australian government.[2] The establishment of ACCHOs in the 1970s was in response to social movements, organised by Aboriginal and Torres Strait Islander

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communities against racist and exclusionary practices in healthcare that asserted community rights to self-determination and culturally secure healthcare provision.[3,4] At the time of writing, 144 ACCHOs operate in over 300 locations across Australia working to improve Aboriginal and Torres Strait Islander wellbeing across numerous areas of health and through a combination of fixed, outreach and mobile healthcare models.[4] Governance models of ACCHOs are community operated and grounded in accountability to community members.[5] ACCHOs provide a platform for activism, engagement and employment that align with local cultures and values.[6] The prioritisation of Aboriginal and Torres Strait Islander values within a Western and biomedical health sector, through ACCHOs, shifts power dynamics and centres Indigenous knowledges, perspectives, and understandings, ultimately providing more equitable access to health services.[7,8] ACCHOs remain one of the only publicly funded organisations that are governed by and accountable to Aboriginal and Torres Strait Islander communities in Australia.[9] The Aboriginal Community Controlled Health sector in Australia has been acknowledged as a best practice example for the implementation of Indigenous self-determination, a central aspect to the United Nations Declaration on the Rights of Indigenous Peoples.[3,8] Research in Australia posits that adaption of the community-controlled model is associated with improved health outcomes and wellbeing for Aboriginal and Torres Strait Islander peoples.[10] Oral health is essential to overall wellbeing[11] and as such, is an important piece of the ACCHO mission.

Regrettably, Aboriginal and Torres Strait Islander people experience poorer oral health than non-Indigenous people in Australia.[12] Aboriginal and Torres Strait Islander children experience significantly higher rates of early childhood caries than non-Indigenous children across all age groups,[13] whilst periodontal disease, untreated dental decay and tooth loss are higher among Aboriginal and Torres Strait Islander adults.[14] The improvement of Aboriginal and Torres Strait Islander oral health is a mandate of both the Australian and South Australian governments' respective oral health plans.[15,16] The 2019 to 2026 South Australian Oral Health Plan identifies Aboriginal and Torres Strait Islander communities as a priority population and asserts that culturally secure dental services, co-located with primary health systems, are needed to close the oral health gap.[16] ACCHOs are the key provider of culturally secure, acceptable, and safe health care for Aboriginal and Torres Strait Islander communities.

Provision and involvement in dental care access varies widely across ACCHOs in Australia. Facilitation of off-site dental services is the main role ACCHOs play in oral health (39%), followed by provision of on-site dental assessment or treatment (37.6%), a combination of on-site and off-site services (15.6%), and no access to dental care (7.8%).[17] Despite varying support for oral health, approximately half of all ACCHOs across Australia identified dental care as one of their top five health services gap in 2015.[12] While some national data exists for provision of oral health services through ACCHOs, there is limited information specific to the South Australian context. To assess the scope of oral health provision and programming, including the promotion of oral health and nutrition knowledge on social media, this study utilised content analysis of publicly available data to audit provision of oral health care by ACCHOs in South Australia. This research aimed to identify and describe programs and information shared about dental caries prevention, which included dental service provision and coordination, as well as oral hygiene and sugar-related education.

2 | METHODS

2.1 | Positionality

Researcher reflexivity and positionality are essential elements in qualitative methodologies due to the influence of research subjectivity on study design and interpretation of findings. This project was driven by limited foundational understandings regarding ACCHO involvement in oral health in South Australia. A desire to explore available data regarding ACCHO involvement in oral health was recognised with the aim of establishing an evidence base for future program development in partnership with ACCHOs. As members of the Indigenous Oral Health Unit at the University of Adelaide, the research team for this project comprised of both Indigenous and non-Indigenous researchers, all of whom have been involved in collaborations with ACCHOs across the state. All aspects of this project had oversight by a senior Indigenous researcher (JH).

2.2 | Study design

All South Australian ACCHOs were included in this audit. Services were included if they were identified by the Aboriginal Health Council of South Australia (AHCSA), the peak body for ACCHOs in South Australia, as members. After retrieving the list of ACCHOs from AHCSA, a search strategy was formulated that included the websites, *Facebook* pages, *Twitter* accounts, and *Instagram* accounts (where applicable) for each of the ACCHOs (S1). Due to the publicly available nature of the data collected in this audit, ethical approval was not obtained. Social media platforms were included in the search strategy because of the strong social media presence of the Indigenous health sector in Australia.[18] In addition, limited research suggests that Aboriginal and Torres Strait Islander use of social media is higher than non-Indigenous individuals[19,20]; this has partially been attributed to social media's ability to help develop and express Indigenous identity.[21-23]

2.3 | Search strategy

The search was conducted between December 2021 and January 2022 and aimed to capture all available information on programs that incorporate oral health components, including dental service provision. Initial searches returned limited results, so the search was expanded to include all oral health and nutrition information shared

on websites and social media pages, including *Facebook*, *Twitter* and *Instagram* that related to the prevention of dental caries, including nutrition information. Nutrition information and programming were included in the search due to the strong association between sugar consumption and dental caries.[24] All pages of websites were manually searched, including newsletters and annual reports. The search function on *Facebook* pages was used to search a pre-defined list of key terms; all posts identified through by this approach were extracted, regardless of when the post was made (S1). In addition, all *Facebook*, *Instagram* and *Twitter* posts made in the past 18 months were manually searched for any information shared about oral health or nutrition.

2.4 | Data extraction

Data obtained through the systematic search were extracted into a piloted extraction framework in Microsoft Excel.[25] Data were classified into one of four overarching categories: (1) oral health programming; (2) oral health information shared online; (3) nutrition programming or; (4) nutrition information shared online. All posts, regardless of classification had the following information extracted: date of post, link to post, exact content of post, and corresponding program name (where applicable). For both oral health programming and nutrition programming the following characteristics were recorded: delivery model (in person, internet, phone, other), mode of delivery (individual, group, other), delivery setting (outpatient clinic, in-home, dental clinic, school, government department, community setting, other), and person delivering the program (dental therapists, Aboriginal Health Workers, social workers, nurses, teachers, other).

2.5 | Data analysis and synthesis

Program data and information shared on social media pages were analysed separately. Content of each of the posts extracted from social media pages was qualitatively analysed utilising content analysis[26,27] to determine patterns among the key oral health promotion information being shared by ACCHOs. Excerpts from ACCHO websites and social media pages were decontextualised from the other data collected and imported into NVivo Software (QSR International Pty Ltd. Version 12.6.1, Melbourne, Australia). This analysis followed methodologies of manifest content analysis or surface structure, where researchers describe what is actually said, staying close to the text, rather than inferring meaning from text.[28,29] Utilising deductive reasoning, the research team sought to determine what topics of the pre-determined subjects of oral health and nutrition were commonly shared across the various ACCHO websites and social media pages. These common topics were then categorised into sub-headings[30] and brought together during the compilation phase, where final conclusions were drawn.[26] Oral health and nutrition program data from all sources were collated, and tabulations of program features were calculated in Microsoft Excel.

3 | RESULTS

3.1 | Search results

In total, 31 websites and social media pages representing 12 ACCHOs, across 11 regions in South Australia (Port Augusta, Anangu Pitjantjatjara Yankunytjatjara [APY] Lands, Adelaide, Whyalla, Yalata, Coober Pedy, Murray Bridge, Port Lincoln, Whyalla, Ceduna, Mount Gambier) were searched. From the 31 online sources searched, 51 unique pieces of publicly available information related to oral health programming, oral health information shared online, nutrition programming or nutrition information shared online were extracted.

3.2 | Program characteristics

A total of 12 programs were identified through searching information on the 31 sites from the 12 ACCHOs in South Australia; seven (58%) programs focused on oral health and five (42%) focused on nutrition. No programs relevant to our research question were found by searching publicly available information in the Ceduna or Mount Gambier regions. Of the identified oral health-related programs, five provided dental treatment, one provided oral hygiene tools, while one offered dental advice through the phone. Dental treatment was delivered to individuals by a dental therapist, while the oral hygiene and dental advice programs were facilitated by Aboriginal Health Workers (Table 1). All identified nutrition programs provided advice on healthy eating. Four of these programs were delivered by a nutritionist, while one was delivered by organisation staff. Only one of the five nutrition programs provided individual services, while the other four were delivered in a group setting (Table 2). Of all the identified programs, 10 (83%) did not specify a target group, one (8%) was aimed at females and one (8%) at youth. Two (17%) programs were also open to non-Indigenous immediate family members of Aboriginal and Torres Strait Islander clients. The majority of identified programs (92%) were delivered in person, with only one program utilising phone services.

3.3 | Oral health and nutrition information shared online

Oral health information shared by ACCHOs across their various websites related to seven common categories: oral health advocacy, oral hygiene promotion, oral health promotion activities, dental appointment promotion, visiting dental services, availability of dental services in-house and dental training opportunities (Figure 1). Two posts were reshared from other organisations, including the Australian Dental Association (ADA) South Australia branch and the Australian Government Department of Health, one post referenced the ADA, and one referenced the South Australian Health Department. Three posts were accompanied by visual representations.

TABLE 1 Oral health programs delivered by Aboriginal Community Controlled Health Organisations in South Australia

Region (program/s)	Target population	Delivery model	Delivery setting	Delivered by	Mode of delivery
Port Augusta (1)	Women	In person	Community	Aboriginal Health Workers	Individual
APY lands (1)	All	In person	Dental clinic	Dental therapists	Individual
Adelaide (1)	All[a]	In person	Dental clinic	Dental therapists	Individual
Whyalla (1)	All	Mixed	Health clinic	Aboriginal Health workers	Individual
Yalata (2)	All	In person	Community	Dental therapists	Individual
	Youth	In person	Schools	Dental therapists	Individual
Coober Pedy (1)	All[a]	In person	Dental clinic	Dental therapist s	Individual

[a]Programs also extend to non-Indigenous immediate family members of Aboriginal and Torres Strait Islander clients.

TABLE 2 Nutrition programs delivered by Aboriginal Community Controlled Health Organisations in South Australia

Region (program/s)	Target population	Delivery model	Delivery setting	Delivered by	Mode of delivery
Murray Bridge (1)	All	In person	Community	Nutritionists	Group
Port Lincoln (2)	All	In person	Community	Nutritionists	Group
	All	In person	Community	Nutritionists	Group
Whyalla (2)	All	In person	Health clinic	Nutritionists	Individual
	All	In person	Community	Organisation staff	Group

Two posts were related to oral health advocacy, one shared the desire of staff to have an in-house dentist available to community, while the other described the oral health gap in Australia, '*Oral health among young Aboriginal adults and children is significantly worse than the general population in Australia. Closing the health gap between Indigenous and non-Indigenous Australians – for too long – has been a nationally debated topic with real progress hard to identify, according to the Nganampa Health Council.*' Four posts promoted oral hygiene, stressing the importance of brushing teeth and using floss to maintain oral health longevity; one post underscored the impact preventive oral hygiene behaviours can have for oral health, '*It should not be a normal expectation that at some stage of your life, teeth will need to be removed because of tooth decay or gum disease. Australians should expect to keep their teeth for their lifetime and practising these four simple routines can help people to reach this goal.*' Five posts related to oral health promotion activities being hosted by the organisation, including school-based initiatives, outreach programs, and dental health promotion days. Six posts promoted dental appointments, sharing information about dental schemes and encouraging community members with prompts such as, '*When was your last dental check-up?*' Eight posts were focused on reminding community members of in-house dental services available at the corresponding ACCHO, and three posts highlighted upcoming visits by dental services to the community. Finally, two posts shared government-funded dental assistant traineeship opportunities specifically designed for Aboriginal and Torres Strait Islander individuals between 17 and 30 years of age.

Nutrition information shared by ACCHOs across their various websites related to six common categories: nutrition education resources, nutrition advocacy, breastfeeding promotion, nutrition education activities, visiting dietitian services and balanced diet promotion (Figure 1). Two posts were reshared from other organisations, including the World Health Organisation (WHO) and Healthy Eating New Zealand, one post referenced the WHO and one referenced the ADA. Nine posts were accompanied by photos or videos.

FIGURE 1 Conceptual model of oral health promotion information shared by Aboriginal Community Controlled Health Organisations in South Australia

Six posts shared nutrition education resources, which included recipes, cooking videos made by services, and three posts shared information related to accessing 'That Sugar Film', an Australian documentary. Two posts related to nutrition advocacy, one shared the efforts of a community member to gain attention for healthy tucker being made by locals, and the other reported changes to the availability of sugary drinks at the local store, '*One Mai Wiru store no longer stocks large sizes of sugary drinks and another no longer stocks large bottles of sugary fruit juice. All stores displayed a greater amount of unsweetened drinks (water and diet drinks) than sugary drinks.*' Two posts promoted the benefits of breastfeeding for both child and maternal health. Six posts related to nutrition education activities, including cooking, weight management, nutrition label reading, and healthy eating workshops: '*The second event will be Eating Healthy on a Budget with Kelly Taylor, Dietician. Participants will get the opportunity to be involved in cooking budget healthy meals, with costing provided, and sampling the foods afterwards.*' Four posts shared information about upcoming visiting dietitian services. Finally, four posts promoted a balanced diet, highlighting the importance of fruit, vegetable, and water consumption, as well as reduced sugar intake.

4 | DISCUSSION

In South Australia, where 2.5% of the population identifies as Aboriginal and/or Torres Strait Islander,[31] ACCHOs shared information related to oral health and nutrition information on 31 occasions and facilitated 12 programs related to oral health between 2013 and 2021. Oral health programs primarily focused on dental care provision, while all the nutrition programs focused on healthy eating. Generally, ACCHO programs were open to all community members. Information shared in relation to oral health and nutrition included oral health promotion, service availability, and educational resources. Despite the limited oral health funding and training received by ACCHOs in South Australia, findings from this study illustrate the significant leadership and advocacy of ACCHOs in relation to oral health promotion for community members. The majority of data included in this study was published online during the Covid-19 pandemic, which demonstrates the strength and adaptability of ACCHOs to meet the needs of their community in accessible and agile ways.

The 2019-2026 South Australian Oral Health Plan identifies Aboriginal and Torres Strait Islander individuals as a priority population for whom targeted action is required to adequately address unique access barriers and disproportionate burdens of oral disease. This plan also recognises that, 'culturally appropriate, acceptable and safe dental services, integrated and co-located with primary health systems are required to close the oral health gap'.[16] These priorities are echoed by the National Australian Oral Health Plan 2015-2024.[15] The findings presented here suggest that there remain limited targeted oral health programs developed in partnership and co-located with ACCHOs, with many of the programs being organisation-driven, with uncertain sustainability. While 12 programs were identified through this research, there remains a lack of comprehensive coverage for the Aboriginal and Torres Strait Islander priority population and insufficient geographic spread across South Australia. Due to the unique positionality of ACCHOs and Aboriginal Health Workers in providing comprehensive care for Aboriginal and Torres Strait Islander communities,[10,32] there is an opportunity to further explore the provision of preventive services and dental care in partnership with ACCHOs.

The South Australian Oral Health Plan recognises the potential role of Aboriginal Health Workers in oral health care provision, as the plan calls for legislative change that is required to enable non-dental practitioners, such as Aboriginal Health Workers, to apply fluoride varnish. Similar initiatives have successfully been implemented in New South Wales, where research has demonstrated that Aboriginal dental assistants can effectively and safely apply fluoride varnish to children.[33] Similar approaches in the Northern Territory,[34] Western Australia[35] and Tasmania[36] have also used paraprofessionals, including Aboriginal Health Workers, for fluoride varnish application programs. The success of the fluoride varnish program in New South Wales has resulted in a call to scale up the initiative to a state-wide program.[37] No comparable programs are currently underway in South Australia, but the existing evidence-base suggests that a similar approach is not only feasible but could be quite successful in minimising the experience of dental caries, particularly for children.[38] Previous research programs in South Australia have demonstrated the effectiveness of fluoride varnish in reducing early childhood caries among Aboriginal and Torres Strait Islander children.[39] The use of fluoride varnish programs is a major component of the National Oral Health Plan due to the possibility these programs hold for increasing accessibility of fluoride to children who might otherwise not have regular access to fluoride toothpaste, fluoridated water, or dental care.[15] This is just one example of the ways in which ACCHOs and the Aboriginal health services workforce in South Australia could be trained to support the oral health of Aboriginal and Torres Strait Islander individuals across the state. Working together with ACCHOs, Aboriginal Health Workers, and community members will help ensure that the needed targeted action identified by the South Australian Oral Health Plan adequately meets community needs.

The evidence base established by this work provides a platform for informed future directions. The development of a structured and regulated oral health education and awareness program for ACCHOs and Aboriginal Health Workers in South Australia would enable ongoing discussions about community oral health needs and an opportunity for training to address those needs. State-wide training opportunities would ensure uniformity across services and equip health workers with the confidence to start a conversation about oral health with clients, inquire about dental needs, and facilitate dental referrals.[40] Funding for an Aboriginal and Torres Strait Islander Oral Health Coordinator to oversee the delivery of training programs and oral health promotion across South Australia would provide necessary Aboriginal and Torres Strait Islander leadership in this space. Finally, the development of pictorial oral health and nutrition information specific to Aboriginal and Torres Strait Islander communities and the

provision of electronic formats of these infographics would enable ACCHOs to share oral health promotion on a more regular basis.[41–43]

4.1 | Strengths and Limitations

This study investigated oral health and nutrition programs available for Aboriginal and Torres Strait Islander communities in South Australia. The search strategy, including social media pages, provides foundational evidence and recognises the efforts of ACCHOs in delivering oral health and nutrition programming. Due to the limited program information available, the research team also included oral health promotion information shared by ACCHOs; and through the utilisation of content analysis, we were able to further understand areas currently targeted by ACCHOs in South Australia. This study is limited by its use of publicly available information; it is plausible that oral health programs not included in this audit are offered by ACCHOs in South Australia but not promoted or described via online platforms. In addition, program details were scarce and therefore, further analysis regarding program design, effectiveness, usage, funding sources and economic evaluation was not possible. The main limitation of this study is that ACCHOs were not involved in this project and therefore were unable to offer their perspectives, which would have enhanced the findings and strengthened the conclusions drawn herein. The evidence generated by this audit will inform future research conducted in partnership with ACCHOs that aims to comprehensively evaluate current oral health programming and ensures that future programming meets community oral health needs.

5 | CONCLUSION

Community controlled health services play an integral role in Aboriginal and Torres Strait Islander health and wellbeing, which includes oral health. This research indicates that ACCHOs provide oral health promotion, oral health services, and facilitate access to dental services across South Australia. Both state and national oral health plans call for targeted oral health care for Aboriginal and Torres Strait Islander communities.[15,16] As such, it is critically important that ACCHOs are involved in the development and implementation of oral health services that address all oral health-related risk factors in a culturally secure manner that meets community needs and reflects community priorities. Critically, the success of oral health programming is directly related to the degree that they consider and address Aboriginal and Torres Strait Islander determinants of health. To effectively work to decrease the experience of dental caries among Aboriginal and Torres Strait Islander individuals in South Australia, oral health programming must be shaped by community knowledge, attitudes, and beliefs.

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CONFLICT OF INTEREST

None to declare.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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11

Results

"I feel like the worst mother in the world": Neoliberal subjectivity in Indigenous Australian oral health

11.1 PREFACE

This study investigated the ways in which internalised neoliberal ideologies influence the experience of oral health for Aboriginal and Torres Strait Islander Peoples in South Australia. This is an important component to the thesis as it explored factors beyond individual control that constrain one's ability to make optimum health choices.

11.2 PUBLICATION DETAILS

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11.3 HIGHLIGHTS

- This is one of the first studies to explicitly link neoliberal ideologies with Indigenous oral health experiences in Australia, indeed, the world.
- The conceptual model includes five overarching experiences: ownership, guilt, failure, embarrassment, shame, and judgment, and three factors that participants discussed as exacerbating their experiences: institutional racism, bullying, and financial limitations.
- Considering oral health within the political economy and current health discourse enables a shift in perspective and accountability for poor oral health from individuals to macro-level determinants of health, while simultaneously minimising opportunities to employ a deficit approach.
- The impacts of 'failing' socially accepted responsibilities for health can create deeper and more complex barriers to accessing care which is often already inaccessible for many Indigenous Communities.

11.4 STATEMENT OF AUTHORSHIP

Statement of Authorship

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Principal Author

Name of Principal Author (Candidate)	Brianna Poirier		
Contribution to the Paper	Conceptualisation of research question Data analysis Manuscript writing Editing and revisions Corresponding author for publication process		
Overall percentage (%)	75%		
Certification:	This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper.		
Signature		Date	14/07/2022

Co-Author Contributions

By signing the Statement of Authorship, each author certifies that:

i. the candidate's stated contribution to the publication is accurate (as detailed above);

ii. permission is granted for the candidate in include the publication in the thesis; and

iii. the sum of all co-author contributions is equal to 100% less the candidate's stated contribution.

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"I feel like the worst mother in the world": Neoliberal subjectivity in Indigenous Australian oral health

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ABSTRACT

Neoliberalism gained popularity during the post-Cold War period as a set of dominating ideologies, practices and policies that underpinned the movement towards globalisation. Neoliberalism champions competitive private markets, deregulation that facilitates economic activity, personal responsibility, and reduced public expenditure on infrastructure. A decade after the initial rise of neoliberalism, health inequities became concerns on the global stage. Oral health inequities aptly reflect social injustices due to the unique relation between material circumstances, access to health services and structural inequities. In Australia, Indigenous children experience early childhood caries at alarmingly higher rates than non-Indigenous children. Recently, neoliberalism has been suggested as an overwhelming contributor to Indigenous oral health disparities. This qualitative research is an extension of a single-blind parallel-arm randomised control trial that aimed to identify factors related to the increased occurrence of dental caries in Indigenous children. The objective of this constructivist grounded theory study was to generate an understanding of how neoliberal subjectivity exists for Indigenous peoples in the context of oral health in Australia. Experiences of ownership, guilt, failure, embarrassment, shame, and judgment were key in participants' experiences of neoliberal subjectivity; these feelings were exacerbated by experiences of bullying, financial limitations, and institutional racism. We argue that individual responsibility for health, as a tenet of neoliberal ideologies, furthers Indigenous oral health inequities and that neoliberalism as a societal discourse perpetuates colonial values by benefitting the privileged and further oppressing the disadvantaged.

Trial registration: Australian New Zealand Clinical Trial Registry ACTRN12611000111976; registered February 01, 2011.

1. Introduction

Health equity scholarship has persistently called for increased consideration of political economies, contending that failing to acknowledge the relationship between political economies and biological measures of health, risks naturalising social conditions that directly shape health outcomes (Leatherman & Hoke, 2016; Sweet, 2018). Considerations of health inequities that fail to acknowledge the influence of power, historical context, and political economic processes, have ethical implications that, in the current neoliberal climate, permit victim blaming at the individual level when these systemic influences manifest as poor health (Leatherman & Hoke, 2016). Epidemiologists and sociologists have reiterated these notions, highlighting the need to integrate political economies into explanatory models to minimise risks of naturalisation (Coburn, 2000; Navarro et al., 2003; Navarro & Shi, 2001). This sentiment has been echoed by the World Health Organisation who has called upon the international community to eliminate the "toxic combination of poor social policies and programmes, unfair economic arrangements, and bad politics" that manifest as health inequities across the world (Health, 2008). More specifically, some researchers have highlighted the influence of neoliberalism in shaping population health (Coburn, 2004; Navarro, 2007).

Neoliberalism is an economic and philosophical set of dominating ideologies, practices and policies that underpinned the movement towards globalisation. Influenced by economists Friedman and Hayek, this model is the predominant political orientation of many countries

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(Freeman, 2018). Neoliberalism promotes personal responsibility, competitive private markets, reduced public expenditure, and deregulation that supports the free market, benefitting those with power and economic strength (Huber & Niedzwiecki, 2018; Peacock et al., 2014). Neoliberalism differs from prior iterations of capitalism because of its endorsement of personal responsibility in which individual wellbeing is a consequence of personal choice (Houghton, 2019). Since the 1980s, neoliberalism in Australia has been embraced by both major political parties. The Labor governments of Hawke and Keating from 1983 to 1996 introduced programs of reform that prioritised economic liberalisation and involved reduced trade protections, privatisation of government corporations, and deregulation of markets (Van Gramberg, 2005). A mandatory superannuation program was introduced in 1993 to minimise reliance on the government for old age pensions, and university funding was deregulated which created competition and encouraged universities to generate more income by recruiting international students (Marginson, 2000). While advocates of neoliberalism cite widespread economic triumph, this pyrrhic victory has disproportionately benefited middle and upper classes, and substantially increased economic and health inequities across the world (Benatar et al., 2018; Gill & Bakker, 2011). A clear impact of neoliberalism on population health is through the modification of policies that structure social resources, such as the privatisation of healthcare and the associated transfer of costs and responsibility from governments to individuals (Labonté & Stuckler, 2016). However, there is increasing evidence to support the breadth of neoliberal influences on health, which are largely related to the overlooked power neoliberalism holds as a cultural doctrine (di Leonardo, 2008a; Gledhill, 2005). Dardot and Lavel suggest that neoliberalism should foremost be understood as a way of life and a new subjectivity that forms the basis of human existence (Dardot & Laval, 2014).

The global experience of oral health for Indigenous peoples is well documented; almost without exception, Indigenous peoples experience alarmingly disproportionate rates of oral diseases (Nath et al., 2021). These patterns of disease have rightfully been attributed to the impact of strategic and intentional government policies of assimilation and colonisation on Indigenous wellbeing (Dudgeon et al., 2010; Durie, 2004). In Australia, Aboriginal and Torres Strait Islander peoples (subsequently, respectfully referred to as Indigenous) represent 3.3.% of the population ("Australia's Health 2018," 2018). Prior to the 1980s, Indigenous children in Australia experienced better oral health than non-Indigenous children; presently, Indigenous children experience up to five times more untreated dental caries than their non-Indigenous counterparts ("Aboriginal and Torres Strait Islander health performance framework 2012: detailed analyses," 2013; "Australia's children," 2020). Dental care for Australian adults is primarily supplied by the private sector, however some individuals have access to publicly funded dental services, determined by means-testing. A large proportion of Indigenous adults are eligible for public dental services, however the long waiting times, required co-payments, and limited range of services presents barriers to access (Jamieson, Hedges, et al., 2020). These factors in combination with experiences of racism at the dentist, complexities of arranging dental appointments, distance from services, and dental fears create a myriad of challenges for Indigenous peoples in Australia. Generally, health care for Indigenous peoples in Australia is managed and provided through government-funded Aboriginal Community Controlled Health Services (ACCHS) and while approximately one third of ACCHS provide dental services, very few services in South Australia offer dental care ("AMA Report Card on Indigenous Oral Health," 2019). Reporting of Indigenous oral health in Australia, and indeed globally, has historically employed a deficit approach, which furthers current blame discourse and highlights the direct impact of neoliberal ideologies on academic research and government reporting (Durey et al., 2016, 2017).

Emerging literature indicates neoliberalism may further impact health at the individual level through the ideological process of internalisation (Peacock et al., 2013, 2014; Sweet, 2018). The pervasive effects of neoliberalism have become incorporated into the common-sense way of how people understand the world around them, demonstrating how this political orientation has embedded itself into the everyday of people, and the organisation we operate within (Clarke et al., 2007; Harvey, 2007; Mirowski, 2013). The "neoliberalisation of consciousness" has been explained as the process where individual world views have increasingly become permeated by neoliberal principles (Di Leonardo, 2008b). Mirowski has termed the small, yet constant interactions with neoliberal policies and beliefs 'everyday neoliberalism' (Mirowski, 2013). The concepts of 'everyday neoliberalism' and the 'neoliberalisation of consciousness' demonstrate the subjective experience of neoliberalism at the individual level, which contributes to the development of individual identities and works to propel individuals into becoming neoliberal subjects (Houghton, 2019). Despite active engagement in their lives, individuals are restricted by discourses in what can be thought, said, and done (Staunæs, 2003); meaning, while individuals exercise choice in personal conduct, that choice is shaped by cultural narratives (Houghton, 2019). Important to this is the internalisation of neoliberal principles that idealise personal responsibility for health and promote self-blame for those with poor health. The construction of neoliberal subjects brings together neoliberal policy and ideology through governance and culture. Not only does neoliberalism create inequities and disadvantage, it encourages moral judgments of others' misfortunate and the internalisation of judgments upon oneself (Sweet, 2018).

Oral health reflects social injustices resulting from neoliberalism because of oral health's relationship between material circumstances, access to health services and structural inequities that contribute to disease development over one's life (Peres et al., 2019). Notably, individualistic and competitive neoliberal ideologies directly conflict with collective and holistic Indigenous values (Jamieson, Hedges, et al., 2020). Indigenous peoples in Australia have identified the conflicts between values of competition and selfishness with relational values of sharing and inclusion; noting the contrast between what is considered 'rich' among white people versus Indigenous peoples (Burbank, 2006; Habibis et al., 2020; A.; Moreton-Robinson, 2017). Despite these contrasts, due to the pervasive nature of neoliberal ideologies and the models of dental care in Australia, neoliberal policies continue to contribute to oral health disease burden among Indigenous communities (Jamieson et al., 2020b, 2021b). Jamieson and colleagues recently identified five ways in which neoliberalism contributes to oral health inequities experienced by Indigenous peoples, including the privatisation of health, increased wealth disparities, emphasis on personal responsibility, dominance of transnational corporations, and influences on systemic racism (Jamieson, Hedges, et al., 2020). Exploring the experience of Indigenous peoples and neoliberal subjectivity within the context of oral health provides an opportunity to consider factors beyond individual control that constrain one's ability to make optimum health choices. This goes beyond the traditionally accepted drivers of Indigenous oral health inequities such as oral hygiene behaviours, sugar consumption, and fluoride exposure. Therefore, this study aimed to understand how aspects of internalised neoliberal ideological principles, explored through the experience of neoliberal subjectivity, influence Indigenous peoples' experience of oral health in South Australia.

2. Methods

2.1. Methods

The present data derives from a randomised controlled trial in South Australia that aimed to reduce oral health inequities among Indigenous children, where Motivational Interviewing (MI) was one of four interventions (Merrick et al., 2012). MI is a psychotherapy intervention that encourages the identification, exploration, and resolution of participant ambivalence to behaviour change (Miller & Rollnick, 2009). The protocol (Merrick et al., 2012), cohort profile (Jamieson, Hedges, et al., 2021), primary quantitative outcomes (Jamieson et al., 2018), and

thematic findings (Poirier et al., 2021) have been published. Ethics approval for this project was received from the University of Adelaide Human Research Ethics Committee (H-057-2010) and the Aboriginal Health Council of South Australia (04-09-362). All participants provided informed written consent. Recruitment for the larger study occurred during pregnancy and therefore, the majority of interviews occurred with mothers. Each participant was interviewed up to three times, from the time of recruitment and until the child was 36 months old. Interviews were conducted in accordance with frameworks that were piloted by the research team prior to data collection (A1). Each MI followed broad directives, which included dental care during pregnancy, the importance of non-cariogenic drinks and foods for children, the importance of fluoride, and children's first dental appointments. While the focus of the project was preventing early childhood caries among children, participants used these interviews as an opportunity to reflect on personal experiences, which provided data concerning both parental role in childhood oral health as well as personal oral health for the present analyses. Interviews varied in length from 45 to 70 min and were audio recorded and transcribed verbatim.

This analysis employed a constructivist grounded theory approach (CGT) to generate a concept of neoliberal subjectivity in the context of Indigenous oral health (Charmaz, 2000). CGT has been suggested as similar in principle to traditional grounded theory, operating within a constructivist paradigm, rejecting ideas of emergence and objectivity of analysis, and instead acknowledging the influence of researcher subjectivity on findings. Accordingly, it is critical to recognise the positionality of those involved in the research process and acknowledge the influence of their experiences on data interpretation and reporting. As white female researchers, the primary author (BFP) and project lead (LMJ) have directly and indirectly benefitted from processes of neoliberalism throughout their lives and will never completely understand the Indigenous experience of neoliberalism. Therefore, the importance of ensuring relational understanding and meaning throughout interviews was central for the development of a theoretical model of neoliberal subjectivity. Hence, a senior Indigenous researcher (JH) conducted all interviews included in this analysis and assisted in interpreting meaning and generating understandings of data. The primary researcher (JH) spent four years conducting fieldwork across South Australia for this trial, and the primary author (BFP) spent significant time familiarising herself with the data as well as working with the same communities that participated in this project. During the familiarisation stage, discussions between the research team about the commonality of notions of failure and shame among participants created the desire to further investigate and explore the impact of personal responsibility, as related to neoliberal ideologies, on participant experiences of oral health. While analysing the data, the primary author (BFP) was continually reflecting on how her codes were being influenced by her life experience. Data analysis occurred over the course of a year, during which time the primary author and senior Indigenous researcher were conducting field work together and were able to discuss the data on a regular basis. NVivo software (QSR International Pty Ltd. Version 12.6.1) was used for organising data and a constant comparative approach was followed throughout the stages of initial coding, focused coding, and theoretical coding procedures (Charmaz, 2000). Initial coding was done line-by-line, staying close to the data, and maintaining participant wording in code generation wherever possible. Debriefing was conducted by disseminating initial findings to the wider research team to enhance credibility and consistency of findings with regard to research context and participants (Lincoln & Guba, 1985). The initial themes generated only related to personal feelings shared by participants but the story felt incomplete to the research team and therefore, data was re-visited to explore what (if any) factors participants indicated impacted these personal feelings. Similarly, while personal responsibility influenced the lens through which data were analysed, the concept of neoliberal subjectivity was only explored upon identifying the internalisation of these neoliberal expectations among participants. Memos, notes, and stories from data collection and the primary stages of analysis informed the final conceptual model (Charmaz, 2000). Authors aimed to emphasise the relationship between feelings within the neoliberal subject as well as factors external to the subject that impacted these feelings; the final model resulted from discussions of individual pathways of action between components identified during analysis, combined with re-visiting of complete stories shared by participants.

2.2. *Sample*

This study utilised convenience sampling of the 448 mothers pregnant with an Indigenous child recruited during baseline. In accordance with CGT, purposive sampling of participants was employed until data saturation was reached (Aldiabat & Le Navenec, 2018); 266 interviews from 177 participants were included in this analysis, from the larger cohort of 585 interviews from 448 participants. Participant characteristics of age, employment and residential location were diverse (Table 1). Self-rated oral health measures, collected during baseline, are reported here to provide context for how participants rated their own oral health at the time of interview (self-rated oral health), as a proxy for dental service utilisation (self-identified need for dental work), and as a measure for impact of oral health on participants' lives in the past year (negative impact of oral health on your life in the past 12 months). Just under half of the participants rated their oral health as good (45.2%), many participants indicated a current need for dental work (85.2%), and oral health had impacted the majority of participants' lives in the past year (81.42%) (Table 1).

3. Results

The conceptual model derived from interviews with 177 carers of Indigenous children from communities across South Australia encompasses the relationship between both internalised feelings expressed by participants as well as the impact of external factors related to these feelings, in relation to neoliberal ideologies. There are two components to this model (1) the embodiment of neoliberal subjectivity and, (2)

Table 1
Participant characteristics.

	OVERALL SAMPLE (N = 177) N (%)
MATERNAL AGE AT THE TIME OF FIRST INTERVIEW	
14-24	59 (33.3%)
25-34	92 (52.0%)
35-44	21 (11.9%)
45+	5 (2.8%)
CHILDREN IN CARE	
1-3	113 (68.1%)
3-6	46 (27.7%)
7+	7 (4.2%)
EMPLOYMENT	
FULL TIME	17 (10.2%)
PART TIME	38 (22.9%)
UNEMPLOYED	111 (66.9%)
RESIDENTIAL LOCATION	
METROPOLITAN	79 (44.6%)
NON-METROPOLITAN	98 (55.4%)
SELF-RATED ORAL HEALTH	
GOOD	80 (45.2%)
POOR	97 (54.8%)
SELF-IDENTIFIED NEED FOR DENTAL WORK	
YES	152 (85.9%)
NO	25 (14.1%)
HAS ORAL HEALTH NEGATIVELY IMPACTED[a] YOUR LIFE IN THE PAST 12 MONTHS?	
YES	144 (81.4%)
NO	33 (18.6%)

[a] Where "negatively impacted" relates to pain, satisfaction with appearance or ability to eat.

factors that exacerbate the experience of the neoliberal subject. The first component includes feelings and experiences of ownership, guilt, failure, embarrassment, shame, and judgment in the context of Indigenous oral health, which largely relate to the neoliberal ideology of personal responsibility for health. The second component includes experiences of bullying, institutional racism, and financial limitations external to the neoliberal subject, which relate to the neoliberal tenets of personal responsibility, reduced public expenditure on infrastructure, and competitive and private markets, respectively (Fig. 1). Sentiments of ownership were most prominent among participants (N=89), followed by judgment (N=69), guilt (N=68), financial limitations (N=54), institutional racism (N=31), shame (N=31), bullying or teasing (N=22), embarrassment (N=18), and failure (N=6).

3.1. Embodiment of neoliberal subjectivity

Many parents expressed personal responsibility for their children's oral health as a sense of ***ownership***. Maintaining oral health was discussed as an expectation for anyone in a parenting role, in the wider context of ensuring child wellbeing, *"It's our role as parents to look out for our little ones. It's our duty more or less, hey. If we don't do that, then how are we going to expect them to succeed in life (P115)."* Parents expressed the desire to try and 'do right' by their children in spite of the multiple barriers to establishing and maintaining oral health experienced by participants, as exemplified by one parent working to cut out fruit juice for her child: *"We're still in the process of doing it and trying to stick by it ... it does get a bit hard to but mainly sort of doing the right thing for her (P61)."* Ownership directly related to being a 'good' parent for many.

> "I'd be confident in going [to the dentist] because that's my baby girl and you know, just to have her have nice teeth, get used to the way the world works and all that you know, it'd be good. [My kids] can look back at me and go oh yes, well Mum used to take me to my dentist ... took me to doctors and if I had to go somewhere she took me... It'll make me feel happy because, you know, like everybody might do a couple of things wrong in their lives and at least my kids can back me up in the future, I don't care what you say but my mum's the best mum (P75)."

Deviation from perceived oral health standards in children caused immense ***guilt*** for parents and related to personal 'irresponsibility', especially when children experienced pain: *"I guess because it looks different, I would feel bad if he had [rotten teeth] in his mouth (P89)."* Parents described feeling like a bad parent for unknowingly enabling high risk behaviours, such as sugar consumption: *"I wish I had read labels properly, I just didn't know... That's terrible because I've just pumped all that sugar into his mouth (P129)."* Many parents shared their difficulties navigating food and sugar marketing, coupled with limited nutrition understanding. Guilt was also discussed in terms of interactions with oral health professionals, where parents described carrying the blame that dental professionals put forth during appointments. Some parents thought that dentists made comments just to make them feel bad, *"It's funny how dentists don't go into a little bit more detail [about oral health] to make you realise... they say it just to make you feel bad, you know? (P59)"* Guilt also acted as a motivator to change household habits, such as children's diets, and prioritise prevention efforts.

> "I feel worried enough about something we have no control over, so if we had to [have surgery] for something just because I hadn't bothered... Just gone, oh, whatever. Drink whatever, eat whatever you want, I'd feel really guilty (P35)."

Failure also related to an inability to fulfill personal responsibilities and was discussed in terms of dental surgery, dental visits, and children's futures. Largely, parents believed that tooth decay and dental surgery were preventable, and for that reason when discussions circulated to the possibility of children having to undergo surgery, some parents identified that surgery would be a measure of parental failure, *"For me, if that was my child [having surgery], I'd feel like a failure, you know, like I didn't do enough to protect them from what they were putting in their mouth (P44)."* One parent reflected on her experiences with an older child who had previously gone under general anaesthetic for dental surgery, this reflection fails to acknowledge the numerous challenges to maintaining

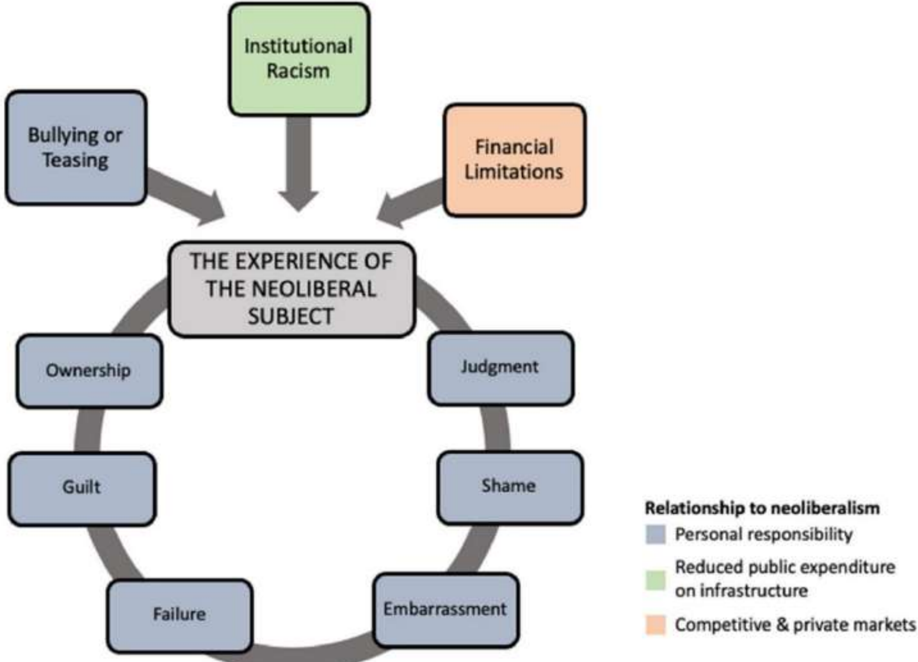

Fig. 1. Conceptual model of neoliberal subjectivity in the context of Indigenous oral health.

child oral health and demonstrates the internalisation of oral health expectations.

> "It's terrible. Yes, I feel bad already… I feel like I've failed… you know, [his rotten teeth are] maybe [because of] my lack of encouraging him. I'm the reason why he's got the teeth that he has, because I'm the one that feeds him, I'm the one that does everything. I'm in control of what he suffers from. So now that he's got really bad teeth, it's my fault. I failed (P97)."

While some parents felt they had successfully bypassed the need for surgery, they worried the habits their children had inherited, such as drinking chocolate milk or iced coffee in their baby bottles, would have ramifications later in their lives, which parents understood as failures in terms of oral health. Other parents feared notions of failure that could result from dental visits, which added another layer to the challenges associated with attending dental appointments. Despite these fears, parents continued to do their best in meeting their children's dental needs.

> "If I'm to go to the dentist and they tell me that [my child has] to get their teeth taken out because I let them have cordial in the bottle I'd feel like the worst mother in the world. I'd feel like I'd failed so I dread it like I'm not scared of the dentist and… I take the kids up and it's alright. But quietly I'm sitting there thinking oh my God please don't tell me I've ruined my kids teeth (P95)."

Embarrassment related to personal responsibility for health and was discussed both in terms of parental embarrassment as well as potential child embarrassment in the future. In discussing possibilities of dental surgery for children with poor oral health, many parents discussed the embarrassment they would feel if the procedure was needed for their child, *"It's embarrassing. You know walking around with a kid, smiling, with teeth [rotten] like that. It's like neglecting your kid (P27)."* Parents also discussed embarrassment in terms of publicly enabling poor oral health behaviours for children, such as sugar consumption.

> "I've seen people walk down the street and have... The kids have got Coke or, you know, strawberry milk in their bottles. I've never ever done that… I'll never do it. I'd be too embarrassed if I was walking down to [the grocery store] with him, and if he had orange cordial in his bottle... I'd be embarrassed because you know, it looks wrong really… It's not good, rots their teeth and it's not healthy (P111)."

Parents discussed the potential embarrassment their children may experience in the future, many of these comments were grounded in personal experiences. Parents did not want embarrassment to hinder their children's ability to talk, smile, or eat freely and without hesitation. Embarrassment was exclusively discussed in terms of school or social environments and assumed that other people would not consider the complex context surrounding maintenance of oral health.

> "My teeth were corroded there for a little bit, and I guess I don't want the same for [my kids], because I was a little bit embarrassed to smile, and things like that. I don't want that for my girls. I want them to feel confident, you know, all the way throughout their life… I don't want them to feel embarrassed, not to smile. And teeth are important… [to] socialising and things like that too. I don't want them to be picked on at school, you know what, you've got yucky teeth, things like that. So, I do think ten steps ahead, you know, especially for them (P86)."

Embarrassment prevented some parents from attending dental appointments for themselves: *"I'm embarrassed to go to the dentist though... That's why I don't want to go because my teeth are so bad (P89)."* However, many participants were willing to overcome feelings of embarrassment for their children. Another parent shared an experience where she received information from her dentist about the importance of baby teeth as a precursor to strong adult teeth; this Mum felt particularly embarrassed because the dentist knew that all her children had had oral health complications. This story exemplifies the limited transference of knowledge between health services and Indigenous families and the multifaceted challenges parents navigate in establishing and maintaining oral health for their children.

Shame was mentioned as a barrier to creating relationships with others, particularly during school years, due to low confidence or self-esteem, *"I know how hard it was for me during school… I didn't interact with anyone because I was so self-conscious about my teeth, and I actually missed out on meeting a lot of really good people (P118)."* Shame impacted parent's willingness to smile for photos and caused anxiety around job applications, *"My boyfriend, his teeth are rotten and he's ashamed… He's thinking you know, what about when I get a job, no one is going to want to hire me with my teeth like this. He doesn't want to smile. It sort of depresses him a bit you know, at the same time (P102)."* Parents also discussed shame of teeth in terms of dental appointments, including transportation needs, poor oral health, and limited knowledge; the internalisation of personal responsibility and societal expectations of oral health was evident during these discussions. Many parents wouldn't go to the dentist themselves or knew someone else who avoided the dentist because they felt shame, which created a further barrier to navigating a complex dental care system for many.

> "Yes a lot of Nunga mums are really ashamed and that's probably why they don't take their kids to appointments in the first place because it's just that cycle of being ashamed all the time. Not knowing how to talk to professionals and doctors and stuff like that, not having that confidence (P19)."

Parents not only held expectations of oral health responsibilities for themselves but also for those around them, as demonstrated by the various ***judgmental*** comments parents made about other parents. Judgment exhibited by parents was often a result of comparison or competition, *"I'm better than half of the Mums that I'm friends with because they just don't care about their children's teeth (P118)."* Judgment was also based on what parents believed others should know or should do in their role as a parent, based on either personal or societal standards, *"[As a parent] that is your role, to be on the ball with that sort of stuff… when I see little kids [with rotten teeth] it breaks my heart because it's just the things you have to do when you're a parent. You have to do it. That's what it's all about (P64)."* Parents used various words to describe others' parenting behaviours, including terms like 'lazy,' 'unfit,' and 'useless.' *"I think it's lazy when people just allow their kids to thrive on soft drinks every day. Every day. You see like two-year olds, three-year olds drinking like 1-L bottles of Coke (P38)."* Many parents identified that although they had differing parenting beliefs than others, they rarely translated comments made during interviews to other parents.

> "One of their cousins had all his teeth out at the hospital… The parents are stupid. Within hours they're back, he's drinking Coke… Like he just went to have all their teeth ripped out and you're rewarding him with Coke… but I don't say anything to them… it's not my place to say (P87)."

Some parents justified their judgments or comments by identifying that it is 'not that hard' to be a good parent or to 'do the right thing' in terms of children's oral health, *"I think [dental surgery] is bad, because… If your parents looked after them and give them the right thing, they won't have to have it done. It's not hard (P40)."* These comments did not account for the complexities of oral health and nutritional knowledge, navigating services, and other barriers that impact oral health outcomes. Many parents who passed judgment on others used phrases such as, 'no offence' and 'not to judge.' *"I'm one of those people, like I'm not a judgmental person, I'm not a judgmental mum but I'll sit there and go oh my God that poor baby getting his teeth ripped out because he had chocolate milk in his bottle (P95)."*

3.2. Factors that exacerbate the experience of the neoliberal subject

Experiences outside of the neoliberal subject that exacerbated feelings of ownership, guilt, failure, embarrassment, shame, and judgment included bullying, financial limitations, and institutional racism. Parents wanted to prevent their children from being ***bullied*** due to poor oral health because of the impact bullying has on confidence and feelings of shame, embarrassment, or depression for some.

> "[I don't want her to] go through the experience I went through, because it was not pleasant. I was very upset and depressed and never liked going to school… it was all that harassment I got throughout my school years that's like, well, what's the point of being at school? What's the point of getting a good education and getting a good job if you're going to get picked on, kind of thing? So it's something I don't want her to go through (P107)."

Bullying related to externally imposed assumptions of individuals failing to meet oral health expectations. Many parents had either been bullied themselves or had witnessed others be teased because of their teeth, *"I've actually been teased that my front top teeth have always been like, see they're, not really straight… [When] I'm in the group, walking around with that wobbly, disgusting, not disgusting, then they're just like wobbly teeth… that I feel conscious about (P13)."* These personal experiences provided motivation for parents to continually pursue the best options for their children's oral health; good oral health meant limited bullying, increased confidence and a head start in life for children for parents.

Financial limitations, as a result of competitive and private markets, directly and indirectly exacerbated experiences of shame, guilt, and failure. Parents discussed having to make difficult decisions between buying food and buying oral health supplies, such as toothbrushes, toothpaste, and floss. Despite wanting what is best for their children, these items were inaccessible for some due to cost, *"You go to some Nunga kids' homes and sometimes there'll be one toothbrush between ten kids (P152)."* Parental worry about the uncertainty of costs associated with dental appointments, particularly with specialists such as orthodontists, caused apprehension or avoidance for some.

> "I guess the dollar signs slam me and just I feel like if I go there they're going to be like no you're going to have to do this, this and this … I guess it is that. It's the cost. Like I mean I know government, going to the government and like the dentists, like the school dentist is good. But when you've got bigger issues… that's too scary for me... I think that's sort of why I've backed off with my daughter at the moment with her teeth (P129)."

For some parents, when dental services were utilised the cheapest option was the only option to alleviate pain, which often was to pull teeth out, *"[I've] rip[ped] a lot of teeth out, just because of the cost. I lost a lot of teeth like that (P4)."* Some parents identified dental surgery at the hospital as the preferred option over preventive treatments for their children because it was free, despite the ramifications of dental surgery. Parents expressed great relief for government subsidies that enabled their children to attend dental appointments, although navigating these systems and accessing funding options for both their children and themselves posed challenges. Limited finances impacted participant's ability to complete dental treatments, sometimes forcing individuals to find alternative solutions.

> "My Mum didn't have the money to do my teeth … My dad paid for half with my braces, my Mum was supposed to pay the other half out of her pension, and she didn't, so I was too shamed to go back to the dentist and they just rotted on my teeth. I cut them off myself, my braces (P11)."

Institutional racism impacted parents' willingness or ability to make and attend dental appointments in a variety of ways. Dental staff, such as receptionists and nurses, were the forefront of many parent interactions at the dentist and most discussions related to institutional racism reflected experiences of implicit bias or unhelpful assumptions from the dental team. While ACCHS provides culturally secure health services for many communities in South Australia, dental care is still provided by mainstream services that often fail to meet the needs of Indigenous communities. For parents this project, institutional racism related to reduced public expenditure on social services and infrastructure. In accessing services for prevention, one Mum was questioned by the receptionist about why she was coming in if there was no problem or emergency, *"I just want to be treated as a person… all people should have a choice, and opportunity to thrive (P157)."* Some parents were not confident that they would be treated well by dental staff due to previous experiences, which caused avoidance of booking and attending appointments. For some parents, an experience of racism in a non-dental healthcare setting, such as having child protective services called at the doctor's office, created an expectation of similar behaviour from all healthcare providers. Parents shared experiences where their feelings or worries were downplayed by oral health professionals, diminishing the importance of these concerns and the ability of parents to confidently ascertain their needs.

> "I asked [the dentist] the other day if I could put my baby in [for an appointment] and he spoke to me like it didn't really matter that he had teeth and that I was concerned about some of his teeth… I didn't think he needed to be so casual because it is important… he's not understanding that a lot of Aboriginal children have tooth decay and have poor tooth, or gum, mouth hygiene (P90)."

Parents also highlighted difference between their needs and service provisions of mainstream health services, as articulated by one Mum, *"Our bodies aren't meant to live the whitefellas way (P173)."* Misalignment of expectations between parents and oral health professionals created disappointment and tension, particularly when parents were making strong efforts for their children's oral health: *"I really don't like [that dental office] they are really quite rude… I just feel like they're trying to work against me, not with me (P123)."* Parents expressed frustration at their reliance on government structures to provide care for their children.

> "We're behind the eight ball and we can't invest [in our child's health], we rely on government to invest in our children's health… It's like there's a routine in society and we're not a part of society, so how can we be a part of that routine? Buy a house, get married, have bank accounts for each child… dental care, the whole lot. We haven't got it. We're not born into it… Society has put us into a position where we can't basically go above [societal structures] (P157)."

4. Discussion

Through the utilisation of CGT, a conceptual model was developed in relation to the experience of neoliberal subjectivity within the context of Indigenous oral health in Australia. This model includes five overarching experiences expressed by participants in discussing their oral health: ownership, guilt, failure, embarrassment, shame, and judgment. Specific themes within these categories relate to physical appearance, accessing oral health services, and desires or worries for children's oral health in future. This model also includes three factors that participants discussed as exacerbating their experiences: institutional racism, bullying, and financial limitations. Components of the conceptual model relate to neoliberal ideologies of personal responsibility, reduced public expenditure on infrastructure, and competitive and private markets. The findings presented here are similar to qualitative works regarding the constraints of structural factors on Indigenous peoples' oral health choices in Western Australia (Durey et al., 2016, 2017). However, this work is one of the first to explicitly link neoliberal ideologies with Indigenous oral health experiences in Australia. Unlike traditional analyses of barriers and facilitators to oral health, this work considers oral

health within the political economy and current health discourse, particularly with regard to personal responsibility for health. The consideration of sociopolitical discourse in the context of Indigenous oral health enables a shift in perspective and accountability for poor oral health from individuals to macro-level determinants of health, while simultaneously minimising opportunities to employ a deficit approach (Durey et al., 2017). As seen in our results, the impacts of 'failing' socially accepted responsibilities for health can create deeper and more complex barriers to accessing care which is often already inaccessible for many Indigenous communities.

4.1. *Neoliberal subjectivity & Indigenous collectivist values*

The embodiment of neoliberal ideologies for participants in this study was a result of externally imposed values that directly contradicted their cultural ways of thinking, doing, and being. Participants discussed the components of the neoliberal subjectivity model almost entirely within contexts outside of the home, such as health services, places of employment, and educational institutions. The neoliberal emphasis on the individual directly contradicts Indigenous collective and holistic values of participation, sharing, and ownership which create strong social cohesion but limit 'success' in neoliberal environments (Jamieson, Hedges, et al., 2020). In discussions of neoliberalism, Indigenous peoples from Tasmania have highlighted the stark contrast between white values of competition and selfishness with the relational orientation central to Indigenous culture and values of sharing, tolerance, and inclusion; noting that while white people may be rich in wealth, Indigenous peoples are rich in connections (Burbank, 2006; Habibis et al., 2020; A.; Moreton-Robinson, 2017). In the same study, participants reflected on the threat white people and neoliberal discourse pose to life itself, noting that the capacity for harmonious co-existence inherent to Indigenous spirituality and connection with country has been lost (Habibis et al., 2020). The judgment of others exhibited by participants in our study demonstrates that neoliberal ideologies are already endangering collective Indigenous ideologies that promote social cohesion; judging others further divides communities and risks normalising isolation and individualism. By encouraging division and debate among a collective society, neoliberal discourse distracts and limits that society's ability to contradict social norms. Chomsky has understood the threat this poses for some time, "The smart way to keep people passive and obedient is to strictly limit the spectrum of acceptable opinion, but allow very lively debate within that spectrum—even encourage the more critical and dissident views. That gives people the sense that there's free thinking going on, while all the time the presuppositions of the system are being reinforced by the limits put on the range of the debate" (Chomsky et al., 1998).

Factors that exacerbated the experience as a neoliberal subject for participants in this project included bullying, institutional racism, and financial limitations; all of which largely relate to differences in power and wealth between Indigenous and non-Indigenous people. Neoliberalism and its pervasive impact on all human lives operates within increasingly coercive and damaging power frameworks (Benatar et al., 2018). Unfortunately, experiences of power imbalances are not a new phenomenon for many Indigenous communities, who have histories wrought with imposed assimilation policies and acts of oppression. Present day oral health inequities are a result of unequal distribution of power and wealth between Indigenous and non-Indigenous communities (Jamieson, Gibson, & Thomson, 2020). Neoliberalism exceeds unjust power differences and incentivises power over others, while actively seeking to marginalise epistemologies outside of the hegemonic neoliberal discourse (Benatar et al., 2018). Rightly so, tackling power indifferences has been identified as a necessary priority for public health (Hastings, 2012), and this sentiment has been echoed by Jamieson and colleagues in the context of global Indigenous oral health (Jamieson, Gibson, & Thomson, 2020). The historic use of inequitable practices and negative stereotypes of Indigenous peoples in Australia have justified acts of injustice and avoided challenging dominant discourse (Aileen Moreton-Robinson, 2005; Proudfoot & Habibis, 2013). Colonisation and assimilation have restricted the sense of control over one's life for many Indigenous peoples; the promotion of individualism and neoliberal ideology blames individuals for their circumstances, largely ignoring the immense influence of these historical and political circumstances on Indigenous health and wellbeing (Jamieson, Hedges, et al., 2020; Peacock et al., 2014). While not a direct finding from this work, sentiments of historic trauma were alluded to in some of the discussions of institutional racism. Both historic trauma and institutional racism directly relate to non-Indigenous power over Indigenous peoples, and current neoliberal practises enable the continuation of these oppressive circumstances. Failing to recognise and challenge discriminatory practices against Indigenous families and communities sustains the power relations that maintain Indigenous oral health inequities (Johnstone & Kanitsaki, 2009).

4.2. *Moving beyond the paradox of 'personal responsibility'*

Neoliberal policies have impaired the lives of a large majority of Indigenous peoples to an increasingly intolerable extent (Rowden, 2009). Berlin anticipated the dangers of neoliberalism, "Complete liberty is not compatible with complete equality – if men were wholly free, the wolves would be free to eat the sheep" (Berlin, 2014). The assumption of neoliberalism that Indigenous oral health is due to personal failures is contradicted by the findings of this paper, which suggest that the experience of the neoliberal subject exacerbates oral health concerns for Indigenous peoples in Australia. The neoliberal development model persists as the 'norm' in public policy both in terms of progress measures and as a pre-requisite for future success (Benatar et al., 2018). Indigenous acknowledgement and critique of neoliberal tenets challenges expectations of the neoliberal state and generates needed discussion of the vast costs associated with championed 'benefits' of neoliberalism (Howard-Wagner et al., 2018). Incorporation of voices from other marginalised communities, with similar experiences of power differences and oppressive circumstances, would further contribute to the development of an understanding of the many pathways through which neoliberalism maintains oral health inequities. Neoliberal ideologies require buy-in of individualism to thrive. Without autonomous, isolated, and competitive individuals, markets would no longer be seen as the solution to societal problems and the demand for social welfare safety nets would increase (Rasooly et al., 2020; Sweet, 2018).

Suggestion on how to change the neoliberal model and societal discourse include the development of an ethical political ideology and framework which respects human rights, values social justice, and promotes social democracy; there remains significant work to be done on this front (Benatar et al., 2018). Participants from the study in Tasmania identified a vision where the ills of white values and neoliberal discourse were rebalanced by incorporating Indigenous values of support and connection to country (Habibis et al., 2020). As academics, researchers, policy makers, and actors in the maintenance of neoliberal ideologies, changes can be made to push society into an equitable and just future. All considerations of social inequities, particularly in relation to Indigenous health, must not only take into account the inherent relation between the neoliberal political economy and health outcomes, but also explicitly explore the pathways of neoliberal influence on the reported health inequity. We must move beyond the inevitability of current neoliberal and deficit discourses and develop a more nuanced understanding of the real world implications of neoliberalism on health inequities (Jamieson et al., 2020b, 2021b; Sweet, 2018). Privileging Indigenous understandings and critiques of neoliberalism and its impacts on well-being is the first step in challenging the acceptability of the complex social context Indigenous peoples navigate their health (Durey et al., 2017). Considering Indigenous experiences as neoliberal subjects provides a unique perspective, from the periphery of dominant culture, and helps shift the perspective and perceptions of individuals and systems completely embedded in neoliberalism's hegemony (Kowal, 2015).

4.3. Strengths & limitations

This paper adds to the limited qualitative research explicitly linking neoliberalism with oral health outcomes. The findings provide insights into the internalisation of neoliberal ideologies and the impact of these experiences on Indigenous oral health in South Australia. Health systems and services have historically excluded Indigenous voices despite their direct relationship with Indigenous health outcomes, highlighting Indigenous experiences in this paper provides the opportunity to critique neoliberalism from the periphery of hegemonic discourse. A strength of this paper is its Indigenous leadership in conducting MI, a conversational methodology that respects Indigenous traditions of yarning and works to decrease power dynamics between researchers and participants. While MI was effective in generating conversations and improving oral health knowledge among participants in this study, it is a resource intensive method that requires trusting, reciprocal relationships to be effective. A limitation of this paper is that participant characteristics and the majority of interviews represent maternal experiences, rather than the entire family, due to recruitment occurring during pregnancy. Future projects should prioritise paternal participation and engage the whole family, in line with Indigenous collectivist values. Additionally, neoliberalism or personal responsibility was not the focus of the interviews conducted in this study, more conclusive evidence could be garnered by explicitly discussing these topics with Indigenous families. Finally, other marginalised communities should be considered in future works to determine how internalisation of neoliberalism varies across disadvantaged communities with similar experiences of poor health to provide the most comprehensive recommendations for oral health practitioners, policymakers, and services.

5. Conclusion

The embodiment of neoliberalism, expressed as ownership, guilt, judgment, failure, shame, and embarrassment, highlights influences on Indigenous oral health beyond biomedical understandings of oral disease. Exploring neoliberal subjectivity at the individual level provides an opportunity to move beyond deficit discourses focused on personal responsibility and stresses the need to consider structural impacts on Indigenous oral health inequities. The pathway to oral health equity must involve prioritising strategies that re-structure dominant neoliberal ideologies so that Indigenous peoples are no longer forced into resiliency by neoliberal systems that amplify poor oral health patterns. We recommend that specific funding be allocated to ACCHS in South Australia to enable the provision of dental care and decrease Indigenous reliance on mainstream services that pose additional challenges to the establishment and maintenance of oral health. Indigenous leadership must be prioritised in this process to ensure funding meets the needs of services. Additionally, we urge all health researchers, particularly those exploring experiences of disadvantaged health, to consider the influence of socio-political influences as standard practice. Any research failing to consider factors such as neoliberal ideologies will only tell half of the story, without a more comprehensive understanding of circumstances, health inequities will persist. Government, policy makers, health services, and researchers must continually examine their role in maintaining Indigenous oral health inequities and work in partnership with Indigenous communities to address the shortcomings of the neoliberal model, identify ways to challenge existing norms, and demand action that prioritises health equity.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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12

Results

The impact of neoliberal generative mechanisms on Indigenous health: a critical realist scoping review

12.1 PREFACE

This study mapped generative mechanisms which articulate the impacts of neoliberalism on Indigenous health globally. This is an important component to the thesis as it is one of the first pieces to develop a conceptual understanding of the ways in which neoliberalism broadly influences Indigenous health and wellbeing.

12.2 PUBLICATION DETAILS

Poirier B, Sethi S, Haag D, Hedges J, Jamieson L. The impact of neoliberal generative mechanisms on Indigenous health: a critical realist scoping review. BMC Globalisation & Health 2022. doi: 10.1186/s12992-022-00852-2.

12.3 HIGHLIGHTS

- Sixteen generative mechanisms and four generative mechanisms of resistance were synthesised from 100 pieces of evidence and mapped against four core pillars of neoliberalism: competitive and private markets, reduced public expenditure, personal autonomy, and deregulation that facilitates economic activity.
- The evidence synthesised in this review further substantiates the argument that neoliberalism perpetuates colonial ideologies that continue to oppress and marginalise Indigenous Peoples.
- The multiple levels across which generative mechanisms exist contributes evidence to the notion that neoliberalism embeds colonial values at individual, Community, state, national, and international contexts.

12.4 STATEMENT OF AUTHORSHIP

Statement of Authorship

Title of Paper	The impact of neoliberal generative mechanisms on Indigenous health: a critical realist scoping review
Publication Status	[X] Published [ ] Accepted for Publication [ ] Submitted for Publication [ ] Unpublished and Unsubmitted work written in manuscript style
Publication Details	Poirier B, Sethi S, Haag D, Hedges J, Jamieson L. The impact of neoliberal generative mechanisms on Indigenous health: a critical realist scoping review. BMC Globalisation & Health 2022. doi: 10.1186/s12992-022-00852-2.

Principal Author

Name of Principal Author (Candidate)	Brianna Poirier
Contribution to the Paper	Conceptualisation of research question Data analysis Manuscript writing Editing and revisions Corresponding author for publication process
Overall percentage (%)	75%
Certification:	This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper.
Signature	Date: 14/07/2022

Co-Author Contributions

By signing the Statement of Authorship, each author certifies that:

i. the candidate's stated contribution to the publication is accurate (as detailed above);

ii. permission is granted for the candidate in include the publication in the thesis; and

iii. the sum of all co-author contributions is equal to 100% less the candidate's stated contribution.

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Globalization and Health

REVIEW

Open Access

The impact of neoliberal generative mechanisms on Indigenous health: a critical realist scoping review

Brianna Poirier*, Sneha Sethi, Dandara Haag, Joanne Hedges and Lisa Jamieson

Abstract

The pervasive nature and colonial foundations of neoliberalism has significant ramifications for Indigenous health, globally. Not only does neoliberalism undermine Indigenous collectivist values by emphasising personal autonomy, but the exploitation of natural resources has unique implications for Indigenous wellbeing. Therefore, this scoping review aims to synthesise evidence that articulates the impacts of neoliberalism on global Indigenous health inequities. Two reviewers searched PubMed, Embase, Scopus, Web of Science, and ProQuest Central to identify records eligible for inclusion. The search was not restricted by geographic location or language. Using principles of qualitative meta-aggregation, generative mechanism summaries and illustrations were extracted from each of the included articles, synthesised into broader categories, then considered in the context of neoliberal ideologies. The systematic search identified 9952 unique records, of which 38 fully satisfied the inclusion criteria. Findings represented 23 Indigenous communities across 12 countries and considered the impacts of neoliberalism across 16 health outcomes. Eighty-eight generative mechanisms of neoliberalism and 12 generative mechanisms of resistance were extracted from the included articles and mapped against four core principles of neoliberalism: competitive and private markets, reduced public expenditure on infrastructure, personal autonomy, and deregulation that facilitates economic activity. Overwhelmingly, neoliberalism has manifest impacts, through various pathways, on poor health outcomes and experiences for Indigenous communities included in this review. Importantly, Indigenous communities continue to resist the impacts of neoliberalism through advocacy, reclamation of traditional practices, and opposition to industrial development. Consideration and investigation of neoliberal structures and ideologies must become common practice in health equity scholarship. Actors within neoliberal societies must resist dominant epistemological, ontological, and praxiological stances that reinforce the supremacy of colonial values and subalternation of Indigenous ways of knowing, being, and doing to begin effectively addressing Indigenous health inequities.

Keywords: Neoliberalism, Indigenous health, Health equity, Globalisation, Indigenous peoples, Critical realism

Introduction

The wealth of linguistic, cultural, and knowledge diversity of the 400 million Indigenous peoples globally represents an invaluable resource for human development (1). The United Nations considers Indigenous peoples as those with historical continuity and pre-colonial societies whom consider themselves distinct from societies now residing on their ancestral lands; this definition also emphasises that presently, Indigenous communities form non-dominant sectors of society yet remain determined to preserve ancestral territories and transmit knowledges to future generations (1). While various international and national policies and frameworks assert the need for Indigenous health equity, these inequities persist

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and, in some cases, have worsened (2). Indigenous people remain on the periphery of dominant cultures and societies, bearing an inordinate burden of disease, poverty, and mortality compared to non-Indigenous populations (3, 4). The social determinants of health framework (5) in combination with the recognition of the implications of colonisation and assimilation policies have enriched understandings of the complexities of Indigenous health inequities (6). This perspective includes structural and sociopolitical factors that contribute to the intersecting axes of oppression, including racism, environmental dispossession, poverty, as well as social and political exclusion that determine the health of Indigenous peoples (7–9). The pervasive and damaging impacts of neoliberal policies and ideologies have been recognised as having impacted the lives of a large majority of Indigenous peoples to an increasingly intolerable extent (10).

Neoliberalism gained traction as a set of dominating ideologies, practices, and policies during the Cold War period and consequently underpinned the globalisation movement. Championed by economists Friedman and Hayek, and politicians Reagan and Thatcher, neoliberalism prevails today as the dominant global political orientation (11, 12). The core principles of neoliberalism include personal autonomy, competitive private markets, reduced public expenditure on infrastructure, health and social services, and deregulation that supports the free market and economic activity (13, 14). Despite the widespread claim of economic and social triumph among advocates of neoliberalism, this 'victory' has come at a great cost to societies, particularly for those experiencing various forms of social disadvantage (15). Neoliberalism's ubiquitous impact on human lives operates within increasingly coercive and detrimental power frameworks (15). Regrettably, circumstances of power imbalances are a common experience for Indigenous communities globally, who have shared histories of imposed policies of assimilation, dispossession, and oppression (6, 8). Experiences of historic trauma and institutional racism exemplify non-Indigenous power over Indigenous peoples, and present-day ideologies of neoliberalism facilitate the continuation of oppressive circumstances and the maintenance of health inequities between Indigenous and non-Indigenous populations (16).

The reporting of health inequities between Indigenous and non-Indigenous peoples has mirrored the neoliberal ideology of personal autonomy for some time, furthering deficit discourses (17) that attempt to justify the significant health disparities experienced by many Indigenous communities. This insufficient understanding of Indigenous health arguably causes more harm to Indigenous peoples and limits opportunities and resources for substantial improvements in health outcomes (15, 18, 19). Policies of colonisation and assimilation restricted personal control over the lives of many Indigenous people; the shift to a neoliberal discourse of personal autonomy, which blames individuals for their circumstances and behaviours, largely ignores the vast impact of previous political circumstances on Indigenous wellbeing (14, 20). Beyond considerations of assimilation and colonisation, attention to modern colonial values, political economies, and structural factors that limit individual choice for Indigenous peoples is needed. The forced operation of Indigenous peoples within socio-political structures of dominant culture replicates power frameworks established during colonisation (21). Therefore, scholars, politicians and policy makers must move beyond the acknowledgment of historic oppression and develop a more nuanced consideration of how modern-day structural forces maintain and strengthen power imbalances and contribute to Indigenous health inequities. The investigation of Indigenous health which considers historical socio-political circumstances permits a shift away from personal responsibility for health and creates space to explore alternative pathways and interventions to achieving Indigenous health equity. This aligns with a strength-based approach rather than continuing a deficit discourse, which disempowers Indigenous communities (17).

The emphasis on personal autonomy and individualism in neoliberal discourse contradicts widely shared Indigenous collectivist values that facilitate strong social cohesion (20). Dominant culture poses a threat to Indigenous cultures in that neoliberal values diminish social cohesion and increase social divides; failing to challenge these accepted ways risks normalising individualism and isolation (19). Investigating the impact of neoliberalism on Indigenous health through the utilisation of Indigenous experiences provides a unique perspective, from the periphery of dominant culture, that can facilitate a shift in the perceptions of individuals and systems embedded in neoliberalism's hegemony (22). Despite emerging literature investigating the impacts of neoliberalism in various areas of Indigenous health, there remains limited conceptual understandings of the ways in which neoliberalism broadly influences Indigenous health and wellbeing. This information is essential for producing evidence needed to inform interventions aimed at counteracting the negative impacts of neoliberal practices on the health of Indigenous populations. Therefore, this scoping review seeks to identify and synthesise generative mechanisms which articulate the impacts of neoliberalism on Indigenous health, globally.

Materials and methods

Scoping reviews are a specific type of systematic literature review that aim to identify all available literature on a specified topic, regardless of methodological rigour, often including grey literature sources (23). An initial search of the International Prospective Register of Systematic Reviews, PubMed, and the Joanna Briggs Systematic Reviews register revealed no similar published or underway studies. This scoping review has been registered with the Joanna Briggs Systematic Reviews register, and in accordance with Joanna Briggs Institute methodological recommendations for scoping (23), the protocol was made publicly available with the Center for Open Science (24). This review was conducted and reported in alignment with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines (Supplemental File 1).

Positionality

Qualitative research largely rejects ideas of emergence and objectivity, and instead embraces the influence of researcher subjectivity on findings. Accordingly, acknowledging the positionality and influence of those involved in the research process is essential (25). As privileged, educated, female researchers, the review team (BP, SS, DH) and senior author (LJ) have benefitted from processes of neoliberalism throughout their lives and will never entirely understand the influence of neoliberalism on Indigenous health. Therefore, the involvement of a senior Indigenous researcher (JH) in this review was critical to maintaining relational understanding of stories collated during this research process.

Theoretical foundations

This review was conducted from the metatheoretical perspective of critical realism (26, 27), which understands social phenomenon as consisting of and constituted by different layers of reality, where causality must be explored on layers beneath the observable and empirical (28). Critical realism aims to elicit transformative change through the identification and comprehension of the contingencies that evoke causal pathways for a given outcome (27), which for this research is inequitable experiences of health among global Indigenous communities. Determining aspects related to the outcome of interest creates an opportunity to categorise social complexities of actions, occurrences, and decisions, that work to form underlying structures of causal power, also known as generative mechanisms (27, 28). From the perspective of critical realism, generative mechanisms penetrate the empirical surface and forge contact with reality that exists beneath the level of observable events. While generative mechanisms exist in the social world they are regarded as tendential, or not observable in empirical events, and require auspicious conditions. We must be cognisant that mechanisms can contradict and contrast each other and while existent, certain contexts can prevent observable effects from taking place; in an empirical correlation study, this may lead to a conclusion of no effect. However, critical realism postulates that it is possible to draw conclusions about the interaction of existing generative mechanisms even in circumstances that prevent observable effects (28). In line with the socially focused aspects of critical realism, the methodological approach to this review was informed by decolonising theories (29, 30). Decolonising theories highlight the impacts of ongoing colonisation and the related marginalisation from dominant culture, where dominant culture is understood to be aligned with neoliberal and colonial values.

A Western theoretical framework of neoliberalism was utilised in this review to enable a critique of the Western understandings of neoliberalism considered in the articles included in this review. Four domains of neoliberalism were considered in this review: competitive and private markets, reduced public expenditure on infrastructure and social services, personal autonomy, or deregulation that facilitates economic activity (13). Importantly, generative mechanisms in this review do not ascertain a direct 'generation' of impact from neoliberalism itself, but are understood as expressions of the general phenomenon of neoliberalism (27, 28).

Identifying articles for inclusion

Six databases were searched in August 2021 using keywords and index terms related to "neoliberalism," "Indigenous," and "health." The search strategy was first developed for PubMed and then adapted as per the design of Embase, Scopus, Web of Science, and ProQuest Central (Supplemental File 2). The search was not restricted by language, study design, or geographic location. The search was restricted to articles published from January 1 1975, until the search date to capture effects of modern conceptualisations of neoliberalism, which gained popularity with the election of Ronald Reagan (United States) and Margaret Thatcher (United Kingdom) in the late 1970s (31). For the purposes of this review, articles that discussed generative mechanisms of either neoliberalism or globalisation described in accordance with the Oxford Dictionary definition of "a political approach that favours free-market capitalism, deregulation, and reduction in government spending," (32) in relation to Indigenous health, defined as "more than just the absence of disease or illness; it is a holistic concept that includes physical, social, emotional, cultural, spiritual

and ecological wellbeing, for both the individual and the community," (33) were considered for inclusion.

After the removal of duplicates, two independent reviewers (BP, SS) screened the titles and abstracts of articles identified in the systematic search in Endnote (Clarivate Analytics, PA, USA), with articles considered relevant by either reviewer progressing to full-text review. Full-text articles were subsequently screened against the inclusion criteria (Table 1), by the same reviewers. Eight of the papers identified in the systematic search were in Spanish, so a third reviewer (DH) fluent in Spanish performed full-text screening and data extraction for these articles to minimise loss of meaning and other potential errors associated with translating these articles to English. Any disagreements or uncertainties were resolved through discussion among the three reviewers. In accordance with scoping review methodologies, critical appraisal was not performed on studies included in this review because the aim was not to produce critically appraised findings but to provide an overview of existing evidence (23).

Data extraction and synthesis

Data were compiled into a piloted extraction form by three reviewers (BP, SS, DH). Three articles were performed by all reviewers to ensure inter-rater reliability and to reduce the introduction of selection bias (34) of generative mechanisms within articles. The data extracted included information about participants, study aim, context, methods, key findings, generative mechanism summaries and associated illustrations from each article. Standard characteristics of each article were collated into a table. Data regarding geographic location and health inequity considered were tabulated and synthesised in a visual representation of geographic spread. The different neoliberal terminologies employed by authors of included articles were compared and narratively synthesised.

The synthesis approach utilised in this scoping review borrowed heavily from the Joanna Briggs Institute methodological guidelines for meta-aggregations in qualitative systematic reviews (35). A qualitative systematic review was not appropriate for this review because many of the generative mechanisms were not substantiated with empirical evidence and participant illustrations, as is needed for a meta-aggregation. Three reviewers (BP, SS, DH) comprehensively reviewed included articles line-by-line to extract generative mechanisms of neoliberalism. Exact wording of each mechanism was extracted, and each reviewer created a one line 'generative mechanism summary' that captured the essence of the extracted evidence, similar to the themes extracted with findings in a meta-aggregation (35). These findings were then compiled in Microsoft Excel. Unlike a meta-aggregation, findings were not scored for credibility, because all sources of evidence were considered in this systematic scoping review (23). In the initial phases of extraction, reviewers observed the description of resistance against neoliberal forces impacting Indigenous health. This led to the decision to also extract generative mechanisms of resistance to ensure the presentation of a more comprehensive view of Indigenous communities impacted by neoliberal ideologies. The few articles for which extraction had been completed were revisited to ensure all generative mechanisms of resistance were identified. The synthesis of evidence was done manually by the review team, which involved writing all generative mechanism summaries on a whiteboard and identifying common concepts across the data. Common generative mechanisms were then considered in the context of four core neoliberal principles and mapped to one of: competitive and private markets, reduced public expenditure on infrastructure and social services, personal autonomy, or deregulation that facilitates economic activity.

Results

The systematic search located 13,098 articles, of which 3146 were duplicates, leaving 9952 articles eligible for inclusion in this scoping review. After title and abstract screening, 88 articles were retrieved and assessed for eligibility against the inclusion criteria during full-text review. Fifty articles were deemed ineligible during this process, primarily due to a lack of generative mechanism identified by authors that detailed the relationship between neoliberalism and an Indigenous health

Table 1 Inclusion and exclusion criteria

Inclusion	Exclusion
• Indigenous population (1) • The impact of neoliberalism (13, 32) (or 'globalisation') discussed in relation to an Indigenous health (33) outcome • All languages • All locations • Participants of all ages and genders	• Published before 1 January 1975 • Non-Indigenous population • Does not explicitly discuss the impact of neoliberalism on a health inequity or outcome

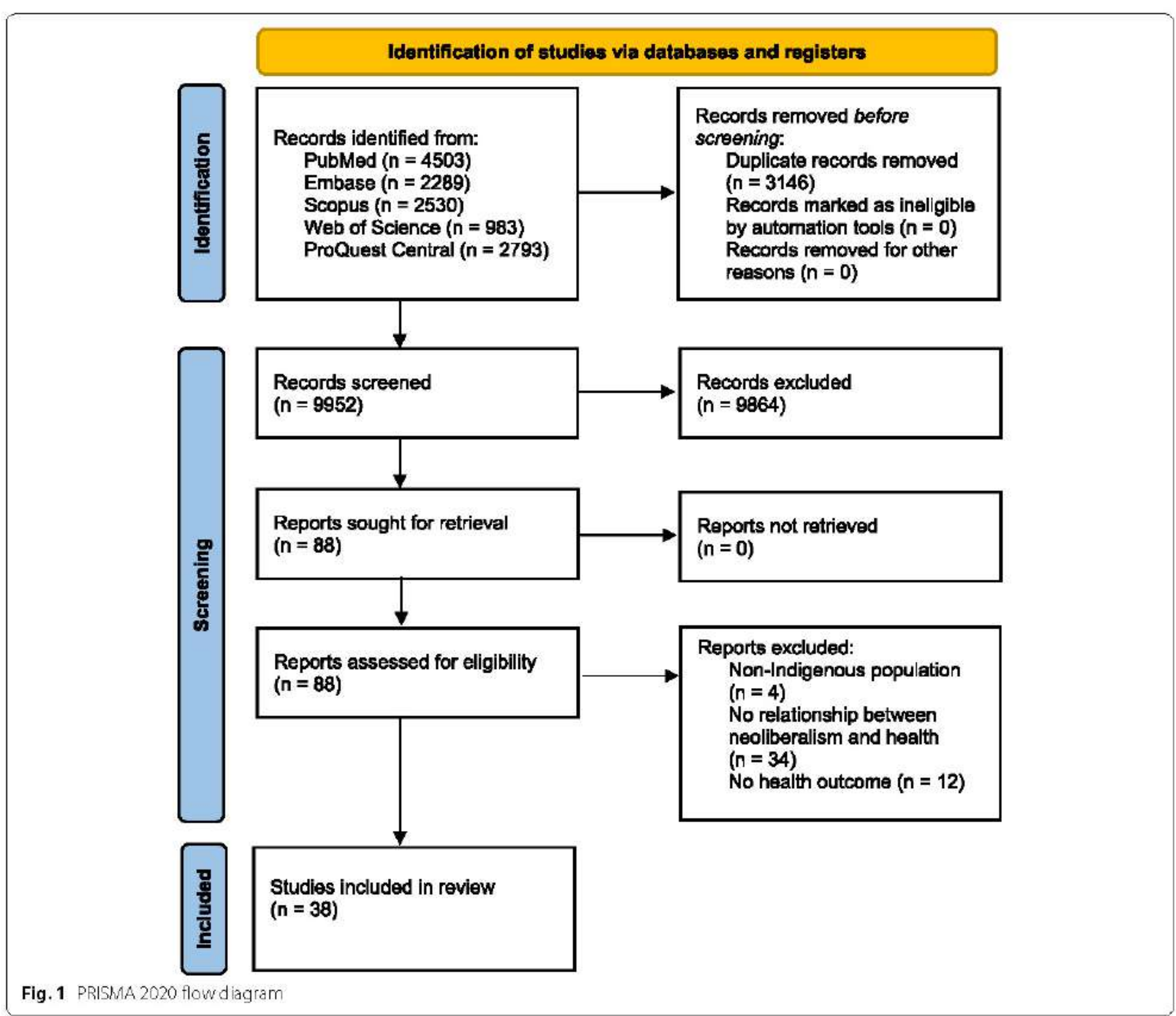

Fig. 1 PRISMA 2020 flow diagram

inequity or outcome. Therefore, a total of 38 articles were included in this systematic scoping review (Fig. 1).

Study characteristics

The included articles were published between 1983 and 2021. Ten articles were from Canada (36–45), five from Australia (46–50), four from Aotearoa/New Zealand (51–54), three from the United States (55–57), two from Guatemala (58, 59) and Brazil (60, 61) and one article from each of Venezuela (62), Ecuador (63), Bolivia (64), Chile (65), Mexico (66), and Peru (67). Six of the included articles had a global or multiple country focus (68–73). Papers discussed health concerns among Ojibway (36), Cree (36), Namg (38), Dene (39), Mi'kmaq (41), Haisla (43), First Nations (37, 42, 44, 45, 71), Inuit (37, 40, 45, 69), Métis (37, 45), Sámi (69, 71), Māori (51–54, 71), Aboriginal and Torres Strait Islander (46–50, 71), American Indian (56, 71), Alaskan Native (57, 71), Warao (62), Kichwa (63), Tsimane (72), Huaorani (72), Mayan (59, 66), Guaraní (61), Kaingang (61), Williche (65), Mbyá-Guaraní (73), Chimanes (73), Moxeños (73), Yuracarés (73), Peruvian (67), and Amazonian (64) Indigenous communities. Included articles ranged in study design; eight commentaries (41, 47, 51, 62, 66, 70, 71, 73), seven reviews (36, 40, 46, 52, 68, 69, 72), seven qualitative studies (38, 50, 53–55, 61, 63), four news articles (49, 56, 59, 64), three dissertations (39, 57, 58), three essays (42, 44, 67), two mixed methods studies (45, 60), two case studies (48, 65), one book chapter (43), and one editorial (37) were included in this review (Supplemental File 3).

Synthesis of evidence

The term 'neoliberalism' is used in academic literature to convey various meanings. To that end, the review team sought to identify how authors of included studies used the term neoliberalism in their papers. Twenty-four of the included studies did not explicitly define neoliberalism in relation to their work (36–39, 42, 43, 46, 49, 52–56, 59–61, 63–65, 67–69, 72, 73). Eight (40, 45, 48, 50, 57, 62, 70, 71) of the remaining 17 papers provided a comprehensive definition that considered the four core principles of neoliberalism used to frame this scoping review; competitive and private markets, reduced public expenditure, personal autonomy, and deregulation that facilitates economic activity. Five papers (40, 47, 58, 62, 66) warned about the threat of endangered livelihoods that neoliberalism poses for some, particularly Indigenous communities already experiencing social disadvantage, with one paper citing neoliberalism as a "leap backwards to a civilisation: 'locked in the grip of an ideology'" (47). Five papers also emphasised the "cultural values of radical individualism" (50) championed by neoliberal ideologies (44, 47, 48, 50, 57). Three papers referenced the University of Chicago (Friedman & Hayek) origin of neoliberalism (57, 70, 71) and three papers also noted that neoliberalism was driven by wealthy OECD (Organisation for Economic Co-operation and Development) countries (62, 70, 71).

The papers included in this review considered the impacts of neoliberalism on a variety of health domains. Fourteen of the included papers discussed multiple health outcomes or Indigenous health generally (37–40, 49, 51–53, 56, 57, 68, 73), four focused on oral health (46, 61, 70, 71), three examined nutrition (41, 58, 72), two explored mental health (45, 47), reproductive health (55, 67), environmental contamination (36, 59), and Covid-19 (60, 66), while there was one paper focused on asthma (43), body weight (54), cancer (63), child health (64), cholera (62), community health (65), disabilities (44), eye health (50), and foetal alcohol syndrome (42) respectively. The spread of health domains distributed geographically is visually represented in Fig. 2.

Generative mechanisms synthesis

One hundred generative mechanisms were extracted from the articles included in this systematic scoping review, 12 of which were considered generative

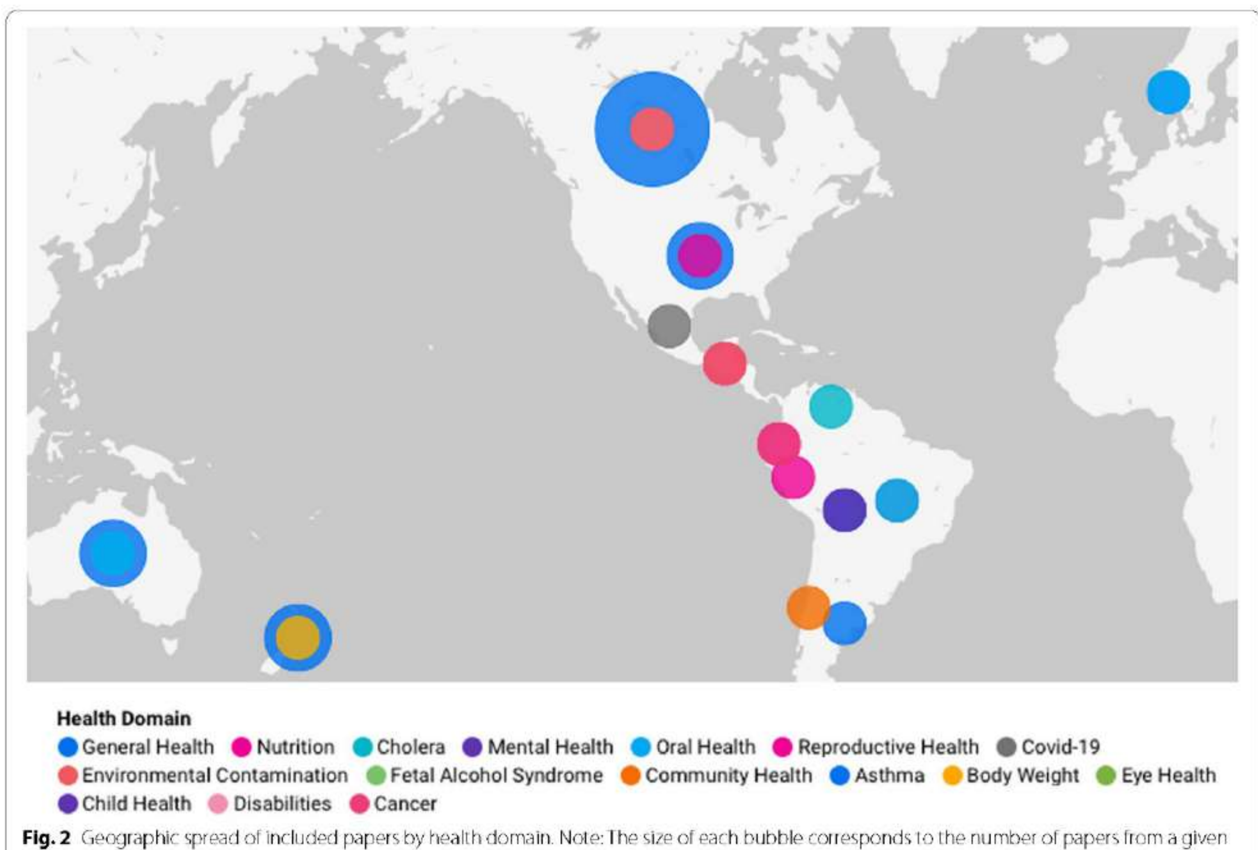

Fig. 2 Geographic spread of included papers by health domain. Note: The size of each bubble corresponds to the number of papers from a given country and the colour corresponds with the health domain

mechanisms of resistance against forces of neoliberalism impacting Indigenous health (Supplemental File 4). These generative mechanisms were synthesised into twenty overarching generative mechanisms, which were then mapped against four core principles of neoliberalism: competitive and private markets, reduced public expenditure, personal autonomy, and deregulation that facilitates economic activity (Fig. 3). It is important to note that several generative mechanisms are related to more than one principle of neoliberalism; for the purposes of this review, generative mechanisms were mapped to the core principle that most aligned with the original presentation of evidence.

Impacts of neoliberal generative mechanisms on indigenous health

Competitive and private markets

Seven overarching generative mechanisms related to the influence of competitive and private markets on Indigenous health inequities. *Exploitation and contamination of natural resources* largely related to the contamination of traditional foods and resources, including water, due to industrial development (36, 39, 40, 55, 59, 63, 73). In Ecuador, increased occurrence of cancer among Kichwa communities was attributed to the use of chemicals, hormones, and antibiotics to increase crop yields and subsequently, market uptake, as one participant detailed, *"Like I was saying, they put them so they grow faster and now they fumigate and add more, and then everything grows really quickly and that is also causing a lot of harm to people I think"* (63). Similarly, a Native American community in the United States likened the rise in chronic health conditions due to industrial pollution to a modern-day genocide of their people, *"You have all of this industrial stuff... We did not have that when we were young... I think that is why our people have cancer. They were not used to this...This is what will kill... I said, 'John Wayne did not live long enough to kill all of the Indians, so that's what they want to do, finish killing the Indians'"* (55). Water contamination was also expressed as a concern by Indigenous communities in Canada, Guatemala, Bolivia, and Argentina, relating to environmental contamination, in terms of polluted drinking water and aquatic food sources (39, 40, 59, 73). For Ojibway and Cree First Nations in Canada, high levels of poisonous substances in the water led to a ban on fishing which had significant impacts on the economic, social status, and health of Indigenous communities (36). Exploitation of natural resources due to industrialisation saw deforestation, monocultures, and irreversible damage to

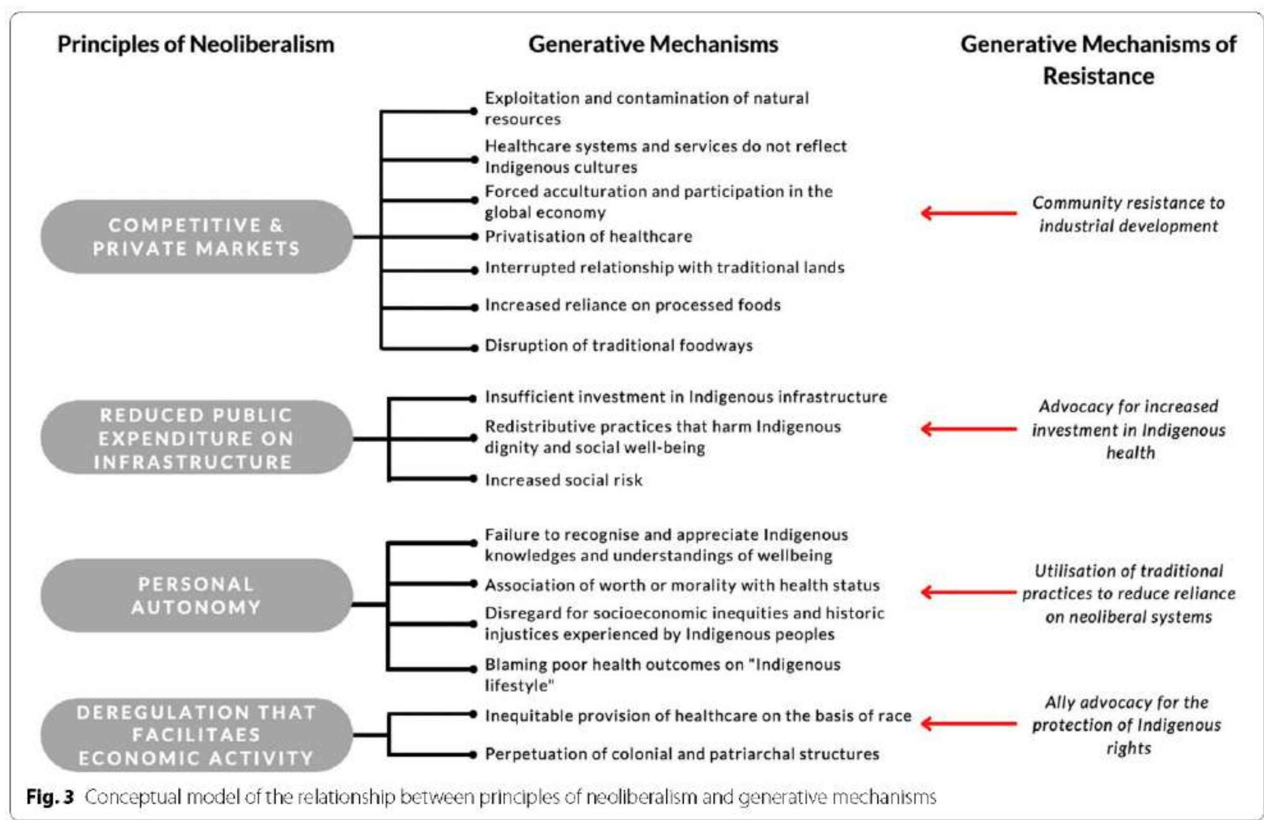

Fig. 3 Conceptual model of the relationship between principles of neoliberalism and generative mechanisms

previously flourishing ecosystems for Indigenous communities in South America (73).

The push for increased industrialisation due to competitive and private markets has *interrupted relationships with traditional lands* and subsequently impacted health outcomes for Indigenous communities in Canada (36, 38, 39), the United States (57), Bolivia (73), and Argentina (73). The feeling associated with the loss of traditional lands and foods for Inuit communities has been termed, "lonely for the ice," (36) while Alaskan Natives refer to this feeling as a "soul wound" (57). This is illustrated by an Inuit Elder's reflection on her 'loneliness for the ice,' *"I wish I could turn the clock back. I wish. What I see today I wish I could turn the clock back [on] all the mining that you know that oil spill, the oil, and all over our country you know. I don't know if things are ever going to change back. It'll take a long time."* This feeling of loss has manifested as asocial behaviours among Ojibway and Cree First Nations (36) and poor health for Namg First Nations, which is attributed to the severing of spiritual connections (38). In Bolivia, Argentina, and Alaska interrupted relationships with traditional lands has resulted in increased drug and alcohol use, and suicide rates (57, 73).

The impact of *increased reliance on processed foods* was documented among Indigenous communities in Canada (36, 39, 71), Ecuador (63, 72), Australia (46, 71), the United States (55, 71), Guatemala (58), Bolivia (72), Aotearoa/New Zealand (71), and Norway (71). The inability of Indigenous peoples to depend on traditional foods due to factors including environmental contamination or participation in the economy (which reduces available time to take part in food sovereignty practices) has resulted in an increased reliance on processed, often termed 'Western', foods. Western foods were described by authors as calorie dense, nutrient poor, and unhealthy (39, 55, 58); a direct contrast to traditional diets, which are low in sugar and high in protein and nutrients. Harvesting traditional foods also contributes to physical fitness (39). Ojibway and Cree First Nations in Canada refer to traditional foods as a pure form of "genuine foods," whereas Western foods were deemed altered or poisoned forms of foods (36). Contamination of waterways has similarly influenced beverage choices among Indigenous communities in Aotearoa/New Zealand, Australia, Canada, and the United States; drinking water has been replaced by sugar sweetened beverages due to their availability and affordability (70, 71). Kichwa community members in Ecuador have attributed the rise in cancer among their community to poor nutrition ("mala alimentacion") associated with the increased preference for Western foods over traditional home cooked meals (63). Three authorship teams highlighted the impact of intense marketing of Western foods, particularly sugar, on Indigenous consumption and consequently, oral diseases (46, 70, 71). These factors, paralleled with increased availability and affordability of Western foods, has created increased susceptibility to diet-related chronic diseases, including cardiovascular disease, cancer, obesity, and type 2 diabetes (39, 55, 63, 72). While reliance on Western foods in many instances was a coping mechanism to overcome the impacts of industrial pollution and environmental contamination resulting from neoliberal ideologies, this transition has serious implications for Indigenous health (39, 58).

The means through which neoliberalism *disrupts traditional foodways* and impacts Indigenous health outcomes was detailed by research among Canadian (39, 41), Brazilian (61), and Arctic Indigenous communities (69). Dene First Nation members described the implications of increased mining on their traditional lands for local caribou, *"The way you look at it now, all the mines started it. All the animals we traditionally hunted are all gone now. Just all mines now. All the animals are making different routes now. Before I was used to having lots of caribou before all that mine stuff. Caribou not as much now... There's another mine they want to open and in our hunting area. The moose are there. When that mine starts there's going to be nothing because all the animals will move, will migrate again with all the blasting"* (39). In addition to impacts on those directly involved in hunting, disruption of traditional foodways has manifest ramifications on lifestyle practises, with many Indigenous communities having extensive food sharing networks that are important for nutrition as well as maintaining and strengthening cultural connections. (69). Similar to Dene First Nation, implications of climate change among Arctic communities, including melting ice and thawing permafrost, are effectively severing community reliance on traditional wildlife due to the degraded quality of local foods. Additionally, permafrost ice houses, typically used by Arctic Indigenous communities to store traditional foods, are presenting food contamination challenges (69). Governance models framed under the guise of reconciliation target land-based practices of Indigenous communities in Canada (41) and restrict access to traditional lands for Indigenous communities in Brazil, constituting a substantial threat to Indigenous food sovereignty while simultaneously increasing monetary dependence of communities (61).

The impact of *privatisation of healthcare* was discussed in relation to Māori (51), Aboriginal and Torres Strait Islander (46), and Mayan (66) Indigenous health. Barnett and Bagshaw highlighted the false claims of health services overfunding made in the 1980s by the Aotearoa/New Zealand government and reinforced by self-interested private organisations; health expenditure modelling

of Treasury models from that time revealed a cumulative decline in health spending (51). Unfortunately, this neoliberal narrative effectively reduced funding for health services which supported Māori wellbeing. Due to the privatisation of dental services in Australia, use of services for many Aboriginal and Torres Strait Islander has been constrained to treatment focused care rather than preventive care due to associated financial costs of both private and public services, which often incur a co-payment (46). In Mexico, the commonality of understocked and intermittently staffed community clinics recently saw an increase in susceptibility to workforce and material shortages due to Covid-19 recruitment of medical personnel to hospitals; this left Mayan communities with extremely limited access to healthcare of any kind (66).

In addition to implications of privatisation, many *healthcare systems and services fail to reflect Indigenous cultures*. Both commodification of care and biomedical neoliberal language was highlighted as impacting Indigenous community health in Aotearoa/New Zealand (51), Australia (50), and Canada (38, 44). For some Aboriginal and Torres Strait Islander communities with low fundamental English literacy, individuals described biomedical language as confusing and frightening, leading to communication breakdowns, and ultimately, exclusion from eye health knowledge and decision making, *"The doctor they frighten you too, it's how they talk you know?"* (50). Similarly, an Elder from Namg First Nation in Canada described the connection between traditional languages and health and the impact of dispossession, as a result of biomedical neoliberal language, on mental and spiritual health, *"Our language is our culture; it is the medium, or the form, or the process, that allows us to give full expression to who we are, mentally, physically, spiritually, collectively, as friends and family, individually, historically [and] looking forward. It's the only medium we have that can do that. As long as we have our mind-set we're not going to be struggling with Western concepts [like] what's right or wrong. The creator never intended that to be the way it is. We're Kwakwaka'wakw and he gave us laws that are spiritual, that will sustain us through time. We will be the healthiest when we can give expression to that"* (38). Indigenous families in Canada identify a gap in provision of care related to the government approaches to disability and childhood, which translates into reliance on commodification of care, paying for services of professionals and failing to recognise the value of a mother's knowing and care for her children (44).

Finally, the expansion of private and competitive markets has resulted in a *forced acculturation and participation in the global economy* for many Indigenous communities (68), including those in Ecuador (63), Bolivia (73), Argentina (73), Canada (39), Mexico (66), and Brazil (61). Four of the included articles discussed the implications of the transition from traditional economies to participation in the wage work economy; many Indigenous families in these articles were required to move to bigger cities, leaving home, and increasing consumption of Western foods (39, 61, 63, 66). Kichwa communities in Ecuador attributed the rise in cancer to participation in the global economy with many women now working outside of the home. Both men and women described their reliance on public transportation to travel to work instead of walking; this combined with decreased free time and increased purchasing power associated with a dual income household resulted in higher consumption of Western foods (63). Similarly, Dene First Nation in Canada are increasingly partaking in wage work which requires employment Monday through Friday, limiting time for Indigenous peoples to partake in land-based and harvesting activities; this further compounds the widespread loss of traditional skills and knowledges due to the impacts of Residential Schools (39). Similar sentiments were echoed by the Kaingang in Brazil, who attribute the recent changes in eating practices to lifestyle changes due to participation in the formal labour market, which is effectively discontinuing practices of food cultivation among youth and has implications for the emotional importance of traditional foods, which are now only reserved for special occasions (61). Many Mayan individuals in Mexico work in the cruise ship and tourism business, which resulted in increased transmission and early exposure to Covid-19; work continued for a month until public health measures were implemented and Mayan people returned to their communities, bringing Covid-19 with them (66). The reliance on translators in Bolivia and Argentina has disrupted and destabilised Indigenous communities, resulting in a "crisis of representation" where non-leaders, who are in need of money, are utilised by government or outsiders to gain access to community knowledges (73). The integration of Indigenous peoples in the global economy often occurs without appreciation for self-determination and associated social and political violence. Acculturation has been linked to issues of addiction, suicide, and weakened social networks and knowledge systems, which are fundamental to Indigenous health and adaptive capacity (68).

Reduced public expenditure on infrastructure

Three overarching generative mechanisms related to the influence of reduced public expenditure on Indigenous health outcomes. *Insufficient investment in Indigenous infrastructure* was highlighted in Canada (37, 41, 43, 45, 71), Chile (65), Australia (50, 71), Aotearoa/New Zealand (71), and the United States (71). The need to 'close the gap' between Indigenous and non-Indigenous health,

touted by many Indigenous and non-Indigenous leaders, is directly contradicted by the neoliberal funding models these leaders operate within. In Canada for First Nations, Inuit, and Métis communities this contradictory unequal distribution of social programs is accelerating health and social inequities (37) and manifesting as increased poverty and hunger (41). Reduced funding for housing in Inuvik and the Beaufort-Delta region of Northern Canada has resulted in mass housing shortages, with one in seven people living without adequate shelter leading to an observed increase in mental illness and addiction (45). Insufficient investments in housing among First Nation communities in Canada has also resulted in unacceptable rates of mould in housing, with 21% of homes in Haisla First Nation contaminated with visible mould (74); health risks associated with mould exposure disproportionately affect children and can lead to respiratory distress, immunosuppression, cognitive difficulties, fatigue, and asthma (43). In Chile, neoliberal policies have resulted in limited health care provision for Indigenous communities, with some communities experiencing neglect of health care facilities, for example, the Williche only had a health centre founded in 2007 (65). Although Aboriginal Community Controlled Health Services (ACCHS) in Australia are mandated to provide culturally responsive health services that reflect Aboriginal values and workforce, the neoliberalisation of care, which prioritises profit focused values and a non-Aboriginal workforce, has resulted in a lack of Aboriginal leadership for some ACCHS, *"Back then your driving force was your Aboriginal Health Worker. Your managers or funding bodies finalised it and you ran it. Now its driven by people who don't know what is going on in the community. So how do they know what is best for us?"* (50). The influence of powerful groups on provision of dental service models in the United States exemplifies the inadequate investment in Indigenous oral health. For example, 36,000 residents of Oglala Lakota are being serviced by only nine dentists and the Navajo Nation has an average ratio of 32.3 dentists per 100,000 individuals (71). Reduced public expenditure has also seen an increase in *redistributive practices that harm Indigenous dignity and social wellbeing* in Canada (38). While promotion of Indigenous self-governance and self-determination might appear to benefit neoliberal ideologies of personal autonomy and privatisation, the reduction of public expenditure undermines Indigenous autonomy (38), "the redistributive tactics of neoliberalism are wide ranging, sophisticated, frequently masked by ideological gambits but devastating for the dignity and social well-being of vulnerable populations and territories" (75).

Reduced public expenditure has also led to an *increase in social risk* among Indigenous communities in Aotearoa/New Zealand (51, 52, 71), Australia (49, 71), Canada (44, 71), and the United States (57, 71). In reflecting on the impacts of neoliberal policies on Māori health, through reduced income, social fragmentation undermining social capital, and increased housing costs, Hodgetts refers to neoliberalism as "social experimentation" between "the haves" and "the have nots" (52). This notion is exemplified by the steady increase in Māori life expectancy observed through the 1950s to 1970s and the subsequent plateau in the 1980s, when social reforms were introduced, while Pakeha (white non-Maori New Zealanders) life expectancy continued to rise (52). This sentiment was echoed by Shorten, a member of parliament in Australia, who asserted in 2004 that costs of transitioning in the dynamic world economy were being borne too greatly by Aboriginal and Torres Strait Islander peoples, as evidenced by significantly lower life expectancies than non-Indigenous Australians (49). This risk-shifting was explained by Barnett and Bagshaw as a negative relationship between austerity and health where, *"those already disadvantaged bear the consequences of deterioration in the determinants of health"* (51). Jamieson and colleagues (70, 71) detail how neoliberalism's contribution to wealth inequities disproportionately impacts Indigenous populations in Aotearoa/New Zealand, Australia, Canada, and the United States which increases social risk, manifested as lower income and under- and unemployment. Social risk also relates to job security and health insurance as detailed by an Alaskan Native fisherman, *"It's tough, because you're considered self-employed, so you get hit with higher taxes. Taxes are nuts. And you of course, have no health care, that's a big part of that. It doesn't offer a lot of stability, I think that's why people think about settling down with someone and starting a family and it's like, 'well I don't have insurance and don't have a guaranteed job this month and what would happen?"* (57). The increase in social risk observed among Māori communities, and indeed globally, is not an accidental phenomenon but a direct result of neoliberal policies that impact mortality as well as morbidities, including obesity, mental health, and health risk behaviours (51).

Personal autonomy

Four overarching generative mechanisms related to the influence of personal autonomy on Indigenous health outcomes. *Failure to recognise and appreciate Indigenous knowledges and understandings of wellbeing* impacted the health and wellbeing of Indigenous communities in Canada (38), Mexico (66), Bolivia (64), and Aotearoa/New Zealand (54). Many Mayan communities are rooted in traditions that often clash with Western understandings of disease and healing; for example, some Mayan peoples employ a communitarian approach to illness where decisions are taken communally rather than autonomously

and mental reasoning is not taken into consideration when making healthcare decisions, because the heart is believed to be the receptor of the divine essence which enables people to use their good sense. It is critical to build bridges of communication and trust to facilitate healthcare for Mayan communities, this was not possible during the crisis state of the Covid-19 pandemic, which unfortunately saw increasing vulnerability among Mayan communities (66). Failure to appreciate Indigenous knowledges risks child wellbeing in Bolivia, where the adaptive cultural resources for protecting health are dismissed in healthcare systems, despite the strong association between maternal knowledge and child health outcomes, as indicated by blood markers of immune function, height, and skin-fold thickness (64). The manifestation of intersecting forms of dispossession lead to spaces of deprivation and exclusion in health care settings for Namg First Nation in Canada, demonstrating how historic colonial relations transform to neo-colonial relations. Repossession of space for Indigenous health equity must come from the perspective that people, structures, practices, and policies within health care shape and create experiences of First Nation health (38). In conducting research regarding weight management among Māori communities, researchers discussed the neoliberal sanitisation of holistic Māori health views, wherein media and public health campaigns focus on individualisation. This has ultimately enabled the aggregation of Māori as a distinctive group, whose comparison to the rest of the population can then be folded back onto the Māori collective in a disciplinary manner (54).

The *association of worth or morality with health status* disempowers Māori individuals in Aotearoa/New Zealand (54) and enables neoliberal-ableism in Canada (44). Neoliberal biopolitics of the body in Aotearoa/New Zealand maintain the belief that not only is weight loss entirely reasonable, but that it is the only ethical position for an overweight or obese individual to inhabit. In Canada, concepts of neoliberal-ableism lead to a willingness of Indigenous peoples with a disability to sacrifice one's self to death due to a perception of low productivity or high cost of dependency; in this space Indigenous peoples with a disability, "become window dressing[s] for the pervasive logic of neoliberal-ableism and sacrificial citizens" (44).

The neoliberal promotion of personal autonomy often *disregards socioeconomic inequities and historic injustices experienced by Indigenous peoples*. The neoliberal introduction and reinforcement of high living costs and poverty, globally, are not an isolated incident of social disadvantage but are compounded by historic trauma, colonial values, institutional racism, existing health, social, economic, and political disparities. For Inuit, Amazonian, and Alaskan Native communities, an existing prevalence of food insecurity increases sensitivity to nutritional deficiencies caused by disrupted traditional food systems (68). The focus on personal autonomy related to the medicalisation of consequences of Aboriginal and Torres Strait Islander health inequities relates to the expression of disadvantage, such as substance use, violence, and suicide, and forces a focus on the presumed mediators of these expressions and encourages service solutions (47). Service solutions have limited indications of improvement in outcomes and disregard the complexity of socioeconomic and historic injustices experienced by Indigenous peoples (47). For American Indian and Alaskan Native communities in the United States, there is an expectation that a relationship of trust with the United States government will improve relationships with communities through the provision of health, social services, and government. This expectation dismisses the forced assimilation into mainstream America that removed American Indian and Alaskan Native communities from their traditional lands and customs and has resulted in sustained poverty, trauma, and health inequities such as chronic disease, substance use, poor mental health, and mortality compared to non-Indigenous Americans (71).

Finally, the neoliberal ideology promotion of personal autonomy enables *blaming of poor health outcomes on "Indigenous lifestyles"* which results in classist social derision of purchasing decisions, lifestyles, and subsequent health outcomes (70); examples from Canada (42), Venezuela (62), and Australia (48, 50) illustrate the impact of this generative mechanism on Indigenous health. Remote Aboriginal and Torres Strait Islander communities in Australia have been seen as 'ungovernable' spaces that are distant, both metaphorically and physically, from the 'civilised' world; the assumption that these communities are 'failures' with an 'enclave of social problems,' limits the pursuit of health equity and permits the continuation of poor health (48). Perspectives among ACCHS clinicians in Australia is torn between neoliberal ideologies of personal autonomy and Indigenous cultural systems which preserve social protection; the paradox of blaming appointment attendance on client 'lifestyle' in a community controlled service is revealing, *"I think some of them are just slack to make the appointments, you know. They know all about it, but they're slack. It's low down on the list of priorities. They just see it as a big disruption to their, you know, lifestyle"* (50). In Canada, neoliberal public health messaging emphasises women's responsibilities for healthy pregnancies and babies highlighting the need to avoid alcohol, tobacco, and other drugs. The responsibility to provide maternal education campaigns targeting foetal alcohol syndrome have been shifted to Indigenous communities due to the belief that births affected by

foetal alcohol syndrome are 'entirely preventable' and an unjustifiable 'cost to communities' (42). In Venezuela, the manipulation of the cause of cholera, including unhygienic and unsanitary conditions, was utilised by the government to conveniently blame the spread of disease on Warao 'Indigenous lifestyle and conditions' (62).

Deregulation that facilitates economic activity

Two overarching generative mechanisms related to the influence of deregulation on Indigenous health outcomes. The *inequitable provision of healthcare on the basis of race* was discussed among Indigenous communities in Venezuela (62), Australia (48), Brazil (60), and the United States (56). The implications of budget cuts for Indigenous communities in the United States was evident early in the neoliberal era; in 1983, Walker critiqued a Reagan Administration proposal to define the term "Indian" by the amount of "Indian blood" an individual possessed as another means to reduce the number of people eligible for federally funded health care, *"excluding Indian people from [Indian Health Service] funding will neither solve human nor budgetary problems. The likely result will be more Indian deaths and hospital emergency visits. The cuts proposed in urban Indian health services are but another example of an inconsistent Federal policy that chooses to recognize Indian people when convenient for the government and to ignore them when the consequences of Federal action result in human suffering"* (56). Since this time, neoliberal policies have continued to directly influence systemic racism through the promotion of competition and support for groups in power; systemic racism originates in the operation of societal forces which are increasingly neoliberal. The impact of racism on Indigenous oral health inequities have been empirically examined in Canada, Australia, Aotearoa/New Zealand, and the United States (71). In Venezuela, the death of Warao community members during a cholera outbreak has been attributed to the disease-favouring conditions created by the impact of racism on the provision of health care, water, and waste treatment by government (62). In Australia, Shared Responsibility Agreements were used in place of health care provision for some Aboriginal and Torres Strait Islander communities. For example, the 2004 Mulan agreement specified that community would, *"make sure kids shower everyday, wash face[s] twice a day... ensure that rubbish bins are at every house and that they are emptied twice each week... ensure that household pest control happens four times each year... [and] ensure that petrol sold through the store is not used for petrol sniffing."* In return, this community would receive Australian government contributions towards the provision and installation of fuel bowsers, with compliance tested by state government regularly via skin and worm infection assessments of children (48). In Brazil, Indigenous peoples suffered disproportionately from Covid-19 due to restricted access to an already precarious health system fraught with racist, structural neglect that has been likened to "policies of extermination" by Indigenous movements. Limited healthcare accessibility was compounded by government attempts to continue neoliberal development, undermining Indigenous and environmental rights, during what the Minister of Environment in Brazil deemed *"a moment of calm while the press is focusing on the pandemic"* (60). Mining of Indigenous territories was deemed an 'essential service' in Brazil and ultimately introduced Covid-19 to nearby Indigenous communities with limited health care infrastructure (60).

Neoliberal ideologies of deregulation also *perpetuate colonial and patriarchal structures* through power structures, particularly targeting Indigenous and female rights. Pictou asserts that one of the greatest tragedies of Canada's neoliberal approach is its exclusionary practices that limit Indigenous women's ability to hold leadership roles and partake in official negotiation processes (41). Women are traditionally Land and Water protectors in many First Nations communities; their continued struggle against neoliberal and colonial gender discrimination disrupts traditional duties and limits their ability to protect traditional lands and communities (41). Patriarchal structures are also upheld by neoliberal ideologies in Peru, where Indigenous women have been instrumentalised as citizens and called upon to regulate their 'overly fecund bodies' to drive the country's desired poverty reduction; due to their exclusion from full rights, many Indigenous peoples were forced, rather than asked, to limit their fertility through sterilisation (67).

Generative mechanisms of Indigenous resistance

Competitive and private markets

Indigenous communities in the United States (55), Brazil (60), and Guatemala (59) have demonstrated strong *community resistance to industrial development*. Contexts of neoliberal government negligence in Brazil has seen emergence of grassroots initiatives and resistance. The Mebengokrê-Mekranoti blocked the highway utilised for transportation of goods, demanding government support against deforestation and their fight against Covid-19; despite the lack of support and the use of violence against the blockade, they continued to stand firm (60). Indigenous communities in the northeast of Brazil recognised their invisibility to the state and took autonomous actions to prevent the spread of Covid-19 in their communities, *"We had to compensate for the absence of the state, they didn't have a platform of action. The blockades are one action within reach of Indigenous peoples to*

help mitigate the impacts" (60, 76). The Mayan resistance movement, 'Peaceful Resistance La Puya' in Guatemala has defended their local water and health from mining development for a decade through the maintenance of a 24-h encampment; this group has also been successful in anti-corruption cases, with many government members now incarcerated (59). In the United States, Indigenous environmental activists similarly fight to protect the health of their community members, *"Well, in my community we had an oil-field waste site... I was living in a toxic town... still do... We got together, kids at the bus stop and parents would say their kids were sick with asthma and every month it's the same thing. And then we realized they had dumped toxic waste inside of our community. So I became an environmentalist, not by choice but... we fought for seven years against the oil and gas company... I was fighting for the rights of my community and my kids to live a normal, happy life as we knew it in a small town... we watched kids with no asthma become asthmatic. We watched kids would grow up with... severe diarrhea, nausea, dizziness, vertigo. It's different effects from all these chemicals, from the oil and gas industry"* (55).

Reduced public expenditure on infrastructure

In response to the rise in neoliberalism, the Māori health movement in Aotearoa/New Zealand has *advocated for increased investment in Indigenous health*. Led by Smith, an influx of Indigenous scholars and allies forced a reversal of a national funding agency decision to withdraw funding for Māori research centres, enabling the continuation of Indigenous-led health research in Aotearoa/New Zealand (53). This advocacy validated the importance of Māori health research by Māori researchers and for Māori communities; funding set aside by the Health Research Council of New Zealand was specifically dedicated to community-based research, research development, post-graduate scholarships, and studentships for Māori research and researchers (54).

Community autonomy

Indigenous communities in Brazil (60, 61), Canada (41), and Australia (50) have *utilised traditional practices to reduce reliance on neoliberal systems*. Food sovereignty and subsistence farming in Brazil has helped communities avoid Covid-19 exposure (60) and reduced reliance on industrialised products (61). Subsistence farming practiced by the Guarani is a conscious strategy of cultural reproduction and neoliberal resistance that allows the community to maintain sovereignty and independence from industrialised products, *"As you see the cassava there, everyone has planted. Corn also, there is plenty of corn, and it prevents us from buying food outside"* (61). Similarly, Indigenous women in Canada have demonstrated profound resilience against neoliberal forces, teaching alternative ways to live in harmony with each other and with the natural ecosystems that sustain them, leading land-based, water-based, and food practices (41). The continued provision of culturally responsive health care by ACCHS and strong Aboriginal workforces in Australia ensures continuity of care and positive community engagement, *"The good thing is we sort of know everyone in the community so we can go to their house and if they are not there then we can ask if they know where such and such are and if they are not there then they are at this house. We will do this until we can find them"* (50).

Deregulation that facilitates economic activity

Ally advocacy for the protection of Indigenous rights was discussed both in the Canadian (38) and Brazilian (60) contexts. Nurses in Canada have resisted the 'naturalisation' of language decline and dispossession experienced by Indigenous peoples by orienting actions toward opportunities of repossession, engaging with Indigenous peoples and acknowledging how dispossession creates disconnection and oppression which impacts health care inequities (38). Despite mandates to reduce support activities for Indigenous health during the Covid-19 pandemic, allies in the Brazilian Senate approved an 'Emergency Plan to Combat Coronavirus in Indigenous Peoples.' Although this bill was initially vetoed by Bolsonaro and hundreds of Indigenous peoples died due to Covid-19, Congress eventually overruled Bolsonaro's decision and instated support for communities facing a public health crisis (60).

Discussion

Due to the vast health inequities experienced by Indigenous peoples around the world and the pervasive nature of neoliberal ideologies in health discourse, service delivery, and experiences of health inequities, this systematic scoping review aimed to identify the generative mechanisms through which neoliberalism impacts Indigenous health, globally. Utilising principles of qualitative systematic review meta-aggregation methodologies (35), 100 pieces of evidence from 38 included articles were synthesised into 16 generative mechanisms and four generative mechanisms of resistance. Generative mechanisms were mapped against four core principles of neoliberalism: competitive and private markets, reduced public expenditure, personal autonomy, and deregulation that facilitates economic activity.

Indigenous communities have been subjected to social and environment destruction, greed, and militarisation for centuries (6, 8, 30); neoliberalism follows this pattern of oppression. As such, "the practical critique of neoliberalism embodied in Indigenous peoples' resistance into

the global market is one informed by an acute recognition of not only the global dimensions of such resistance but also an acknowledgement of anti-imperialist struggles stretching back over many hundreds of years" (77). The evidence synthesised in this review further substantiates the argument that neoliberalism perpetuates colonial ideologies that continue to oppress and marginalise Indigenous peoples across the world. Neoliberalism inhibits Indigenous peoples' right to self-determination, which was a critical component to the historical attempts to assimilate Indigenous peoples in colonised countries (21). Raghavan coined the phrase "re-colonisation" in 1990 (78) in relation to the extensive impacts of neoliberalism on Indigenous peoples. Bagh expanded on this idea noting, "re-colonization is the embedding and re-embedding of neoliberalism utilizing multiple avenues including institutional, state, corporate and intellectual pressure" (79). The multiple levels across which the generative mechanisms identified in this review exist provides further evidence on how neoliberalism explicitly acts to embed colonial values across individual, community, state, national, and international contexts. In Smith's (30) seminal decolonising methodologies work, she highlighted the colonial power frameworks that act to erase and subordinate Indigenous knowledges and worldviews. Similar processes of neoliberal subalternation of Indigenous knowledges regarding understandings of health and healing was highlighted in this review wherein, health services fail to incorporate Indigenous values and health providers fail to incorporate Indigenous knowledges. While public health researchers have gone some way to acknowledge, incorporate and work to intervene on the impacts of social determinants of health (80), largely missing from this dominant narrative is genuine acknowledgment of the ways in which neoliberal states and societies continue to deny Indigenous peoples' rights to self-determination and the ways in which we, as actors within neoliberal systems, reproduce colonial power relations (21).

Due to the embedded subalternation of Indigenous knowledges within dominant colonial discourses, embracing Indigenous knowledges and decolonising frameworks in governance, research, and policy is necessary to critically refuting neoliberal structures and ideologies. Failing to value Indigenous analyses of neoliberalism and Indigenous strategies of resistance is to seriously restrict meaningful and transformative action for dominant health discourse and social, political, and economic order (21). Sovereignty and self-determination for Indigenous peoples needs to be the bottom line for a different world order that mandates health equity (21). For example, the Sámi peoples in Norway are constitutionally recognised and have their own governance system that recognises the rights of Sámi children to speak and receive education in their traditional languages. The health inequities among Sámi peoples in Norway are of a lesser magnitude than the profound inequities experienced between Indigenous and non-Indigenous peoples in other parts of the world (81). The Lowitja Institute in Australia is an Aboriginal and Torres Strait Islander community-controlled national health research institute leading the way in research sovereignty among communities. The Lowitja Institute is dedicated to the strength and agency of Indigenous communities and researchers and prioritises investment in community driven health research, mobilisation of research knowledge, and enhancement of the Indigenous research workforce capability, and sustainability (82). Similarly, the Aboriginal Community Controlled Health sector in Australia ensures community ownership of health, has strengthened health outcomes, and has been recognised as a best practice example for the implementation of the right to self-determination highlighted in the United Nations Declaration on the Rights of Indigenous Peoples (83). These examples of governance models related to Indigenous health and research directly resist neoliberal ideologies and honour Indigenous knowledges and epistemologies.

Largely, recommendations and outcomes from studies included in this review called for a change in discourse and epistemologies regarding neoliberal ideologies. Suggestion on how to change neoliberal models and societal discourses include the development of social democratic governance models with ethical political ideologies that respect Indigenous self-determination and prioritise Indigenous leadership (5, 15). As academics, policy makers and researchers, we have a choice to either act to resist neoliberal frameworks and promote decolonial values or to be complicit in the maintenance of neoliberalism and colonialism. We contend that all actors in neoliberal societies are ethically compelled to lead work, and lives more generally, that pushes society into a just and equitable future by challenging neoliberal models that continue to harm Indigenous health outcomes, as evidenced by the findings of this review. As suggested by Borde and Hernández (5), we must move beyond the social determinants of health framework to clarify the "causes of the 'causes of the causes,'" failing to do so reproduces processes that sustain health inequities (5, 80). The expectation that health inequities created and sustained by neoliberal systems and colonial values can be solved while maintaining these very structures is idealistic and completely unrealistic. Belief in 'win–win' solutions to health inequities embedded in neoliberal structures remain superficial and reliant on an idea of

civil identity and autonomy that fundamentally supports colonial values. In the absence of comprehensive analysis of power, global politics, society, and societal relations, social determinants of health are inadequate indicators of health inequities (5). Failure by non-Indigenous people to end the silence of neoliberalism's impacts on health is problematic and demonstrates the selective and colonial nature through which 'social justice' operates (21, 84).

We maintain that all considerations of social and health inequities, particularly those related to Indigenous wellbeing, must not only consider the innate relationship between neoliberal political economies and health outcomes in research development, design, implementation, and analysis, but must explicitly investigate the impact of neoliberalism on the reported health inequity. Investigations must move beyond the inevitability of colonial, neoliberal, deficit health discourse to develop a more nuanced understanding of the generative mechanisms through which neoliberalism amplifies health inequities (19, 20, 70, 85), identifying the structural and systemic perpetrators of Indigenous health inequity. In doing so, Indigenous leadership and perspectives must be privileged and amplified to ensure a critically robust analysis that challenges the acceptance and reproduction of neoliberal impacts on both Indigenous and non-Indigenous wellbeing (86).

Strengths and limitations

This review considered the impact of neoliberal generative mechanisms in relation to an Indigenous-defined understanding of wellbeing, which included connections to traditional lands (33). Generative mechanisms of resistance were an incidental finding of this work, future work must centre stories of Indigenous strength and resistance to neoliberalism to document the widespread success of global Indigenous communities, share knowledges related to these successes, and inspire more work in this space. While the authors made all attempts to limit publication bias through the inclusion of all languages and locations across the world, as well as grey literature, limitations remain. Systematic searches fail to capture knowledges and stories not contained within written and published literature. Further, terminology around neoliberalism can vary and 21 studies included in this review did not explicitly define neoliberalism in relation to their works. Studies that did not specify the impact of 'neoliberalism' and instead used terminologies such as bureaucratization or free market in their work were excluded to maintain boundaries of a systematic and rigorous methodology. As such, it is likely that this work captures only a snapshot of the ways in which the pervasive nature of neoliberal ideologies impacts Indigenous wellbeing.

Conclusion

Actors within neoliberal societies must resist dominant epistemological, ontological, and praxiological stances that reinforce the supremacy of colonial values and subalternation of Indigenous ways of knowing, being, and doing to begin effectively addressing Indigenous health inequities. In line with the evidence generated by this review, we recommend the following: (1) consideration and investigation of neoliberal ideologies and structures as common practice in health equity scholarship; (2) explicitly attributing circumstances of inequitable health to neoliberalism, where evidenced, and holding neoliberal actors accountable for the consequences of their decisions; and most importantly, (3) designing research and policies in ways that honour and amplify Indigenous resistance to neoliberalism and assertions of self-determination.

Supplementary Information

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Additional file 1. Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist.

Additional file 2. Search Strategy.

Additional file 3.

Additional file 4. Generative mechanisms.

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Author contributions

BP, JH and LMJ contributed to the conceptualisation of this analysis. BP and SS performed the search and screening. BP, SS and DH completed data extraction as well as interpretation and analysis of the data. JH and LMJ aided in data analysis. Writing and original draft preparation were done by BP. Writing review and significant editing were performed by JH, LGS, MM and LMJ. All authors read and approved the final manuscript.

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Availability of data and materials

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"At the heart of all the violations of our human rights has been the failure to respect our integrity and the insistence on speaking for us, defining our needs and controlling our lives. Self-determination is the river in which all other rights swim." – Michael Dodson

SECTION D

Future Directions

OVERVIEW

Section D provides an overview of the research presented in this thesis and recommendations for future directions. Chapter 13 and 14 are commentaries regarding aspects of discussion and concepts deemed critical during previous sections of the thesis: self-determination, resistance to neoliberalism, and the need to progress a strengths-based narrative regarding Aboriginal and Torres Strait Islander oral health. Chapter 15 provides concluding remarks and recommendations.

13

Neoliberal Resistance

Aboriginal Community Controlled Health Services: An Act of Resistance Against Australia's Neoliberal Ideologies

13.1 PREFACE

This work argues that ACCHS operate in resistance to neoliberal ideologies while maintaining self-determination. This is an important component to the thesis because it brings together earlier studies within this thesis while acting upon the call to amplify Indigenous resistance to neoliberalism identified in Chapter12

13.2 PUBLICATION DETAILS

Poirier B, Hedges J, Soares G, Jamieson L. Aboriginal Community Controlled Health Services: An Act of Resistance Against Australia's Neoliberal Ideologies. International Journal of Environmental Research and Public Health. (Submitted July 2022).

13.3 HIGHLIGHTS

- Arguments presented call for dedicated funding relative to the need of Aboriginal and Torres Strait Islander Communities for ACCHS as identified by Aboriginal and Torres Strait Islander Peoples.
- The Australian nation must comply with and respect Aboriginal and Torres Strait Islander Peoples' right to self-determination to ensure Aboriginal and Torres Strait Islander Communities have the power to overcome legacies and ongoing impacts of neoliberalism and colonization and attain equitable health outcomes.

13.4 STATEMENT OF AUTHORSHIP

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Name of Principal Author (Candidate)	Brianna Poirier
Contribution to the Paper	Conceptualisation of research question Data analysis Manuscript writing Editing and revisions Corresponding author for publication process
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Co-Author Contributions

By signing the Statement of Authorship, each author certifies that:

i. the candidate's stated contribution to the publication is accurate (as detailed above);

ii. permission is granted for the candidate in include the publication in the thesis; and

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13.5 PUBLICATION

Commentary

Aboriginal Community Controlled Health Services: An Act of Resistance against Australia's Neoliberal Ideologies

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Abstract: The individualistic and colonial foundations of neoliberal socio-political ideologies are embedded throughout Australian health systems, services, and discourses. Not only does neoliberalism undermine Aboriginal and Torres Strait Islander collectivist values by emphasizing personal autonomy, but it has significant implications for Aboriginal and Torres Strait Islander health. Aboriginal Community Controlled Health Services (ACCHS) operate within Community-oriented holistic understandings of well-being that contradict neoliberal values that Western health services operate within. Therefore, this paper aims to explore the role of ACCHS in resisting the pervasive nature of neoliberalism through the prioritization of self-determination for Aboriginal and Torres Strait Islander Peoples. Utilizing a critical evaluative commentary, we reflect on Aboriginal political leadership and advocacy during the 1970s and 1980s and the development of neoliberalism in Australia in the context of ACCHS. Community controlled primary health services across Australia are the only remaining government-funded and Aboriginal-controlled organizations. Not only do ACCHS models resist neoliberal ideologies of reduced public expenditure and dominant individualistic models of care, but they also incontrovertibly strengthen individual and Community health. ACCHS remain the gold standard model by ensuring Aboriginal and Torres Strait Islander rights to the self-determination of health in accordance with the United Nations Declaration of the Rights of Indigenous Peoples.

Keywords: Indigenous health; Aboriginal Community Controlled Health Services; neoliberalism; resistance; self-determination

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1. Introduction

The existence of Aboriginal Community Controlled Health Services (ACCHS) in Australia is inherently political. The origins of the Community controlled sector are intrinsically linked with Australia's Black Power movement [1]. The Black Power movement gained traction after the 1965 Australian Freedom Rides and has been defined as a "loose coalition of young Indigenous activists" [2]. Black Power leaders in Australia expanded on previous iterations of Aboriginal and Torres Strait Islander activism while focusing on three principles: self-determination, land rights, and economic independence. The Black Power movement harnessed a grassroots resistance, advanced critiques of Australian racism, and promoted cultural pride [1]. During this time, ACCHS were established by supporters and leaders of the Black Power movement to overcome the structural racism embedded within Australia's mainstream health system and to provide an immediate solution to the poor health experiences of Aboriginal and Torres Strait Islander Peoples [3]. The mainstream health services available at this time promoted exclusionary and discriminatory practices, including the denial of service provision to Aboriginal and Torres Strait Islander Peoples [4]. The Black Power movement provided the leadership to identify and the platform from which to combat the structural racism present in Australia's health system; the need for an alternative health system for Aboriginal and Torres Strait Islander communities was made

clear by Black Power leaders. In alignment with the collectivist values of Aboriginal and Torres Strait Islander Peoples, leaders at this time turned to the communities to address this need. The first ACCHS opened in 1971, predating the Alma Ata statement and declaration of Community primary healthcare principles by seven years, which further demonstrates the longevity of Aboriginal and Torres Strait Islander leadership in Community-owned healthcare models [5].

Importantly, ACCHS were never simply healthcare providers but fundamentally political organizations founded by Aboriginal and Torres Strait Islander Peoples "in an attempt to regain control over their lives after almost two centuries of oppression and disempowerment" [3]. The establishment of ACCHS was done without government assistance or funding. Communities and supporters provided premises for services, renovated sites, and provided transportation for those wanting to access services, while doctors worked without pay in many cases and used their own equipment [3]. To outsiders, these organizations may have appeared insignificant, but they were a critical articulation of Aboriginal and Torres Strait Islander autonomy and self-determination, where health services were conceived, designed, established, and controlled by Aboriginal and Torres Strait Islander communities.

The rise of neoliberalism in Australia, and indeed globally, paralleled the development of ACCHS. Neoliberalism is the dominant political, economic, and social orientation and philosophy of Australia and most OECD (Organization for Economic Co-operation and Development) countries today. The uptake of neoliberal ideologies of both the major political parties in Australia resulted in the introduction of programs that prioritized economic liberalization, reduced trade protections, deregulated markets, and privatized government corporations [6]. In Australia, and indeed globally, neoliberalism continues to disproportionately benefit the middle and upper classes while considerably increasing economic and health inequities [7–9]. Neoliberalism has pervasive impacts on Aboriginal and Torres Strait Islander well-being through observable modifications to policies that structure social resources [10], as well as insidious processes of internalization [11] and more covert influences articulated as generative mechanisms [11]. Scholarship is increasingly acknowledging the relationship between political economies and health outcomes and rightfully attributing experiences of poor health, including Aboriginal and Torres Strait Islander experiences, to the colonial and neoliberal models of government that continue to marginalize Indigenous Peoples [11–13].

Previous works have identified the need to amplify Indigenous resistance to neoliberalism and associated assertions of self-determination, indicating that failing to do so is to seriously restrict transformative action and the potential for a world order that commands health equity [12,14]. In consideration of the colonial and paternalistic approach to Aboriginal and Torres Strait Islander affairs in Australia and the neoliberal ideologies of privatization, reduced expenditure on public infrastructure, and personal autonomy; we, therefore, argue that Aboriginal Community Controlled Health Services successfully operate in resistance to Australian neoliberal ideologies while maintaining the right to self-determination for Aboriginal and Torres Strait Islander Peoples.

2. The Neoliberal Disempowerment of Aboriginal and Torres Strait Islander Self-Determination

The human right to self-determination has been identified as a "world order principle ... that must be a basis of social and political organization if we are to progress along the road toward a peaceful and humane world" [15]. Self-determination includes the freedom to determine political status and pursue economic, cultural, and social development [16]. The right to self-determination for Indigenous Peoples was first recognized internationally in article three of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). UNDRIP expressly acknowledged distinct cultural rights for Indigenous Peoples: "By virtue of [the] right [to self-determination, Indigenous Peoples] freely determine their political status and freely pursue their economic, social and cultural development" [17].

Despite the important protection that UNDRIP offers Indigenous Peoples, Australia was one of four countries that opposed the declaration in 2007. Australia shares a history of invasion, oppression, and racism with the other countries that opposed UNDRIP: Canada, the United States, and Aotearoa/New Zealand [18].

The principles of self-determination contend that Indigenous Peoples have the capacity to establish what is of moral importance and which related political objectives they choose to prioritize; these decisions cannot be made by a guardian or assumed on behalf of Indigenous Peoples. For these reasons, we can conceptualize not the right—but the power—of self-determination, where this power includes Indigenous self-government of affairs [19,20]. Self-determination is a circumstance of political capacity wherein "by focusing on 'everyday' acts of resurgence, one disrupts the colonial physical, social and political boundaries designed to impede [Indigenous] actions to restore [Indigenous] nationhood" [21]. Self-determination radically opposes an assimilationist order wherein Indigenous Peoples are deliberately positioned as powerless and Indigenous aspirations are excluded [19]. As such, from a decolonial standpoint, self-determination can provide the tools to advance demands for external self-determination and anti-colonial norms, and anti-racist consciousness [22].

Despite the importance of self-determination for Indigenous Peoples, it remains difficult to find specific arrangements that ensure the survival of Indigenous cultures and institutions that operate outside of frameworks championed by states within which Indigenous Peoples live. That is, often, Indigenous Peoples are granted internal self-determination where communities participate in processes of power, rather than external self-determination, where communities are given the freedom to determine their own international status, including the power to choose political independence [15,23]. While neoliberal ideologies of personal autonomy theoretically have the potential to benefit Aboriginal and Torres Strait Islander communities, due to parallels with the notion of self-determination, the Australian state has repeatedly failed to apply this ideology to Aboriginal and Torres Strait Islander affairs, which instead remain firmly entrenched in colonial discourses and paternalistic attitudes [24]. Neoliberal rationality enables an argument that Aboriginal and Torres Strait Island Peoples fail to make 'good' choices at the individual level, as measured through health outcomes, while ignoring the colonial social structures and contexts of racism and disadvantage created and maintained by the state. The state continues to assert its position as knowing 'what is best' and neoliberalism has enabled increased authoritarianism, wherein Aboriginal and Torres Strait Islander Peoples are seen as needing benevolent white governance: "The individualism of neoliberalism informs the discourse of pathology within the race war, enabling the impoverished conditions under which Indigenous people live to be rationalized as a product of dysfunctional cultural traditions and individual bad behavior" [25].

Aboriginal and Torres Strait Islander Peoples have been intentionally and systematically locked in a paradox wherein the state deems communities as incapable of adhering to neoliberal individual responsibility, thus manufacturing a need for Aboriginal and Torres Strait Islander Peoples to be governed [26]. This authoritarianism and paternalism is enacted through political agendas, such as closing the gap, which has been described as a colonial endeavor to maintain control over Aboriginal and Torres Strait Islander Peoples within the boundaries of the nation-state [24,27,28]. Rather than encouraging self-determination for Aboriginal and Torres Strait Islander Peoples, neoliberal frameworks maintain justifications for the Australian state to control the agenda and affairs of Aboriginal and Torres Strait Islander communities. This approach sustains and encourages narrow perceptions of Aboriginal and Torres Strait Islander Peoples as dependent and passive actors rather than active decision-makers, ultimately reinforcing colonial values.

Self-determination in its purest form goes beyond personal autonomy within neoliberal economies and fundamentally includes the choice to participate within a mainstream neoliberal economy [24]. The forced acculturation and participation in the global economy have proven damaging to Indigenous well-being [12]. Corntassel has asserted the

importance of understanding that self-determination represents more than just a political struggle, explaining that "resurgence means having courage and imagination to envision life beyond the state" [21]. Irrespective of the decision to participate in the Australian neoliberal economy, the Aboriginal and Torres Strait Islander political and economic agenda must be designed and controlled by Aboriginal and Torres Strait Islander Peoples in order to reflect and encompass the vast diversity of Aboriginal and Torres Strait Islander values and circumstances across Australia [24]. The power to formulate policy that meets one's social, political, and cultural contexts is a foundational feature of self-determination [29,30]. Aboriginal and Torres Strait Islander Peoples also have the right to administer programs subsequent to policy development through their own institutions, to the extent that is possible, as is seen with ACCHS [17].

3. Self-Determination & Aboriginal Community Controlled Health Services

Due to the unique ability of ACCHS to support Aboriginal and Torres Strait Islander self-determination, the ACCHS model in Australia has been described as the gold standard regarding implementation of the right to self-determination enshrined in UNDRIP [27]. While Canada, the United States, and Brazil all have health services directed to meet the needs of Indigenous Peoples, these models fall short of equitably embodying the right to self-determination, with Indigenous Peoples across these countries calling for greater control over their well-being [31–33]. The core business of ACCHS is to reduce the health disparities between Aboriginal and Torres Strait Islander Peoples and non-Indigenous Australians, a directive supported by the Australian government [34]. The well-being of Aboriginal and Torres Strait Islander communities is vital for the well-being of individuals within a Community; Community well-being comprises overall physical, spiritual, psychological, economic, and political health [35]. Central to the maintenance of all these aspects of well-being is the fulfillment of the Aboriginal and Torres Strait Islander right to self-determination, which is championed by ACCHS. Today, there are over 140 ACCHS across Australia that are committed to putting Aboriginal and Torres Strait Islander health in Aboriginal and Torres Strait Islander hands [36]. The governance models of ACCHS prioritize Community leadership, control, and, ultimately, accountability to Community members [37]. ACCHS create space for engagement, advocacy, and employment that align with Aboriginal and Torres Strait Islander values and cultures; creating this space within a predominantly Western health system enables a shift in power dynamics that centers Aboriginal and Torres Strait Islander knowledges and values of self-determination [38].

ACCHS are consistently recognized for their success in attracting and retaining Aboriginal and Torres Strait Islander patients, as well as improving health outcomes. Through the provision of culturally responsive and comprehensive care, ACCHS reduce experiences of racism and barriers to accessing care, which progressively improves the well-being of Aboriginal and Torres Strait Islander communities [27]. ACCHS provide a cultural brokerage between biomedical conceptualizations of disease and Aboriginal and Torres Strait Islander understandings of well-being that build on familiar relationships of Community trust; both of these aspects are imperative to the comprehensive identification of patient needs and Community utilization of services [39]. The exploration of self-perceived health determinants among Aboriginal and Torres Strait Islander Peoples has identified the Community empowerment related to ACCHS as associated with improved healthcare-seeking and Community well-being [40]. Rather than utilizing a top-down approach that employs universal solutions for the 'benefit' of participants, ACCHS prioritize comprehensive primary healthcare or a bottom-up approach, wherein health concerns are addressed through interventions that utilize Aboriginal and Torres Strait Islander knowledge combined with appropriate professional expertise [41]. Notably, the comprehensive primary healthcare model effectively redistributes the power from the state and health professionals to Aboriginal and Torres Strait Islander communities. The continuance of ACCHS since their establishment in the 1970s, despite policy cycles and government changes, speaks to their

robust and effective care provision, grounded in the right to self-determination for Aboriginal and Torres Strait Islander Peoples [27,28]. There is an opportunity to extend Aboriginal and Torres Strait Islander self-determination in health by utilizing this bottom-up approach to incorporate Community needs and decisions into national-level programs and health policies; this could also include the provision of care that meets Community needs in non-Community controlled health service settings.

4. Aboriginal Community Controlled Health Services as Neoliberal Resistance

The very existence and success of ACCHS in creating more equitable and emancipatory experiences of health for Aboriginal and Torres Strait Islander Peoples is a force of resistance against Australia's neoliberal ideologies. ACCHS represent sites of 'radical possibility' and 'space[s] of resistance' [42] for Aboriginal and Torres Strait Islander Peoples due to their strength and power in prioritizing Aboriginal and Torres Strait Islander ways of knowing, being, and doing [27]. By continually demonstrating the need for Community-governed health services through successful service provision and high Community engagement, as well as through the prioritization of collectivist values and holistic care, ACCHS directly resist two of the commonly ascribed neoliberal tenets: reduced public expenditure on infrastructure and personal autonomy. ACCHS are one of the only remaining publicly funded organizations in Australia that are fully accountable to and governed by Aboriginal and Torres Strait Islander communities [27]. Further, ACCHS are Community-based and grounded in collectivist values that defy notions of personal autonomy or individual responsibility for health, instead utilizing a comprehensive primary care model that privileges Community knowledge; this form of resistance has been termed 'Community autonomy' [12]. While personal autonomy is central to neoliberalism, individualistic ideologies and private ownership do not align with long-held Aboriginal and Torres Strait Islander values; resisting the assumed uptake of individualism contests the expectation of Aboriginal and Torres Strait Islander Peoples to forego socio-cultural systems and fundamentally supports the right to self-determination [24]. ACCHS embody an alternative to imposed ideologies while simultaneously honoring Aboriginal and Torres Strait Islander diversity and representing collective wisdom and Community resilience [27].

While ACCHS continue to receive funding from the Australian state, the expenditure increases since the 1990s remains insufficient to overcome the disproportionate burden of mortality and morbidity experienced by Aboriginal and Torres Strait Islander communities, as well as adequate salary rates to retain Aboriginal and Torres Strait Islander staff [39,43]. Funding structures must reflect the relative and specific needs of Aboriginal and Torres Strait Islander Peoples; the continued struggle for adequate funding experienced by ACCHS represents practical constraints on the embodiment of Aboriginal and Torres Strait Islander self-determination within the Australian state. To strengthen the effectiveness of ACCHS in alignment with principles of self-determination, an equitable share of the health dollar and meaningful allocation of expenditure directed by Aboriginal and Torres Strait Islander Peoples is needed [44]. For fundamental changes regarding Aboriginal and Torres Strait Islander self-determination, the "redistribution of resources and power in the political process and the increased ability of marginalized communities to control key processes that influence their lives" [41] is required. State support for ACCHS should entail relationships of genuine trust instead of support conditional on criteria determined by the state to measure success [24]. Continued reliance on cyclical state funding restricts ACCHS priorities, structures, and the scope for self-determination; there is a clear need for ongoing state commitments and trusting partnerships based on shared values of health equity and self-determination [27].

5. Conclusions

In the Australian state, neoliberalism maintains colonial power and restricts the self-determination of Aboriginal and Torres Strait Islander Peoples. Dedicated funding relative

to the need of Aboriginal and Torres Strait Islander communities for ACCHS as identified by Aboriginal and Torres Strait Islander Peoples is required. ACCHS must be commended for their work in resisting the power of the Australian state and the hegemonic nature of neoliberal ideologies in Australian society; the Community strength and preservation of self-determination is admirable. The power of self-determination lies in the politics of possibility; these possibilities manifest when sovereignty truly lies with Aboriginal and Torres Strait Islander authority, as is demonstrated by ACCHS [19,21]. The Australian state and society must fully comply with and respect Aboriginal and Torres Strait Islander Peoples' right to self-determination to ensure Aboriginal and Torres Strait Islander communities have the power to overcome legacies and ongoing impacts of neoliberalism and colonization and attain equitable health outcomes.

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14

Oral Health Discourse

The future of Aboriginal and Torres Strait Islander oral health lies in the footprints of the past

14.1 PREFACE

This piece uses historical evidence to substantiate an argument for the need to reframe discussions of Aboriginal and Torres Strait Islander oral health by critically engaging with the ways in which the future of Aboriginal and Torres Strait Islander oral health lies in the ways of the past. This is an important component to the thesis because it was inspired by experiences along the Candidature journey and provides an evidenced strategy around the need to progress a strengths-based narrative of Aboriginal and Torres Strait Islander oral health.

14.2 PUBLICATION DETAILS

Poirier B, Hedges J, Jamieson L. The future of Aboriginal and Torres Strait Islander oral health lies in the footprints of the past. Australia New Zealand Journal of Public Health. (Submitted June 2022).

14.3 HIGHLIGHTS

- To reframe the narrative of Aboriginal and Torres Strait Islander oral health, we identified two key steps: (1) the recognition, appreciation, and embodiment of Aboriginal and Torres Strait Islander self-determination, knowledges, and leadership in oral health programming and provision, and (2) the utilisation of a strengths-based approach in all Aboriginal and Torres Strait Islander oral health research.
- The need to recognise, appreciate, and prioritise Aboriginal and Torres Strait Islander knowledges and practices that contributed to the historical self-determination of Aboriginal and Torres Strait Islander oral health to ensure a healthier future is identified.

14.4 STATEMENT OF AUTHORSHIP

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Principal Author

Name of Principal Author (Candidate)	Brianna Poirier		
Contribution to the Paper	Conceptualisation of research question Data analysis Manuscript writing Editing and revisions Corresponding author for publication process		
Overall percentage (%)	75%		
Certification:	This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper.		
Signature		Date	14/07/2022

Co-Author Contributions

By signing the Statement of Authorship, each author certifies that:

i. the candidate's stated contribution to the publication is accurate (as detailed above);

ii. permission is granted for the candidate in include the publication in the thesis; and

iii. the sum of all co-author contributions is equal to 100% less the candidate's stated contribution.

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Signature		Date	14/07/2022

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14.5 PUBLICATION

TITLE: The future of Aboriginal and Torres Strait Islander oral health lies in the footprints of the past

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We would like to begin by acknowledging and paying respect to the First Peoples of Australia, whose land we have the privilege of living, learning, and working on, the Kaurna Peoples. We extend this respect to all Aboriginal and Torres Strait Islander Peoples who may read this work, those whom we have had the honour of yarning with and learning from, and whose participation in research contributed to the stories shared herein. We express our gratitude for the sharing of these lands and more so, our deep sorrow for the spiritual, cultural, and personal costs of that sharing. We would like to inform Aboriginal and Torres Strait Islander readers that this commentary has referenced fundamentally unethical and racist scientific works; to justify going forward, this historical evidence was needed as a window to the past. We recognise these unethical works as unacceptable and regret that limited work has been done from a decolonial lens in the space of Aboriginal and Torres Strait Islander oral health history. We commit to re-telling this history by pursuing future works that present a balanced and truthful account of the oral health history of Aboriginal and Torres Strait Islander Peoples.

It is widely acknowledged that both the history of research and the provision of healthcare for Indigenous Peoples globally has been framed by oppressive colonial values and wrought with maltreatment and unethical behaviour. Oral health research and dental care provision for

Aboriginal and Torres Strait Islander Peoples is not exempt from colonial influence (1, 2). This commentary aims to counteract the stories often told of Aboriginal and Torres Strait Islander oral health by collating evidence that discusses the healthy history of oral health, the implications of colonisation on oral health, and the current portrayal of oral health. We argue the need to reframe discussions of Aboriginal and Torres Strait Islander oral health by critically engaging with the ways in which the future of Aboriginal and Torres Strait Islander oral health lies in the footprints of the past.

Aboriginal and Torres Strait Islander Oral Health

A Healthy History

Despite current biomedical understandings of oral health and dentistry that tend to view teeth and oral health as an entity separate from the body, Aboriginal and Torres Strait Islander Peoples have long considered the mouth as an interconnected component of well-being, that extends far beyond individual behaviour (3). Yarning and Songline traditions of Aboriginal and Torres Strait Islander Communities preserve and share knowledges within stories and spoken words. Songlines *"connect sites of knowledge embodied in the features of the land"* (4) and it is through Songlines that Aboriginal and Torres Strait Islander Peoples share ways of exploring the information, innovations, secrets, and stories that Country hold (4). Culturally, teeth have played a significant role in many Aboriginal and Torres Strait Islander traditional practices, including men's business, initiation, weaving, and fishing. Amongst many Communities in Australia's eastern and south eastern regions, tooth removal is the most important aspect of initiation ceremonies, whereby young men are bestowed the status of manhood (5); while specifics of this process are as diverse as Aboriginal and Torres Strait Islander Communities, tooth removal has been a common aspect of initiation for some time (5, 6). Another example of the cultural importance of teeth can be seen in the use of biting

bags, small, looped woven string bags made by Aboriginal women and used by Aboriginal men in Arnhem Land. The distinguishing feature of biting bags is their ability to be held in one's mouth, clenched between one's teeth for a variety of reasons, including ritual fighting. Biting bags are believed to be powerful objects whereby biting down enables access to spiritual power (7).

The primary source of sugar for Aboriginal and Torres Strait Islander Communities prior to colonisation was honey and manna from sugar trees. There was a generally low availability of fermentable carbohydrates in food sources; nothing comparable to the soft, sticky carbohydrates that cling to teeth and gums in white breads, pastries, and jams (6). Aboriginal and Torres Strait Islander Communities relied on the numerous plant and animal foods available for nutritional substance, which included roots of native carrots, yams, grasses, leaves, fruits, seeds, fish, kangaroos, and birds (8). Cooking and eating practices are thought to have contributed to oral hygiene of the time; for example, side effects of chewing the marrow and bones of animals contributed to tooth cleaning. As a result of cooking foods in an oven of ash and hot sand, meals often had a level of charcoal remaining at the time of consumption. A combination of these factors accounts for the comparative freedom from oral diseases experienced by Aboriginal and Torres Strait Islander Communities at this time (6).

Anthropological studies have identified that Aboriginal and Torres Strait Islander Communities were almost entirely free from periodontal disease and dental caries prior to colonisation (6, 8). A clinical comparison of 172 Aboriginal and Torres Strait Islander children and nearly 500 non-Indigenous children in 1963 identified a twofold prevalence of dental caries in non-Indigenous children compared to Aboriginal and Torres Strait Islander children (9). The oral health of Communities was so strong that one anthropologist reflected

on the likely experience of a dental surgeon in Communities during the 1800s, *"For one thing, [the dentist] would have practically no periodontal disease to treat, or the cases he had would be very few and far between… Again, caries would be infrequent, indeed would be so comparatively rare that he would be able to take his time over the treatment of the few carious teeth met with. Most astonishing of all, he would have no dentures to make. The number of teeth lost would be so few that he could forget all his knowledge of prosthetic dentistry without harming his patient"* (6). In reflecting on the oral health of Aboriginal and Torres Strait Islander Peoples today, we see a stark difference both in clinical indicators as well as the commonality of notions of oral health related fatalism (10).

Colonisation of Oral Health

With colonisation came impoverishment, dispossession, exploitation of land, disruption of social networks, and the destruction of subsistence livelihoods for Aboriginal and Torres Strait Islander Communities (11, 12). Importantly, the point of 'contact' between Aboriginal and Torres Strait Islander Peoples and colonisers is not a static place in time, but an ongoing and enduring period of deterioration in Aboriginal and Torres Strait Islander living conditions, quality of life, and eventuated in disrupted wellbeing, including oral health (13). The majority of documented records from the initial arrival of colonisers in Australia reflect European encounters with Communities from a colonial lens. Limited records regarding health indicators, such as mortality and morbidity, exist from this period (11).

Linear enamel hypoplasia (LEH) and defects of the dental enamel (DDEs) are measures anthropologists use to learn more about the historic health of a population. LEH can assist with general health inferences as well as socioeconomic circumstances (14), while DDEs reflect the presence of physiological stress during child development (15). Before the arrival

of colonisers in Australia, evidence demonstrates low levels of LEH, with many Aboriginal and Torres Strait Islander Peoples escaping LEH altogether (16) and the occurrence of DDEs was also infrequent (11). The rapid expansion of colonial presence, along with the introduction of assimilation policies, and the mandating of missions[2] across Australia, saw a significant increase in the levels of LEH and DDEs. The development of missions paralleled a uniform and dramatic increase in LEH prevalence, with earlier and longer occurrences (16). The uniform levels of LEH are attributed to the uniform environments of increased control, forced sedentism, increased nutritional deficiencies, and infectious diseases characteristic of missions. These experiences are despite the availability and 'benefit' of medical services and support allegedly provided by missions (16, 17). For Aboriginal and Torres Strait Islander Peoples, LEH is an indication of changing morbidity that demonstrates chronic and long-term effects of colonial settlement not otherwise visible during this initial period (16). Nearly identical to the rise in LEH, impacts on child development, as measured via DDEs, occurred earlier and persisted over a longer period of development, with prolonged exposure to colonisation and the environments of missions. Using measures of both individual teeth and total counts of teeth, a consistent rise in the frequency of LEH and DDEs from infrequent occurrences to a ubiquitous experience parallels increasing strength of the colonial goal of assimilation (11).

The historical relationships of domination over Aboriginal and Torres Strait Islander Peoples that began with colonial contact is maintained through the biomedical provision of modern-day dental services. The contrast in epistemological understandings of oral health are reflected in the characterisation of dental professionals as 'heroic' and 'benevolent,' and

[2]In Australia, missions were established to achieve assimilation of Aboriginal and Torres Strait Islander Communities with dominant colonial citizens by segregating Communities into "schools of citizenship" (18).

patients as passive recipients (2, 18). The perceived passive involvement of Aboriginal and Torres Strait Islander Peoples in oral health is furthered by an apparent ‘lack’ of oral hygiene practices or ‘failure’ to follow expert advice (1, 19). However, if we consider the relationships between Country, Community, food, and knowledges, as well as the historic evidence, we are compelled to believe another story; one of preventive health that goes beyond individual behaviours promoted by biomedical understandings of oral diseases and instead extends to the wellbeing of entire Communities.

Aboriginal and Torres Strait Islander Oral Health Deficit Discourse

A mix of biomedical understandings of disease and neoliberal ideologies of individual responsibility for health have surmounted in immense personal blame surrounding Aboriginal and Torres Strait Islander oral health (1, 20). The current portrayal of Aboriginal and Torres Strait Islander oral health largely contributes to and upholds the deficit discourse that creates expectations of poor oral health even among Community members themselves (3). Problematically, this narrative fails to recognise the forced assimilation of Aboriginal and Torres Strait Islander Peoples during colonisation that initiated and rapidly increased the experience of oral diseases. Reinforcing the deficit discourse surrounding oral health outcomes for Aboriginal and Torres Strait Islander Peoples is a damaging practice that is echoed by the media, demotivates Communities, and sustains experiences of oppression. This narrative of deficit discourse infiltrates to the provision of oral health services, where health care providers have unjust assumptions about Aboriginal and Torres Strait Islander Peoples, as evidenced by experiences of racism at dental services (21). Further, the assumption of ‘poor oral health’ is based on biomedical understandings of oral diseases that is limited in scope to Western understandings. By comparison, Aboriginal and Torres Strait Islander understandings of oral health reflect more holistic notions of teeth as central to one’s day to

day life, rather than an acute focus on problems limited to the oral cavity (1). The biomedical view fails to recognise the whole person in relation to their oral health, as well as their Community, knowledges, and histories.

Reframing Aboriginal and Torres Strait Islander Oral Health

To reframe the narrative of Aboriginal and Torres Strait Islander oral health, we identify two key steps: (1) the recognition, appreciation, and embodiment of Aboriginal and Torres Strait Islander self-determination, knowledges, and leadership in oral health programming and provision, and (2) the utilisation of a strengths-based approach in all Aboriginal and Torres Strait Islander oral health research. It is a great limitation and loss of opportunity to not include Aboriginal and Torres Strait Islander knowledges in relation to dentistry; currently, Aboriginal and Torres Strait Islander oral health is limited to the scope of dental professionals. It is clear from the evidence that Aboriginal and Torres Strait Islander oral health flourished prior to colonisation. As such, reframing our approach to the provision of oral health that honours self-determination and Community knowledges would create the opportunity to learn from the past. Opportunities could include ongoing Elder consultation with dental services, extended appointment times with Aboriginal and Torres Strait Islander patients to build relationality and allow for considerations of oral health in relation to the whole person, or co-designing oral health promotion campaigns and training for Community, but also for dental professionals. We caution the reduction of our second key step, a strengths-based approach, to symbolic gestures fulfilled through superficial inclusion of statements within manuscripts. Therefore, employing a strengths-based approach to oral health research must move beyond reporting of results and extend to study design, data capturing tools, Community engagement, and meaningful knowledge translation efforts that honour Community needs and contribute to policy change that betters the oral health of Aboriginal and Torres Strait Islander Peoples. A fundamental acknowledgment of the

continual impact of colonisation and discrimination on the oral health outcomes of Aboriginal and Torres Strait Islander Peoples is needed to encourage achievable and meaningful program outcomes that move beyond individual responsibility (1, 22).

Journeying forward

The Uluru Statement from the Heart was published in 2017 and is an invitation for the people of Australia to contribute to a better future for Aboriginal and Torres Strait Islander Peoples, which includes a commitment to "truth telling about our history" (23). The healthy history of oral health and wellbeing for Aboriginal and Torres Strait Islander Peoples is a part of the story that needs to be told truthfully. We must recognise, appreciate, and prioritise Aboriginal and Torres Strait Islander knowledges and practices that contributed to the historical self-determination of Aboriginal and Torres Strait Islander oral health to ensure a healthier future.

Conflicts of Interest

None to declare.

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15

Conclusions & Recommendations

15.1 PREFACE

This chapter collates the evidence generated throughout this thesis. Section 15.2 provides an overview of the research comprising this thesis. Section 15.3 highlights the key findings and concluding remarks of the evidence presented herein. Finally, section 15.4 reports recommendations and future directions arising from this thesis, in alignment with the 74th World Health Assembly Resolution for Oral Health.

15.2 OVERVIEW OF RESEARCH

The research comprising this thesis has explored micro, meso, and macro level facilitators and challenges to establishing and maintaining oral health for Aboriginal and Torres Strait Islander Peoples in Australia and, Indigenous Peoples globally. Learnings and observations acquired along this journey were also translated into a methodological paper proposing Relational Yarning as a mechanism to ensure meaningful and ethical oral health research, as well as two commentaries. The commentaries aimed to progress a strengths-based narrative of Aboriginal and Torres Strait Islander oral health as well as emphasise the importance of self-determination in any successful health equity pursuit. The exploration of the impact of neoliberalism on Aboriginal and Torres Strait Islander oral health as well as Indigenous wellbeing globally provided an opportunity to consider the influence of socio-political ideologies that shape the environments in which Indigenous health inequities persist.

15.3 RECOMMENDATIONS

During the 74th World Health Assembly (provide country and year) a Resolution for oral health was made that called upon the World Health Organisation to draft a global strategy on tackling oral diseases for consideration in 2022 and translation to an action plan by 2023 (1). This Resolution acknowledged the high prevalence of oral diseases globally, and the

increasing inequities experience by socially disadvantage population groups, which includes Aboriginal and Torres Strait Islander Peoples. This Resolution is a landmark document that puts oral health equity on the global stage, in a comprehensive manner that identifies the interconnectedness of oral diseases and general wellbeing, including cancer, quality of life, mental health, and noncommunicable diseases. The Resolution *urged* member states to take eight actions and *called* on member states to take an additional three actions. Table 1 summarises these calls to action in relation to the evidence generated within this thesis.

Table 1. World Health Assembly Resolution on oral health comparison with evidence generated within this thesis.

The World Health Assembly Resolution on Oral Health Calls to Action	
The Resolution URGES Member States:	Evidence generated within this thesis related to this Call to Action
(1) to understand and address the key risk factors for poor oral health and associated burden of disease	✓
(2) to foster the integration of oral health within their national policies, including through the promotion of articulated interministerial and intersectoral work	
(3) to reorient the traditional curative approach, which is basically pathogenic, and move towards a preventive promotional approach with risk identification for timely, comprehensive and inclusive care, taking into account all stakeholders in contributing to the improvement of the oral health of the population with a positive impact on overall health	✓
(4) to promote the development and implementation of policies to promote efficient workforce models for oral health services	✓
(5) to facilitate the development and implementation of effective surveillance and monitoring systems	
(6) to map and track the concentration of fluoride in drinking water	
(7) to strengthen the provision of oral health services delivery as part of the essential health services package that deliver universal health coverage	✓
(8) to improve oral health worldwide by creating an oral health-friendly environment, reducing risk factors, strengthening a quality-assured oral health care system and raising public awareness of the needs and benefits of a good dentition and a healthy mouth	✓
The Resolution CALLS on Member States:	Evidence generated within this thesis related to this Call to Action
(1) to frame oral health policies, plans and projects for the management of oral health care according to the vision and political agendas in health projected for 2030, in which oral health is considered as an integral part	

of general health, responding to the needs and demands of the public for good oral health	
(2) to strengthen cross-sectoral collaboration across key settings, such as schools, Communities and workplaces to promote habits and healthy lifestyles, integrating teachers and the family	✓
(3) to enhance oral health professionals' capacities to detect potential cases of neglect and abuse, and provide them with the appropriate and effective means to report such cases to the relevant authority according to the national context	

This thesis generated evidence related to six of the 11 Calls to Action from the World Health Assembly Resolution on oral health within the Indigenous Australian context. Much work remains to be done to ensure equitable experiences of oral health for Aboriginal and Torres Strait Islander Peoples. More translational emphasis on existing evidence, similar to policy translation pursuits called for in the discussions included in this thesis, is needed to reorient oral health from a curative approach to a preventive promotional approach. A holistic and preventive approach is possible within Aboriginal and Torres Strait Islander Communities, as this approach is already utilised by ACCHS for other areas of health and to some extent oral health, as evidenced by research comprising this thesis. Providing adequate funding and a concentrated effort towards establishing an oral health role for AHW in South Australia, and indeed nationally, would go some way to strengthen the provision of oral health service delivery as part of essential health services. To achieve the calls to action from the World Health Assembly, researchers must recognise their inherent responsibility to prioritise translation and advocacy efforts of their research. Specifically related to the limitations of the work presented in this thesis, future engagement with multi-level stakeholders, including AHW, ACCHOs, fathers, families, communities, dental care service providers, and political leaders will be critical to further Indigenous oral health equity and wellbeing, both in Australia and indeed, globally.

15.4 CONCLUSIONS

The work presented herein provides evidence that furthers a shared understanding of the complex environments and conditions that sustain the inequitable experiences of oral health for Aboriginal and Torres Strait Islander Peoples. More importantly, the evidence provides suggestions and opportunities to enhance existing facilitators to establishing and maintaining oral health as identified by Aboriginal and Torres Strait Islander families, as well as Indigenous Communities globally. ACCHOs have a strong history of supporting Aboriginal and Torres Strait Islander self-determination and subsequently, Community wellbeing. Any successful endeavour to further oral health equity for Aboriginal and Torres Strait Islander Peoples must privilege the leadership and expertise of ACCHOs and their workforce. There remains a need for structural changes that ensure adequate funding to comprehensively embed oral health promotion and programming in the service delivery of ACCHOs. This thesis supports the notion of neoliberalism as a re-colonisation of Aboriginal and Torres Strait Islander Peoples that is furthering health disparities through both insidious process of internalisation as well as generative mechanisms external to individuals. Critically, the strength of Aboriginal and Torres Strait Islander Communities continues to resist these processes.

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"Do the best you can until you know better. Then when you know better, do better." - Dr Maya Angelou

In loving memory of

Stephen Albert Poirier

16

Appendices

16.1 APPENDIX A: MOTIVATIONAL INTERVIEWING GUIDES

<u>MI: Pregnancy</u>

Intro

1. Scope of study / spirit of MI
2. Timeline / info sheet
3. Consent / voucher & goodies / contact details

Discussion

1. Take yourself to the dentist

   It is safe:

   a. It is safe to visit the dentist during pregnancy
   b. The dentist can check your whole mouth including your teeth and gums
   c. The dentist can then work out what treatment will be best for you, for your pregnancy and preparing for your baby
   d. There may be some treatments that you and your dentist decide to leave until after you have your baby, but most treatments (cleaning, fillings, even extractions) are normally ok

   It is important to have a check-up treatment during pregnancy to keep your mouth healthy:

   a. You may notice changes in your mouth during pregnancy, for example, your gums could bleed more
   b. The dentist can help check the way you are cleaning and help you clean well and look after your gums as well as your teeth
   c. If your gums are not cleaned well, they could bleed even more and cause you problems
   d. Vomiting in pregnancy can put your teeth at more risk of damage: the dentist can help check this and help work out ways for you to prevent more damage

   Having healthy teeth and gums is good for you and your baby:

   a. Gum problems can put you at more risk of having an early delivery (which isn't good for the baby)
   b. If you have holes in your teeth that are not fixed, then there is more chance you will pass the germs onto your baby after it is born, and this makes your baby more likely to get holes
   c. The dentist can help get your teeth and gums healthy during pregnancy

   Check-ups are always best

   a. Having check-ups early, before you have big problems, means that the treatment you need is probably smaller
   b. Some things can be fixed easily with small treatments
   c. Waiting until you feel pain could mean that the tooth cannot be fixed anymore and needs to be pulled out
   d. So make an appointment for a check-up, and if you notice any changes or think you have problems later, contact the clinic again

2. Brushing daily stops germs making holes in your teeth

   Brush with a soft tooth brush and toothpaste with fluoride

a. Brush every morning and every night
b. A soft toothbrush cleans your teeth well without causing damage to your teeth and gums
c. Toothpaste with fluoride helps protect your teeth against holes
d. Most toothpastes from the supermarket have fluoride
e. After brushing do not wash the toothpaste out: just spit it out
f. *When you visit the dentist they can check the way you are brushing and help you clean your teeth and gums well*
g. *The dentist can check if the toothbrush and toothpaste you are using are the best ones for you*

Your gums may bleed more when you are pregnant

a. During pregnancy your gums might bleed more than normal
b. This means that your gums need to be kept very clean
c. Brush the edge of your gums with a soft toothbrush: do not worry if they bleed, if you are gentle and using a soft toothbrush they should get better
d. Severe gum problems in pregnancy may increase your chance of having your baby early (which is not good for the baby)
e. *Visiting the dentist when you are pregnant will mean that they dentist can check your gums and see if you have calculus or tartar that they can clean off for you: this will help stop your gums bleeding*

Fluoride in toothpaste helps protect your teeth against holes:

a. The fluoride in toothpaste helps to protect your teeth and even helps heal early decay
b. It is best to use toothpaste at least twice a day
c. You only need a pea size amount
d. After brushing do not rinse the toothpaste out
e. If your gums are bleeding and you want to rinse – put a small amount of toothpaste back on your teeth after rinsing
f. Leave the toothpaste in your mouth – you will get used to it!!
g. The dentist can check that the toothpaste you are using is the best for you and give you specific advice that is best for your teeth

3. Take care of your teeth

Children will learn by watching you

a. Show your children how you are looking after your teeth and gums
b. Show them that you value a healthy body and healthy smile
c. Brush your teeth with a soft toothbrush and toothpaste twice a day
d. *Visiting the dentist when you are pregnant means the dentist can help make sure that your teeth and gums are healthy and help you look after them*

Children will learn about visiting the dentist from you

a. Visit the dentist regularly –for yourself and other children
b. Visit for check-ups – don't wait until you have a problem
c. If you notice changes, or think you might have a problem, visit the dentist as soon as possible

d. Visiting the dentist early can help make sure your teeth can be fixed and not pulled out
e. Finding and treating problems early means you have smaller and more comfortable visits
f. Show your children that visiting the dentist is ok

Fluoride in toothpaste helps protect your teeth against holes:

a. The fluoride in toothpaste helps to protect your teeth and even helps heal early decay
b. It is best to use toothpaste at least twice a day
c. You only need a pea size amount
d. After brushing do not rinse the toothpaste out
e. If your gums are bleeding and you want to rinse – put a small amount of toothpaste back on your teeth after rinsing
f. Leave the toothpaste in your mouth – you will get used to it!!
g. *The dentist can check that the toothpaste you are using is the best for you and give you specific advice that is best for your teeth*

Your gums may bleed more when you are pregnant

a. During pregnancy your gums might bleed more than normal
b. This means that your gums need to be kept very clean
c. Brush the edge of your gums with a soft toothbrush: do not worry if they bleed, if you are gentle and using a soft toothbrush they should get better
d. Severe gum problems in pregnancy may increase your chance of having your baby early (which is not good for the baby)
e. *Visiting the dentist when you are pregnant will mean that they dentist can check your gums and see if you have calculus or tartar that they can clean off for you: this will help stop your gums bleeding*

Having healthy teeth and gums is good for you and your baby:

a. Gum problems can put you at more risk of having an early delivery (which isn't good for the baby)
b. If you have holes in your teeth that are not fixed, then there is more chance you will pass the germs onto your baby after it is born, and this makes your baby more likely to get holes
c. The dentist can help get your teeth and gums healthy during pregnancy

4. Bush tucker, fresh fruit and vegies are best for teeth

Bush tucker, fruit and vegies are low in sugar

a. Foods and drinks that are low in sugar are good for your teeth, your body and your baby
b. The germs that cause holes in teeth feed on the sugar from your food and drink
c. *Visiting the dentist when you are pregnant means the dentist can check your teeth for any holes that are already there, and look for signs of holes that are starting*
d. *If the dentist finds early signs of holes starting, there are ways (cleaning, fluoride and low sugar diet) that means they can repair themselves*

Snack on healthy foods that are low in sugar

a. Sometimes in your pregnancy you may feel like you need to eat more
b. Snack on foods that are good for you and your baby – as well as your teeth
c. Good healthy snacks include fruit and vegetables, cheese, nuts and yogurt
d. Sometimes in your pregnancy you may feel like soft drinks, juice or sweet foods
e. These foods can damage your teeth
f. It is best for you and baby if you eat foods that are healthy and not high in fat or sugar
g. *The dentist can check your teeth for damage, as well as holes, and talk with you about what foods would be good for your teeth*

Drink plain fluoridated tap water

a. As much as you can, drink plain water
b. Water is good for your teeth as well as your body and your baby
c. Many other drinks have a lot of sugar or acid that can damage your teeth
d. If you have juices, try mixing them with some water
e. *Your dentist can look for signs of damage to your teeth from acid drinks and talk with you about what will be best for you and your teeth*

<u>MI: 1</u>

Intro

1. Scope of study / spirit of MI
2. Timeline / info sheet
3. Consent / voucher & goodies / contact details

Discussion

1. Find out what she knows
    - Is everything going okay with your teeth?
    - Can you tell me what you think about oral health?

2. Cards: Agenda setting
   There are a number of things we can talk about today. These are some of the ways people work towards oral health. Some of these you might have heard of/are already doing; others might be new ideas for you. When you look at these cards, what would you like to find out more about today?
    - Take yourself to the dentist
        – Dental treatment safe & important during pregnancy (pre-term, enamel, birth weight).
        – How bugs in mouth can pass to baby
    - Brushing daily stops germs
        – Soft toothbrush, fluoride toothpaste, evening better than morning, spit (don't rinse)
        – Brush bleeding gums gently to heal

- Take care of your teeth
  - – Children learn by watching you, teaching values. Brushing teeth, regular trips to dentist, how decay spreads to babies.
- Fresh food is best
  - – Bush tucker & veg low in sugar, germs + sugar=cavities, starchy foods are sugary
  - – Fruit, cheese, yogurt are good snacks. Drink tap water when thirsty. Dilute juices with water.

3. Ask-Provide-Ask
   - I'm happy to share ideas with you... what have you already thought of?
   - Some mothers do it this way... what do you make of that?
   - Can you think of other times when this happened, but you got through it?
   - From what you're saying, it sounds like ___ may be an issue. What ahve you heard about ___?
   - There are some great ideas about the ways women look after their teeth during pregnancy... would it be okay to talk about some of these?

4. Rulers: Importance and Confidence
   - On a scale of 0 -10
   - High
     - What makes change important to you?
     - What does it mean to be a __?
   - Low
     - How come a 2 and not a 1?
     - What would it take to bump you up a few notches?
     - What would help you feel more confident to make this change?

5. Commitment language
   - What do you think the first step might be to reach your goal?
   - Given that you're here... where would you like to go now?

6. Change Plan

7. Referral

Questionnaire

MI: 2

*denotes activity

Intro

4. Scope of study / spirit of MI
5. Timeline / info sheet
6. Consent / voucher & goodies / contact details

Discussion

8. Establish rapport.
   - How are you and baby going? (e.g. family, birth, feeding)

9. Ask for change talk.
    - What are your goals for baby's teeth? What concerns might you have?
    - Why do you think it's important for your baby's teeth to come in healthy and strong?

10. Listening / sharing information.
    (Find out what she knows about looking after baby's teeth. → Discuss bugs/time/sugar in MI-consistent way.)

    Listening.
    - Can you tell me your thoughts about looking after your baby's oral health?
    - How is everything going with baby's teeth? (e.g. teething, sleeping/soothing)
        i. What are some of the things you're doing as _______ (e.g. baby's teeth come through; baby gets cranky)?

    Sharing information. (Ask – Provide – Ask / listen, reflect, summarize / encourage change talk)

    →From what you're saying, it sounds like ______ may be an issue. Is it alright if I share some information with you? We've learned that there are 3 important things which put holes in our teeth:

    BUGS

    Babies aren't born with bugs in their mouth. Bugs come from <u>people</u> (e.g. through sharing food, cleaning dummy in mouth, kissing) and <u>sugar</u> (which combines with bugs to form acid, dissolving the teeth).

    Fizzy dissolving teeth

    When we eat food or drink, the bugs in our mouths break down the food and drink into ACID. The acid then starts to dissolve the healthy tooth. Bugs breakdown food/drink to make acid, and the acid makes holes in baby's teeth.
    - Discuss. (Wiping away bugs with cloth.)

    TIME
    - The more frequently we eat or drink things that contain sugar, the more we dissolve our teeth. Which do you think is better: sipping your can of fizzy over cleaning the house, or drinking a can at dinner? It's better to finish your sweet drink quickly than having it over a long time.
    - One of the main causes of children getting decay is going to sleep with a bottle of something other than water, let's say milk (which contains sugar). That sugar is getting eaten by the bugs to make acid. The acid is dissolving baby's teeth for the 8 hours they are sleeping.
        - Discuss. (Drinks at sleeping time do the most damage, water ok.)

    SUGAR
    - Sugar combines with bugs to form acid. Cariogenic substances; milk, formula, juice, flavoured milk, cordial, fizzy, lollies, high sugar content puree fruit, tinned fruit.

    Ranking sugary drinks

*Sugar in baby food** Show where to find sugar on the label. A good amount would be under 5g.

– Discuss. (Breast milk and formula are best. Only milk or water should go in baby's bottle. Try not to give baby food with tooth much sugar.)

11. Use bugs/time/sugar cards to discuss issues relevant to mum. (Ask – Provide – Ask.) She can pick topics, and/or you could discuss these: "What do you know about _____ for baby's teeth?"
    - Cleaning
      - – Wipe baby's gums and teeth with damp cloth, morning and night
      - – Around 10 months, brush baby's teeth with toothpaste morning and night
      - – Play with a toothbrush to encourage use
      - – Less bugs = less decay
    - Healthy diet
      - – Minimize sugar intake (e.g. juice, fizzy drinks, cordial, flavoured milk, honey, jam)
      - – Breast milk is best
      - – Discuss healthy foods/bush tucker
    - Teething
      - – Give baby damp wash cloth, frozen ring, or cold spoon to suck on
      - – See doctor about baby's pain relief

12. Rulers: Importance and Confidence
    - On a scale of 0 -10
    - High
      - What makes change important to you?
      - What does it mean to be a __?
    - Low
      - How come a 2 and not a 1?
      - What would it take to bump you up a few notches?
      - What would help you feel more confident to make this change?

13. Commitment language
    - What do you think the first step might be to make sure baby has the best possible start for healthy, strong teeth?
    - Given that you're here... where would you like to go now?

14. Change Plan
    - What kinds of challenges do you see this plan?

<u>MI: 3</u> (12 months)
Goal: Fluoride varnish

Intro

Scope of study / spirit of MI. Timeline / changes to info sheet / fluoride questions. Audio consent / goody bag / contact details

Discussion

15. Intro

- How is everything going with your baby's teeth?
- The focus of our meeting today is on keeping baby's teeth healthy, especially with the help of fluoride. Can you tell me what you know about fluoride?
- Ask for change talk:
  – What are your goals? What concerns do you have about fluoride varnish?
  – Why do you think it's important for baby's teeth to come in strong and healthy?

16. Agenda setting

    There are a number of things we can talk about today. These are some of the ways we can look after babys' oral health. Some of these you might have heard of/are already doing; others might be new ideas for you. When you look at these cards, what would you like to find out more about today?

    - Fluoride varnish

      What:

      – Fluoride is a natural mineral found throughout the earth's crust and widely distributed in nature.
      – Fluoride varnish is a protective coating which is painted on the teeth to stop cavities forming and to slow down cavities which may have started. The varnish last for 6 months. So your child should receive the fluoride varnish every 6 months for the next 2 years.
      – Has a good taste. It's a sticky gel and stays on teeth for a long time, soaking deep into the tooth to make it very strong.
      – It is safe and has been used all over the world.

      How:

      – Fluoride is in tap water, toothpaste, some foods, and also comes in a high concentration called fluoride varnish. This is the application of fluoride directly onto the tooth. It helps to rebuild damage produced by acids. FV has over 48 times the amount of fluoride as child toothpaste.
      – Fluoride concentrates in the growing bones and developing teeth of children, helping to harden the enamel on baby and adult teeth before they emerge.
      – Fluoride helps because, when teeth are growing, it mixes with tooth enamel (the hard coating on your teeth), that prevents tooth decay, or cavities. But fluoride can help even after your teeth are formed. It works with saliva to protect tooth enamel from plaque and sugars.
      – Also helps even when the cavities have started

      Why:

      – This is a problem affecting Aboriginal kids in particular. Important to make change for Aboriginal health.
      – Some people believe that fluoride causes cancer, but this not true and has never been proven. They also think that fluoride is bad for you because it is given to everyone, and they would rather individuals get to decide. But fluoride in water is actually the most effect public health initiative that's ever happened, anywhere in the world. What's really great about it is that the people with the most decay end up getting the biggest benefit from fluoride varnish—so it reduces inequalities. Before fluoride was put in our water in the 1950s, most people had to have all of their teeth pulled out.

When: Within the first 12 months, baby gets their top 4 and bottom 4 teeth—so this is the best time for fluoride varnish to work. We want to apply it today and also in 6 months, when baby is about 18 months old.

Who: Dental professional. In our study, staff are "dental professionals." You can't buy Duraphat at the Chemist or supermarket.

- No bottle feeding at night
  - The main cause of babies getting holes in their teeth is going to bed with a bottle of something other than water (like milk, which contains sugar). The sugar from the milk gets eaten by the bugs on our teeth to make acid. The acid dissolves baby's teeth for the 8 hours they are sleeping.
  - Drinks at sleeping time do the most damage. Water is okay.

- Brushing baby's teeth
  - Now is the time to start brushing baby's teeth, morning and night
  - Play with toothbrush to encourage use
  - Brushing off bugs from teeth prevents holes. Less bugs = less decay
  - Do not use toothpaste until 18 months

- Healthy diet for baby
  - Minimize sugar intake (e.g. juice, fizzy drinks, cordial, flavoured milk, honey, jam). A good amount from canned food is under 5g.
  - Breast milk is best
  - Bush tucker & vegetables low in sugar, germs + sugar = decay, starchy foods are sugary too
  - Drink tap water when thirsty. Dilute juices with water.

Ask-Provide-Ask

- I'm happy to share ideas with you... what have you already thought of?
- Some mothers do it this way... what do you make of that?
- Can you think of other times when this happened, but you got through it?
- From what you're saying, it sounds like ___ may be an issue. What have you heard about ___?
- There are some great ideas about the ways mums look after their baby's teeth... would it be okay to talk about some of these?

17. Rulers: Importance and Confidence

18. Commitment language

- What do you think the first step might be to make sure your baby has the best possible start for healthy, strong teeth?
- Given that you're here... where would you like to go now?

19. Change Plan

My plan is to:
It's important to me because:
A step I can take is:

Someone who can help is:
If things don't go well, I can:

- What kinds of challenges do you see to your plan?
- What kinds of challenges do you see for continuing with fluoride varnish through this project? How about meeting us in 6 months to put more varnish on baby's teeth?

20. After applying FV, let mum know:
    1. No food or drink for at least 30 minutes
    2. No brushing or cleaning teeth tonight
    3. Teeth will have a yellow tint from the fluoride but will come off when brushed in the morning.
    4. I'll be back in 6 months for another application.

MI: 4 (18 months)

Goal: schedule baby's dental check (+ apply FV)

Intro

7. Scope of study / spirit of MI
8. Timeline / changes to info sheet / fluoride questions
9. Audio consent / goody bag / contact details

Discussion

21. Intro
    - How is everything going with your baby's teeth?
    - The focus of our meeting today is on taking baby for her first dental check. Can you tell me what you think about taking baby to the dentist?
    - Ask for change talk around taking baby to the dentist:
        - – Can you tell me why you think it's important for you to have baby's teeth to come in strong and healthy?
        - – What are your goals for taking baby to the dentist? What concerns do you have about taking her?

22. Agenda setting

    There are a number of things we can talk about today concerning taking baby to the dentist. We can't know until we get there, but these 4 cards show some of the things that might happen when you take your baby to the dentist. When you look at these cards, what would you like to find out more about today?
    - Healthy check up / healthy teeth
        - – Things go well: baby gets comfortable with going to the dentist, starts a healthy habit from a young age which they can carry into adulthood, dentist will look at her teeth, clean them, etc.
        - – Diet, brushing, no bottles at night
    - Family support
        - – When the clinic calls, you can ask to bring your family with you. It could be a new family tradition, supporting each other by doing it together and maybe even holding each other accountable back at home too, to brush, eat healthy foods, etc. How can you make things better for your family now than what you've seen others do in the past? What kinds of changes do you want to make?
    - Treatment (crowns under GA)

– After the front teeth decay, the baby can't have crowns (which only work on molars).
– Crown is placed on tooth to keep it strong until it falls out naturally.
– There is a possibility that baby will need treatment for holes in her teeth. This could mean having crowns put in, or maybe even having teeth pulled out under a GA. At this age, the baby will need to go to a dentist/hospital for care. General Anaesthesia (GA) refers to being "put to sleep". During GA, the baby is unconscious. First they give you the baby gas to calm you down, then they numb the baby's arm with a spray before putting a needle in. This puts the baby to sleep.
The baby can't drink or eat for 6 hours before the procedure (otherwise, vomiting is possible and this would be very dangerous during GA).
– Even though it's difficult, this is a really positive thing to do.

23. Ask-Provide-Ask / Ask for change talk
- Can you think of other times when something difficult or scary happened, but you got through it?
- From what you're saying, it sounds like ___ may be an issue. What have you heard about ___?
- What are your goals? What concerns do you have?
- Why do you think it's important for baby's teeth to come in strong and healthy?

24. Rulers: Importance and Confidence
- On a scale of 0 -10
- High
    - What makes change important to you?
    - What does it mean to be a __?
- Low
    - How come a 2 and not a 1?
    - What would it take to bump you up a few notches?
    - What would help you feel more confident to make this change?

25. Commitment language / plan:

- What do you think the first step might be to make sure you can take baby to the dentist?
- What kinds of challenges do you see to your plan?
- What kinds of challenges do you see for continuing with fluoride varnish through this project? How about meeting us in 6 months to put more varnish on baby's teeth?

My plan is to:
It's important to me because:
A step I can take is:
Someone who can help is:
If things don't go well, I can: