ORANGA WAHA

Oral health research priorities for Māori

LOW-INCOME ADULTS, KAUMĀTUA and **MĀORI WITH DISABILITIES, SPECIAL NEEDS** or **CHRONIC HEALTH CONDITIONS**

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He huarahi rangahau
Māori oral health research agenda

Introduction

To have good oral health is to have the opportunity to enjoy good kai, to speak clearly, to hongi, kiss, smile and laugh, without discomfort or embarrassment. It is also to be free from active disease in the mouth that affects overall health and wellbeing.

The opportunity for good oral health is not equally available to all citizens of Aotearoa. Dental services for adults remain fundamentally outside the system of public subsidy for health care* despite the growing recognition of the inter-relatedness of oral health and systemic disease (Spencer 2004). Preventive, restorative, or rehabilitative dental care is accessible to the affluent but often unattainable to those who are less well-off.

Due to the way New Zealand society structures opportunities and wealth, Māori are at greater risk of having low disposable incomes and diminished access to dental care. The values, norms, policies, and practices of an ableist society are also manifest in inequities in the determinants of health for people with disabilities. Poor oral health in turn impacts socioeconomic prospects.

He Korowai Oranga, the Māori Health Strategy (Ministry of Health 2002), the Oral Health Strategic Vision *Good oral health for all, for life* (Ministry of Health 2006a), and the Disability Strategy (Ministry of Health 2001) each seek to contribute to the growth of Māori health and wellbeing, to increase participation, and to reduce inequities. *Good oral health for all, for life* prioritises children and adolescents, people of all ages with physical, intellectual, behavioural, or cognitive disabilities, or who are medically compromised, people experiencing inequalities in outcome (eg, Māori, Pacific and low-income populations), and older adults.

This project was commissioned by the Ministry of Health and the Health Research Council of New Zealand Māori Health Joint Venture programme to determine oral health research priorities that will contribute to improved oral health and reduced disparities for three priority populations: Māori adults with low incomes, older Māori, and Māori of all ages who have special needs, disabilities, or medical conditions that affect oral health or dental care.

* Public funding totals $178m out of $1billion per annum, with only $9m allocated for low-income adults (Chua 2009).

The research endeavour was a partnership between Te Rōpū Rangahau Hauora a Eru Pōmare (a Māori health research centre at the University of Otago, Wellington) and a range of community organisations and Māori health service providers. These included: Te Ao Marama (the New Zealand Māori Dental Association); Tipu Ora Charitable Trust (a Māori health, social service, and training provider based in Rotorua); Te Rūnanga o Toa Rangatira, which umbrellas the Ora Toa Primary Health Organisation serving Porirua and Wellington; Ngāti Pāhauwera Hauora Society, (a Māori health provider in northern Hawkes Bay); Kōkiri Marae Keriana Olsen Trust, (a 'ngā hau e whā' Māori health and social service provider in Seaview, Lower Hutt); Rata te Āwhina Trust (a Māori health and social service provider serving the West Coast of the South Island); and Alzheimers NZ Inc. (a national support and advocacy organisation for people with dementia, their carers and whānau). The research team had strong links with the partner organisations and included researchers from Otago University, Massey University, Tipu Ora, and Kōkiri Marae.

The research used a mix of qualitative and quantitative enquiry, including: surveys, interviews and focus groups with a range of Māori communities and with people working in the health and disability sector; statistical analyses of public hospital admissions for oral disease and injury, and of oral cancer registrations and deaths; a review of oral health data sources; and a comprehensive literature review. The findings were discussed at a national workshop of key stakeholders where research topics were developed and prioritised, along with the vision and principles underpinning the research agenda. The agenda is summarised in the figure on pages 10–11.

Vision

The vision of "oranga waha mō te iwi Māori katoa", good oral health for *all* Māori, for life, acknowledges the Crown's and society's obligation to tackle the major access and equity issues that affect Māori whānau with low incomes, kaumātua, and Māori with disabilities, special needs, or chronic health conditions.

Based on the Treaty of Waitangi, an ideal oral health system enables Māori communities, individuals, and whānau to create environments conducive to health, puts prevention of disease and injury at the front line, and intervenes as early as possible in the disease process (Tomar & Cohen 2010). It is accessible to all, especially those facing greater oral health risks, inclusive, evidence-based, sustainable, and responsive to changing needs and effective innovative developments. An ideal system 'treats whānau not age',* is culturally safe, has a well-supported workforce, is integrated with all health care, crosses health professions and sectors, and overcomes distance barriers. This research agenda

* Previous research has shown that dental care systems that provide family care are more effective than having separate systems for adults and children (Tomar & Cohen 2010).

aims to contribute to a health system that progressively fulfils the right to good oral health for all Māori.

Principles/values

Participants in this research voiced their concerns and aspirations for the research to come out of this agenda to make a difference, to impact decision-making in whānau and communities, to influence policy, practice, education and training. There was considerable discussion concerning the conduct and dissemination of the research that would come out of this research agenda, including the need to embrace kaupapa Māori values and practices, to be scientifically sound, to be empowering, and to strengthen research capacity and control in Māori communities.

Transformative research

This research agenda seeks to encourage research that will be transformative – research that changes the inherent nature of the oral health care system to better meet the needs and rights of Māori whānau, and that creates environments and living conditions conducive to good oral health. It is congruent with Ngā Pou Kōrero, the Strategic Plan for Māori Health Research which supports the expression of rangatiratanga and mātauranga (Health Research Council 2010). It is intended to be inclusive of all types of research.

To strengthen the link with policy, the research areas have been grouped under the pathways of He Korowai Oranga, the Māori Health Strategy. He Korowai Oranga was developed by the Ministry of Health and is grounded in extensive consultation with Māori communities and policy relevant. The Strategy aims to contribute to whānau ora, defined as Māori families supported to achieve their maximum health and wellbeing (Ministry of Health 2002).

WHĀNAU, HAPŪ, IWI, COMMUNITY DEVELOPMENT

Through the course of this project we heard from Māori whānau and communities about the impact of oral health problems and barriers to accessing care, their strategies for looking after their own oral health and that of whānau members, and their aspirations for better prospects for their communities. Previous negative experiences with dental services were disincentives to seeking dental care, but re-engagement was successful provided services were appropriate, affordable, and trusted.

Recognising 'knowledge as power', participants aspired for their whānau and communities to have a good knowledge of oral health and its determinants, to know how to maintain good oral health including traditional methods and

He huarahi rangahau

A research agenda toward the right to good oral health for all Māori

VISION	Oranga waha mō te iwi Māori katoa *Good oral health for all Māori, for life*	
PATHWAYS	**Whānau, hapu, iwi, community development**	**Māori participation**
TRANSFORMATIVE RESEARCH AREAS	**Research on the most effective ways for Māori communities to increase:** > Knowledge and understanding of: oral health risks, how to maintain good oral health, including traditional methods and rongoā, rights and entitlements, and how to access dental care (including preventive, specialist, dentures) > Knowledge and support for people with disabilities to independently access oral health services and improve their oral health, and support for their whānau members. > Control of environmental determinants of oral health > Financial resources and political influence over decisions affecting oral health and the provision of oral health care in their community	**Research on the most effective ways to:** > Increase Māori provider capacity to deliver oral health services > Develop the Māori oral health workforce (including new types of oral health workers, and other health professionals in primary care and public health) > Increase knowledge of oral health and best practice care among non-dental health and disability support providers to Māori, including people with disabilities
PRINCIPLES	Facing inequities “Nothing about us without us” Making a difference Tika Manaakitanga Kaitiakitanga Mana whakahaere Kaupapa Māori Prevention at the front line “To have an ordinary life” Whānau approach	

A sustainable, high quality, responsive and inclusive health system that progressively fulfils the right to oral health for all Māori, including adults with low incomes, older adults, and Māori of all ages who have special needs, disabilities, or conditions that affect oral health and/or health care.

Effective health services	Working across sectors	Monitoring, research, and evaluation
Research to develop, compare, and evaluate: > Innovative models of oral health care for effectiveness for Māori > Legislative, regulatory, financial, and workforce changes required to achieve a sustainable, high quality, inclusive, oral health system for all Māori. > Ways to integrate oral health into models of care for chronic conditions > How to tackle the maldistribution of dental professionals > Interventions to enable disabled Māori to receive good oral health care from 'ordinary services' and increased access to specialist care when necessary	**Research on:** > The social, economic, and cultural impact of improving oral health for Māori adults and Māori with disabilities > Addressing the unequal distribution of the determinants of oral health > Barriers to and facilitators of environmental protection of oral health for Māori > Injury prevention in areas with high rates of fractured jaw among Māori	> Research on ways to systematically monitor progress towards the right to oral health for Māori with different types of disabilities, including health service utilisation and performance > Develop evaluation models for existing and new models of oral health care relevant to Māori values and desired outcomes > Develop methods to ensure mana whakamaarama (equal explanatory power) in research for Māori with disabilities > Mechanisms to disseminate research findings to Māori communities, and other decision-makers, to maximise uptake and impact

Quality science   Research translated into action
Building research capacity & control within Māori communities
Community ownership   Reciprocity   Intergenerational health justice
Research encompasses the past, the present & the future   The spark of mauri!

rongoā, to know their rights and entitlements, and to be able to access good dental care, (including preventive, restorative, rehabilitative, and technical care such as denture repairs) from services that respect their values and economic realities.

Whānau expressed a need for good understanding of the relationship between oral health and specific disabilities or chronic health conditions (such as the link between diabetes and periodontitis, the effects of medication on oral health for example), and how best to manage the associated risks such as dry mouth or difficulties with oral hygiene. Many had suggestions for ways dental services could reduce the stress of obtaining dental care for people with disabilities. Increased capacity to advocate for, and have influence over the provision of oral care for whānau members living at home or in residential care was desired.

Research is required on the most effective ways for Māori communities to:

> Increase their **knowledge and understanding of oral health** determinants, risks and maintenance, the relationship between disabilities or medical conditions and oral health, traditional methods and rongoā, rights and entitlements, and access to care.

> Increase **knowledge of, and support for, people with disabilities** to (independently) access oral health services and improve their oral health, and to increase the knowledge and support of their whānau members.

> Increase their **control over decisions affecting the environmental determinants of oral health** (eg. local authority decisions on water fluoridation, the distribution of alcohol outlets, tobacco regulation, healthy kai policies and practices, protection of rongoā and natural resources).

> Increase their financial, workforce, governance resources, and political **influence over decisions affecting oral health and the provision of oral health care in their communities**, including services provided for people with disabilities, special needs and chronic health conditions.

MĀORI PARTICIPATION

Māori health providers have a vision for improving the oral health of their constituencies, with several developing innovative services to meet the needs of their communities, embedded in primary care organisations. Continued support, evaluation, expansion, and extension of such services to other areas will help to increase access to oral health care for Māori.

> Research is required on the most effective ways to increase **Māori provider capacity to deliver oral health services.**

The Māori oral health workforce is highly committed to making an effective contribution to Māori oral health development, especially for those experiencing barriers to access. The multiple benefits of building the Māori health and disability workforce include: greater potential for culturally concordant health care which is likely to be more effective and efficient; increased access to skills and knowledge about health and the health system in Māori whānau contributing to greater health literacy; increased access to role models for health careers; decreased risk of isolation and burnout among Māori health workers (Ratima et al 2008). The shortfall of Māori in the oral health workforce is acute (Cram et al 2011).

Oral health workforce shortages will intensify as the number of teeth to be cared for is increasing at a faster rate than the population, with greater retention of natural teeth among the ageing population (Ministry of Health 2010a). To meet the growing need and to reduce disparities in access to dental care, new types of oral health workers may need to be developed, with increasing utilisation of other (non-dental) primary care and public health practitioners for oral health care and promotion.

> Research is needed on the most effective ways to **develop the Māori oral health workforce, including workforce innovations.**

The population of people with disabilities or special needs is growing (Glassman & Subar 2010). At the same time as developing community and whānau skills and knowledge of oral health and disability, it is also important to ensure non-dental providers or health, disability, and social services also have the requisite skills and knowledge, and that structural supports are in place such as including oral health in quality improvement programmes, competency assurance, and accreditation processes.

> Research is needed on the most effective ways to **develop oral health knowledge and skills among non-dental providers serving or supporting Māori with disabilities or chronic health conditions.**

EFFECTIVE HEALTH SERVICES

New Zealand's current system of dental service provision for adults, with high out-of-pocket expense, does not meet the needs of Māori families, particularly those with low incomes. Unlike other primary health care services, only a very small proportion of the $1 billion spent on dental care each year is publicly funded ($178m), of which only 5% is allocated for low-income adults (Chua 2009). Cost was the most commonly reported barrier to dental care all groups in this research project. The recent trend of rapidly increasing unemployment among Māori adults, including young adults, with increasing numbers of adults living on highly restricted disposable incomes, indicates increasing numbers of Māori will be experiencing greater cost barriers to dental care.

Funding models and contract restrictions, administrative burdens, narrow scopes of practice, age-restricted services, and workforce shortages were identified by members of Te Ao Marama as barriers to the provision of effective care to whānau with low incomes.

> There is a need to develop **innovative models of oral health service delivery** to meet the needs and aspirations of Māori communities.

The achievement of more effective oral health services may require new ways of financing dental care, particularly for adults, (including people with disabilities and special needs), given the limited publicly funded expenditure on adult dental care. Other changes may be required, including workforce innovations, changes to contractual arrangements, and regulatory frameworks. Examples could include new scopes of practice for current health practitioners (dental and non-dental), new ways to finance dental care provided by public and private dental practitioners or by non-dental health practitioners; new ways of contracting publicly funded dental care for low-income adults to increase access to preventive interventions rather than emergency care only; the development of nationally recognised standards for care, the development of quality metrics and diagnostic codes for dental services to facilitate monitoring for equity; re-examination of policies that restrict certain dental treatments to those who have shown 'previous dental responsibility';* policies to enable the redistribution of unused capacity in the current delivery system to support communities needing care.

> Research will be required on the **legislative, regulatory, financing, policy, training, and workforce changes needed** to ensure successful implementation of alternative systems of oral health care that will enhance equity of access across the dental spectrum for Māori of all ages, incomes and Māori with different types of disability.

Chronic conditions and disabilities are more prevalent among Māori. The experience of participants in this project with special needs, chronic health conditions, or who support Māori with Alzheimers' disease, was that oral health was not part of the routine health checks, screening, or education and support routinely given. Community participants expressed a desire for more information on oral health care appropriate to the health condition or impairment they or their children were experiencing. The incorporation of oral health into models of care for chronic conditions corresponds with the international and national drive to integrate oral health into general health care (National Health Committee 2007).

* See dental services for prisoners (National Health Committee 2010), and ACC provisions for dental implants (ACC 2006).

> Research is needed on the **incorporation of oral health into models of care for chronic conditions** in ways that are appropriate and effective for Māori, given current access barriers, and the greater prevalence of multiple conditions.

The maldistribution of dental professionals, with concentrations of dentists in wealthier urban areas and a lack of professionals in rural areas and areas with higher Māori populations, contributes to access inequities. Relying on dentist volunteerism is not a long-term solution and systematic approaches to the provision of oral health care are required (Skillman et al 2010).

> Research is required to better understand the contributing structural factors of the **maldistribution of dental professionals**, and to compare the effectiveness of current and new strategies designed to increase the likelihood of dentists and other oral health professionals practicing in underserved areas and committed to Māori oral health.

The NZ Disability Strategy and the United Nations Convention on the Rights of Persons with Disability affirm the right for disabled people to have access to the same services as others, near to where they live, and to get the health services they need. In areas where there are no dental services available for people with special needs or disabilities, the need to go to hospital for dental care adds an extra financial, time, and travel burden to whānau. Key informants working in special care dentistry perceived an under-representation of Māori patients referred to their services. Others mentioned the lack of investment by DHB funded services in wheelchair accessible dental facilities or dental chairs for example. There is a need to increase the capability and capacity of community-based dental practitioners to care for Māori with disabilities living in the community or in residential care. Factors affecting the availability and physical accessibility of dental services for Māori with disabilities need further investigation.

> Research is needed to develop, compare, and evaluate interventions to enable disabled Māori to receive good oral health care from 'ordinary services' and increased access to specialist care when necessary.

WORKING ACROSS SECTORS

Almost a quarter of Māori adults report often experiencing negative impacts because of problems with their teeth, mouth or gums (Ministry of Health 2010). The stigma associated with poor oral health also came through as a theme in this project. However, relatively little research has been done on the positive effects of improved oral health for Māori. Such research could be done as part of oral health interventions studies per se, or potentially as part of intersectoral programmes such as those envisaged under the 'Whānau Ora' policy (Taskforce on Whānau-Centred Initiatives 2010).

> Further research is needed on the **social, economic, and cultural impact of improving oral health for Māori adults and Māori with disabilities**.

Accepted risk and protective factors for oral disease include diet, tobacco and alcohol, oral hygiene, fluoride. In addition, certain disabilities or health conditions increase vulnerability to oral health problems. For example, periodontitis is a complication of diabetes; and some medications or treatments cause dry mouth, reducing the protective effects of saliva against caries through buffering acid attacks and supporting remineralisation (Kidd 2005). The 'common risk factor' approach recognises that oral health risk factors are common with those of other chronic conditions. The World Health Organisations recommends that public health interventions for oral health and general health should be integrated (Petersen 2005). Such interventions need to be evaluated for their effectiveness for low-income Māori adults, kaumātua, and Māori with disabilities, psychosocial issues, and chronic health conditions.

> Research is needed on **the aetiology of the unequal distribution of the determinants of oral health** in order to develop effective public health interventions for Māori.

The public health approach to oral health protection emphasises changing environments to be more conducive to health, rather than trying to effect behaviour change without consideration of the contexts in which people live (Sheiham 2001). For example, fluoridated water is shown to be particularly effective in reducing inequalities in caries, providing proportionately greater protection to Māori children (Public Health Advisory Committee 2003) but the decision to fluoridate community water supplies is left to territorial authorities whose decisions do not necessarily prioritise the needs or aspirations of Māori communities. Theories of social inequalities in health recognise the importance of social, political, and economic processes in shaping inequities in population health profiles (Krieger 2001). There is relatively little research providing critical evaluation of how the priorities of the food, tobacco, alcohol, and marketing industries (to accumulate capital), and government actions (eg. through regulation or deregulation, tax codes, trade agreements, labour laws) affect Māori oral health and reproduce inequalities.

> Research is needed on the **barriers and facilitators of environmental protection of oral health for Māori**, especially those at highest risk of oral health problems, those living in rural or urban areas, socioeconomically disadvantaged areas, and in institutions or supported living arrangements.

There is a lack of research on orofacial trauma among Māori. The analysis of publicly funded hospital admissions for this research found high rates of admission for fractured jaw among Māori males and females, particularly high

for those living in high deprivation areas, and in certain health board districts. A high proportion of injuries were attributed to violence.

> There is a need for r**esearch on injury prevention in areas with high rates of fractured jaw among Māori,** including a focus on safety from violence for Māori men and women.

MONITORING, RESEARCH, EVALUATION

Monitoring data provides an important point of leverage for achieving change. It is difficult to advocate for change or to determine where progress is being made without such data. The UN framework for monitoring the right to health promotes the use of structural, process, and outcome indicators. The strong anti-discrimination requirement of the right to health requires monitoring data to be disaggregated by all groups at risk of inequitable outcomes, including ethnicity, socioeconomic status, age, gender, and disability. The absence of oral health data for Māori with different types of disability impedes our ability to monitor the right to health for the group with the highest needs and greatest barriers to accessing care, or to hold the health system accountable for its performance in regard to people with disabilities. The development of efficient ways to identify and record disability status in routine data collections and health surveys is a high priority to enable oral health care provision and innovations for disabled Māori to be evaluated and to monitor the progressive realisation of the right to health for all.

> There is a need to **develop and evaluate methods to systematically monitor oral health status, oral health service utilisation and health system performance for Māori with different types of disabilities**.

Mana whakamaarama (equal explanatory power) has been accepted for Māori health research generally as a way to prevent marginalisation of Māori in research and the resulting policy and practice decisions. However, the notable absence of research, routinely collected data, and the limited funding allocated to research by and for Māori with disabilities, attests to the need to promote and develop ways to ensure **mana whakamaarama for Māori with disabilities and special needs.** Building the disabled Māori health research workforce will be necessary to support the facilitation of mana whakamaarama for all Māori.

> There is a need to develop an **appropriate model for evaluating and comparing new and existing models of oral health care, that reflects Māori values and desired outcomes**, and that is widely accepted by all key stakeholders

Such a model could facilitate evaluation of innovations, and support more rapid uptake, where effective. Suggested outcomes from the international

literature include: increased equity in access and health status compared to the baseline (healthiest) groups; safety; lower disease incidence; lower prevalence of untreated disease; increased utilisation of preventive services; decreased utilisation of emergency services; enhanced access to needed services; improved patient satisfaction; and improved oral health-related quality of life (Garcia et al, 2010). However, a Māori evaluation model may include these and/or other outcomes congruent with Māori values, philosophies, knowledge and experience (Moewaka-Barnes 2009). Specific measures addressing effectiveness for Māori with physical and intellectual disabilities, special needs, and psychosocial issues or chronic medical conditions will need to be included.

> A researcher should always be guided by the principle of tika which is the very basis of the word tikanga. Research processes, procedures and consultation need to be correct so that in the end everyone who is connected with the research project is enriched, empowered, enlightened and glad to have been part of it. (Hirini Moko Mead, 2003:318)

Whakamōhiotanga
Methods and report structure

In March 2009, Te Rōpū Rangahau Hauora a Eru Pōmare (University of Otago, Wellington) and community group partners,* were funded by the Ministry of Health and Health Research Council of New Zealand Māori Health Joint Venture Programme to identify Māori oral health research priorities, with particular reference to low-income Māori adults, older Māori, and Māori with disabilities, special needs or who are medically compromised.

This section outlines the methods used to develop the research priorities. In summary, the project involved: identifying Māori community priorities and aspirations for oral health; ascertaining the Māori oral health sectors views; conducting statistical analyses of hospitalisations and cancers; mapping current oral health data and assessing its utility for Māori; and conducting a comprehensive literature review to find gaps and potential future directions for Māori oral health research. The findings from the research were then brought to a national workshop of stakeholders where the research agenda was developed.

The community partners were asked to identify oral health issues that were important to the members of their communities. Each group chose their own methods, and conducted the research with support from the research team. The methods are outlined briefly here:

- Te Ao Marama (the New Zealand Māori Dental Association) surveyed members using a web-based questionnaire and allowed the research team to conduct a plenary workshop at their annual conference in early 2009
- Tipu Ora Charitable Trust, Rotorua, surveyed staff members using a web-based questionnaire and surveyed clients using a paper-based questionnaire
- Ngāti Pāhauwera Hauora, northern Hawkes Bay, held several focus groups with members of their community and worked with the Kahungunu Executive ki Wairoa to hold a focus group with parents of children with special needs or disabilities
- Te Rūnanga o Toa Rangatira, Porirua surveyed their health service staff and held a focus group with members of their community
- Kōkiri Marae, Seaview held two focus groups with whānau who attend the services based at Kōkiri Marae and surveyed staff using a web-based questionnaire

* See Appendix 1 for a description of the partner groups.

Research priorities workshop, Wellington, December 2009.

- Rata Te Āwhina Trust conducted brief interviews with clients attending their mobile health service throughout Te Tai Poutini
- Alzheimers NZ conducted a mail survey of field staff working for the member societies throughout New Zealand, and contracted field staff in Te Tai Tokerau and the Bay of Plenty to conduct interviews with Māori with dementia and their whānau.

Key informant interviews were conducted by members of the research team with people working as oral health professionals, in oral health policy, in dental training institutions, in the disability sector, and members of disability advocacy groups.

Data on Māori and non-Māori public hospital admissions for oral disease and orofacial injuries during 2000–05 was analysed using data from the Ministry of Health.* Age-standardised rates and Māori/non-Māori ratios were analysed by cause of admission, area deprivation, rural-urban residence, and District Health Board (DHB) for populations aged 20 years and over and 65 years and over.

Oral cancer registrations and deaths during 2000–06 inclusive were used to examine Māori and non-Māori oral cancer incidence and mortality among adults aged 20 years and over. Age-standardised rates were also analysed by area deprivation. Data for the period 1996–2006 was used to analyse stage at diagnosis (Māori and non-Māori distributions and odds ratios), and survival disparities

* The data was obtained for analysis of Māori health statistics in Robson B, Harris R. (eds) (2007). Hauora: Māori Standards of Health IV. A study of the years 2000–2005. Wellington: Te Rōpū Rangahau Hauora a Eru Pōmare. Available on www.hauora.maori.nz

(Māori/non-Māori cancer-specific mortality hazard ratios, adjusted for age, sex, and also for stage at diagnosis).

Oral health data available in routinely collected data, surveys, longitudinal studies, and other data sources were reviewed for gaps, utility for research or monitoring of oral health determinants, service utilisation, and outcomes for the three priority Māori population groups.

A literature review was done to find research literature on Māori oral health and that of other indigenous peoples. The focus of the review was weighted towards solutions or interventions rather than needs.

A national workshop was held in Wellington in late 2009 with key stakeholders. The participants included dental professionals, policymakers, academics and researchers, representatives from community groups, and Māori health providers. The research findings from each component of the project were presented and discussed. Participants were then asked to formulate a vision, principles and values, to identify key research questions and to prioritise them. This formed the basis of He Huarahi Rangahau, with the research areas framed within the pathways of He Korowai Oranga.*

Report structure

He Huarahi Rangahau, the Māori Oral Health Research Agenda is presented in the previous chapter. It is also available as a separate document at www.otago.ac.nz/uow. The remainder of this report provides the supporting evidence for He Huarahi Rangahau and is divided into seven chapters:

Chapter 1: Ngā Rōpū Kōwhiria profiles the three priority populations – low-income Māori adults, older Māori, and Māori with special needs, disabilities, or who are medically compromised.

Chapter 2: Mai Ngā Hapori presents the findings from the consultation with communities.

Chapter 3: Mai Ngā Ratonga Hauora outlines views from the health and disability sector.

Chapter 4: Ngā Tatauranga Hohipera presents analyses of hospital admissions for Māori and non-Māori adults aged 20 years and over during 2000–05. Patterns of admission for oral disease and for injury are presented separately by neighbourhood deprivation (NZDep quintile), by rural-urban residence, and by DHB.

* Ministry of Health. (2002) He Korowai Oranga: Māori Health Strategy. Wellington: Ministry of Health.

Chapter 5: Ngā Tatauranga Mate Pukupuku presents data on Māori and non-Māori oral cancer registrations and deaths for adults aged 20 years and over. Oral cancer incidence and mortality are also presented by deprivation quintile. Also included are data on stage at diagnosis and Māori/non-Māori survival disparities.

Chapter 6: Ngā Rauemi Tatauranga scans currently available oral health data sources, including surveys, longitudinal studies, routinely collected data, and other relevant data collections. There is considerable scope for further analyses on Māori oral health to be done using these data sources.

Chapter 7: Tātaritanga a Rangahau Hāngai presents a summary of the themes identified in the literature review. The complete review, *Oranga Waha – Oral Health Research Priorities for Māori: A Literature Review,* by K Stuart, J Gilmour, J Broadbent and B Robson is available at www.otago.ac.nz/uow. The full review includes the following sections:

- Māori oral health and the oral health of other Indigenous Peoples (particularly Canada, Australia, and the United States)
- Literature on oral health and elders, people who have special needs, disabilities or are medically compromised, people on low incomes
- Public health interventions; oral health values, beliefs and practices, and workforce developments.
- A summary of key themes from the literature relevant to Māori oral health.

Tāpiritanga: Appendix 1 profiles the research partner groups. Appendix 2 includes an information sheet on dental health for people with dementia developed for whānau interviewed in this project and further developed by Alzheimers NZ as a resource for Alzheimers Society staff and their clients. Appendix 3 includes ICD codes used for the analysis of public hospitalisations.

Research priorities workshop, Wellington, December 2009.

1 Ngā rōpū kōwhiria *Priority population profiles*

This section profiles the three priority population groups: Māori adults with low incomes, kaumātua, and those with special needs, disabilities or who are medically compromised. It provides contextual information and outlines the need for these groups to be prioritised in oral health research and policy development. These descriptions are not definitive, rather they aim to give guidance for the considerations involved in meeting the oral health needs for each group of Māori. There is also considerable overlap between groups, as, for example, most older adults also have low incomes and many have disabilities or special needs. People with disabilities are also more likely to have low incomes.

For each priority Māori population group, we briefly describe the group's demographics and socioeconomic profile, how this may influence the determinants of oral health, and what is known about the oral health status and oral health service utilisation for each group.

Māori adults with low incomes

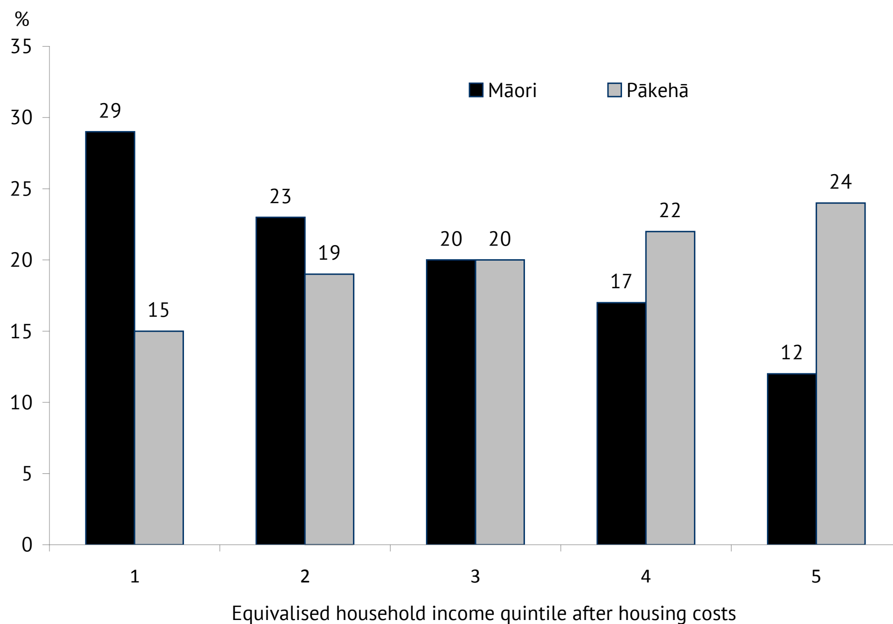
When dental care is largely unsubsidised and fee-for-service, income matters. Oral health can also count towards securing an adequate income, as poor teeth affect confidence, job prospects and how an individual participates in or is perceived by society. Hence income inequalities and oral health inequalities are closely linked, requiring action across all the social determinants. Achieving equity in health means finding ways to redistribute the nation's resources so that all groups have at least adequate resources for healthy living conditions and for full participation in our society, both as Māori and as citizens of Aotearoa New Zealand.

Māori adults on low incomes are the largest of our priority populations, and include older Māori and Māori with disabilities. There are various potential definitions of 'low-income adults' (Chua 2009)*. Nevertheless, Māori households are disproportionately represented among the most materially disadvantaged, no

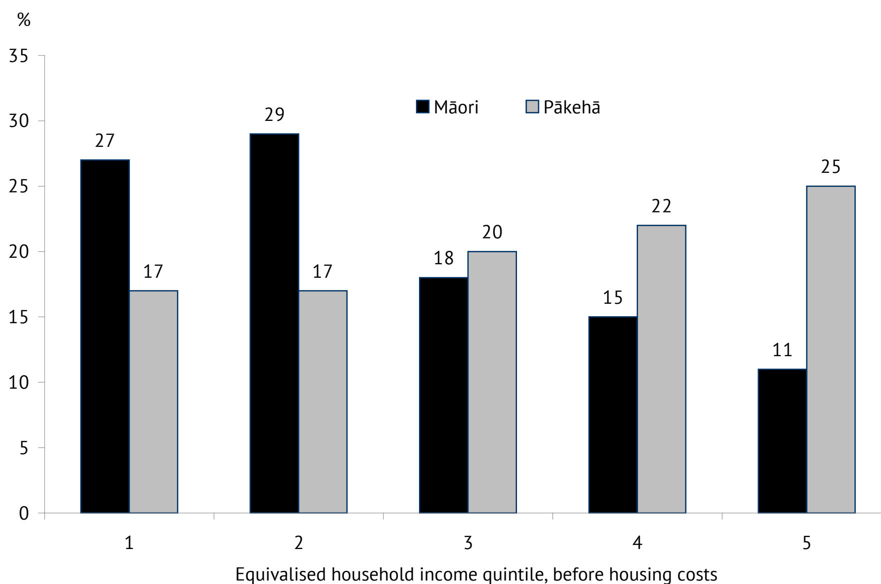
* Chua (2009, p.59) provides examples such as adults in the lowest household income quintile; beneficiaries, enrollees in Very Low Cost access primary health organisations, those living in the most socioeconomic deprivation areas, those who currently hold Community Services Cards or those who are eligible for one. Definitions used to determine eligibility for low-cost care require careful scrutiny for any differential impact on Māori.

Figure 1.1 Distribution of Māori and non-Māori by equivalised household income, economic living standards, and area deprivation

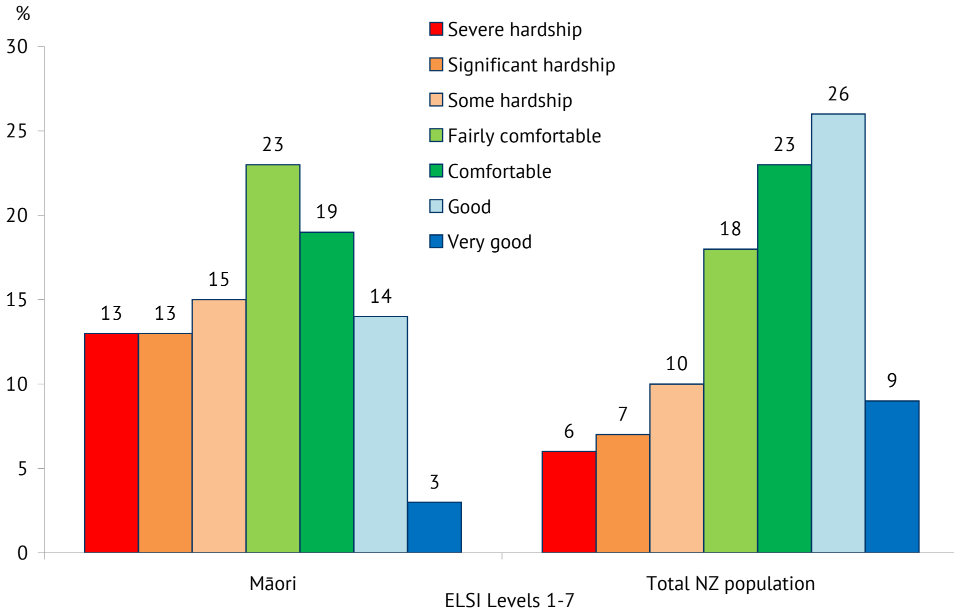
Distribution of Māori and European/Pākehā populations by equivalised household income *after* housing costs 2008/09 (source: Perry 2010)



Distribution of Māori and European/Pākehā populations by equivalised household income *before* housing costs 2008/09 (source: Perry 2010)



Distribution of Māori and Total NZ Population Economic Living Standard Scores 2008 (source: MSD Living Standards 2009)



Distribution of Māori and non-Māori aged 20 years or more by NZDep2006 Small Area Deprivation Decile (Source: SNZ)

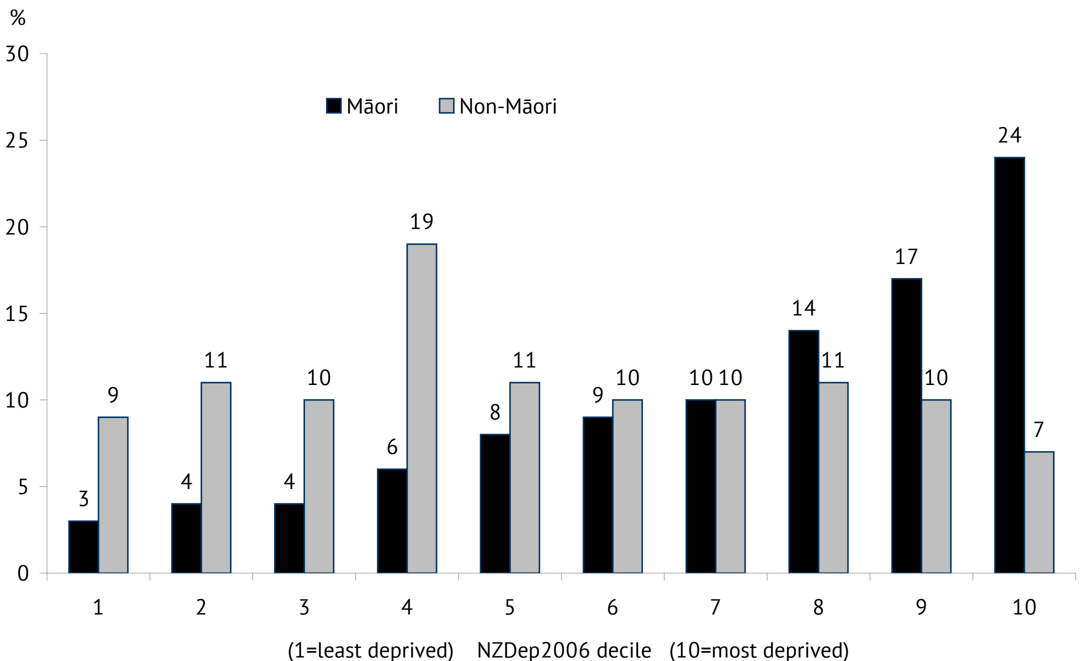
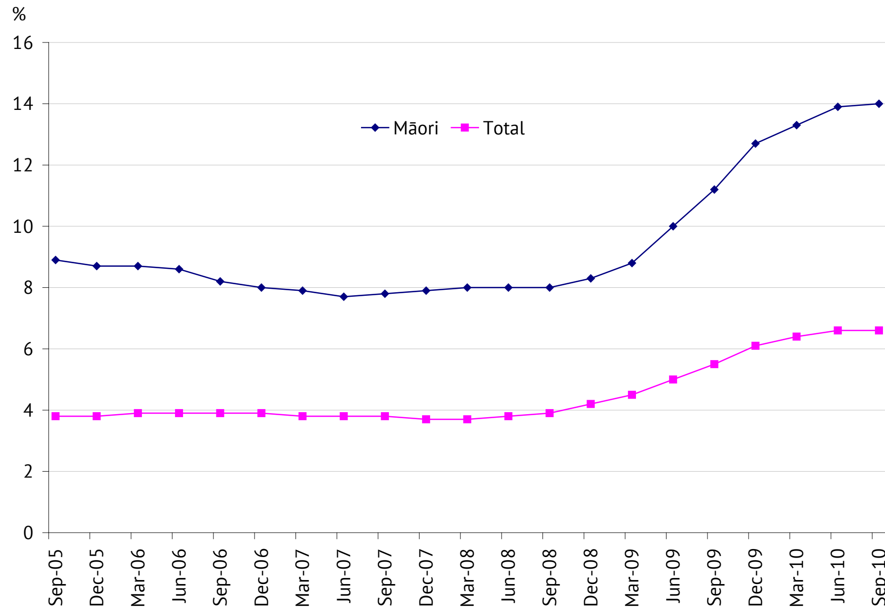
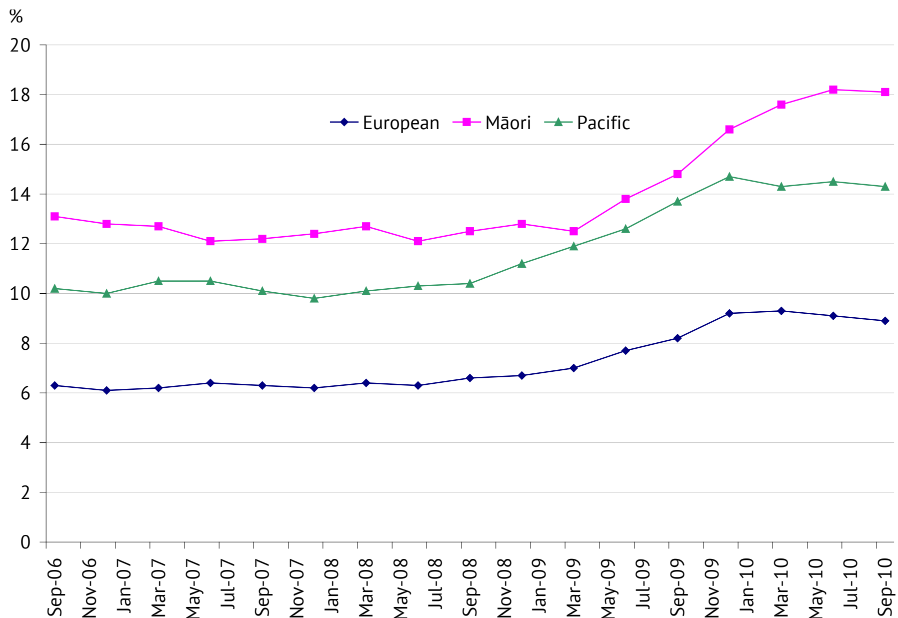


Figure 1.2 Unemployment and youth not engaged in employment, education or training (NEET) rates to September 2010





Sources: Māori Labour Market Fact Sheet – September 2010 and Youth Labour Market Fact Sheet – September 2010. Department of Labour www.dol.govt.nz

matter which measure is used. One in four Māori live in economic hardship*, one in four are in the lowest income quintile both before and after taking housing costs into account, and one in four aged 20 years or more live in the 10% of neighbourhoods that are most socioeconomically deprived (Figure 1.1).

Sole parents and their children face the highest risk of poverty† out of all households, and the relative risk has grown over time for this group (Perry 2010) – an issue of significant concern given the high proportion of Māori children living in sole parent households. The impact of low family income in childhood can have lasting effects, increasing the risk of leaving school without formal qualifications and the attendant risk of unemployment or low wages in adulthood (Maloney 2004). Oral health status in adulthood is influenced by socioeconomic trajectories and by oral health status in childhood (Thomson et al 2004). Thus the number of Māori children growing up in low-income families (especially when the duration of poverty is longer) may be an indicator of future high oral health need among Māori adults.

Māori incomes are more closely tied to employment status than those of non-Māori and therefore vulnerable to labour market fluctuations (Dixon & Mare 2007). Māori unemployment rates tracked around 8% in 2004–08, twice the rate of the total New Zealand population (4%). Since the economic recession starting June 2009 however, Māori unemployment has risen rapidly to 14.0% by September 2010 while the total population rate has risen only to 6.6% (Figure 1.2). This indicates median incomes of Māori households are likely to be lower than those measured in 2008 and income inequalities wider.

Māori youth have been worst affected. In June 2010 Māori youth unemployment (ages 15–24 years) reached a staggering 30%, declining only slightly in the next quarter to 26.8% (Department of Labour 2010a; 2010b). The proportion of young Māori not engaged in education, employment or training (NEET) has also increased sharply to over 18.1% by September 2010 (Department of Labour 2010c). This age group has particular risks for oral health in that they are more at risk of not receiving dental care after the age of 18 years, with a consequent growth in the caries rate by the age of 24 years (Chua 2009).

A recent review of health inequalities demonstrates that increasing indirect taxes, such as GST, disproportionately disadvantage those on low incomes (Marmot et al 2010). Current changes to New Zealand's taxation system will differentially increase the burden on the Māori population, with children and sole parent households affected the most. Alongside the dramatic increases in Māori unemployment, the tax changes will also herald a greater challenge to achieving equitable conditions for health.

* Hardship defined as levels 1 and 2 of the Economic Standard of Living index.

† Poverty has been defined as "exclusion from *the minimum acceptable way of life in one's own society because of inadequate resources*." Perry's study of household incomes uses the measure of poverty as after housing cost equivalised household incomes below 60% of the national median income fixed at a constant value (Perry 2010).

Research priorities workshop, Wellington, December 2009.

Risk and protective factors

The over-representation of Māori in the lowest income bracket results in the Māori population having differential access to the determinants of good oral health, and more exposure to risks to oral health, such as high sugar diets (Drewnowski & Specter 2004), smoking (Barnett et al 2005), non-ownership of toothbrushes and fluoride toothpaste (Jamieson & Koopu 2006), higher risk of serious orofacial injury (see Chapter 4 on hospitalisations), increased risk of conditions associated with periodontal disease such as diabetes (Harwood & Tipene-Leach 2007), transport issues and decreased access to dental care (Chua 2009). Health literacy* is related to health status and access to health care (Ministry of Health 2010b). In Aotearoa New Zealand there is a strong association between income and health literacy showing a clear gradient by income quintile among both Māori and non-Māori, and with employment status (Ministry of Health 2010).

Oral health status and utilisation of care

In the total Aotearoa New Zealand population, oral health status is worse for socioeconomically disadvantaged adults. The 2009 New Zealand Oral Health Survey found people living in areas of high socioeconomic deprivation were more likely to have lost all their teeth, to have more teeth with untreated coronal and root decay, and more periodontal disease (loss of attachment) than people living in less deprived neighbourhoods. They also had poorer oral-health-related quality of life and higher levels of unmet need for dental care due to cost barriers (Ministry of Health 2010a). Other studies have found similar patterns

* 'Health literacy' refers to a person's ability to obtain, process and understand basic health information and services to in order to make sound health decisions in the context of everyday life (Kickbusch et al 2005).

(Ministry of Health 2008a; Chua 2009). A Dunedin study found that in deprived neighbourhoods, oral health outcomes were worse for adults living in households with low socioeconomic status (Jamieson & Thomson 2006). A West Coast study found that, in addition to poorer oral health and less frequent care, community services card holders were also more likely to report being self-conscious or embarrassed (Dixon et al 1999).

The oral health status of the adult Māori population reflects that of people living in areas of high deprivation.* Māori aged 18 years and over are 90% more likely to be edentulous (have complete tooth loss) than non-Māori adults, 10% less likely to have a functional dentition (21 or more natural teeth), and more likely to have untreated coronal and root decay and periodontal disease (Ministry of Health 2010a). Māori were 60% more likely to report one or more oral health impact on quality of life than non-Māori, 20% less likely to have visited a dental professional in the past year, 10% less likely to report always being listened to carefully by a dental professional, 30% more likely to have avoided dental care in the last year due to cost and 50% more likely to have gone without recommended routine dental treatment due to cost (Ministry of Health 2010a). The policy and service response therefore needs to be proportionate to need and targeted appropriately (Koopu 2005).

In response to the unmet need in their communities, several Māori health providers, including Ora Toa Health Services, have developed affordable and accessible dental services integrated into primary care and whānau ora services (Legeyt 2010). These initiatives are showing significant promise, providing models for future developments towards the nation's goal of achieving good oral health for all whānau, for life.

Older Māori / Kaumātua

Demographics

The Māori population aged 65 years and over is growing rapidly. Just over 23,000 Māori were aged 65 years and over in the 2006 Census, but this number is projected to have increased by over a third by 2011 (to 31,800 people) and to treble over the next decade, reaching 70,900 in 2021. The proportion of Māori in this age group will grow from 4% in 2006 to 8% in 2021.† The expected growth in numbers of Māori in the kaumātua age group has significant implications for future oral health service developments for older Māori, particularly as future generations are more likely to retain some natural teeth.

* The key findings of the 2009 NZOHS are reported for people living in areas of high deprivation and for Māori separately, but not specifically for Māori living in areas of high deprivation (Ministry of Health 2010a).

† Statistics NZ subnational ethnic population projections. www.stats.govt.nz

Socioeconomic conditions

Māori women and men aged 65 years and over are more likely to have experienced economic adversity in middle age and are significantly disadvantaged socioeconomically compared to their non-Māori counterparts (Cunningham et al 2002). In 2006, 56% (13,000 people) of Māori in this age group were living in the most deprived areas (NZDep2006 quintile 5) compared with only 15% of non-Māori (78,000 people) in this age group (Chua 2009). The study of the material living standards of Māori aged 65–69 years found Māori were less likely than non-Māori to have accumulated significant wealth (savings, investments, assets) and therefore more likely to be reliant solely on government superannuation, and more likely to face higher housing costs (Cunningham et al 2002). Only a third had average material living standards and a significant proportion were living in hardship, with an income "inadequate to meet day-to-day costs" (32% of single people and 22% of couples). Seven percent had extremely low living standards. Of note, 22% reported having gone without adequate dentures due to the need to economise (Cunningham et al 2002).

Disability

In 2006, nearly half of Māori aged 65 years and over had a disability (11,000) (Office for Disability Issues & Statistics New Zealand [ODI & SNZ] 2010). The most common disability types for Māori adults aged 65 years and over were mobility (37%), agility (28%), hearing (16%), and remembering (10%). Older Māori were more likely than non-Māori to have high support needs. Among disabled people aged 65 years and over, Māori were less likely to have seen a dentist or dental nurse in the last 12 months than non-Māori (11% compared to 29%) (ODI & SNZ 2010).

Risk and protective factors

The 2002/03 NZ Health Survey* found Māori women aged 65 years and over were less likely than non-Māori women to consume the recommended number of servings of vegetables and fruit per day – a finding that may reflect lower levels of food security but may also indicate a higher prevalence of problems with teeth or dentures affecting the ability to chew. Smoking prevalence was also higher, bringing the higher attendant risks of periodontal disease. Māori men aged 65 years and over had similar profiles to non-Māori men in terms of fruit and vegetable consumption, alcohol use and smoking. Smoking was less common among Māori men than Māori women (Ministry of Health 2006b).

Oral health status and access to care

In the 2006/07 NZ Health Survey, just over 90% of Māori aged 65 years and over reported having lost teeth due to oral disease – a similar proportion to the

* Age-specific data from the 2006/07 NZ Health Survey on the prevalence of risk and protective factors for Māori aged 65 years and over has not been published.

total population (85%). However, in the younger age groups the prevalence of tooth loss was significantly higher for Māori than for non-Māori indicating that disparities in the older age groups are likely to increase in the future (Chua 2009). Older Māori men and women were significantly less likely than older non-Māori to have seen a dental care provider in the previous 12 months. But, in contrast to younger ages, the proportions reporting unmet need were relatively low and there were no significant differences between Māori and others (Chua 2009).

The 2009 New Zealand Oral Health Survey found that Māori aged 65 years and over had, on average, more missing teeth and fewer filled teeth than non-Māori in this age group. This pattern was also evident among those in the middle age groups (45–64 years) (Ministry of Health 2010a).

Māori with special needs, disabilities, or who have chronic health conditions

In this project "special needs" includes Māori of all ages with "intellectual or physical disability, or medical or psychiatric conditions, that increase their risk of oral health problems or increase the complexity of oral health care" (National Advisory Committee on Oral Health 2004:30). This section focuses mainly on Māori with disabilities (including people with special needs), as the literature review provides more detail on medical conditions related to oral health.

DISABILITY

The 2006 New Zealand Disability Survey provides a current profile of Māori with disability living in households (ODI & SNZ 2010). In 2006 there were an estimated 95,700 Māori in NZ with disability* (17%). In every age group, Māori had a higher disability rate than all other ethnic groups and the overall age-adjusted rates were 19% for Māori and 13% for non-Māori. A large proportion of Māori with disability were in the younger age groups (63% less than 45 years of age) and almost a third of all children and a quarter of all adults (age 15–44 years) with disability were Māori (ODI & SNZ 2010).

One in seven Māori children aged 0–14 years (28,000) had a disability, with nearly half having more than one type of disability. One in twenty Māori children had a chronic condition or health problem that limited their activities and one in twenty had a special education disability (ODI & SNZ 2010). Almost one in five Māori adults aged 15 years and over had a disability, two thirds of these were physical disabilities, and 61% of these adults had more than one type of disability. Twelve percent of Māori adults had one or more disabilities caused by

* In the survey people were classified as being disabled if they have a self-reported, long-term (six months or more) limitation to carry out one or more activities, or use certain services specified in screening questions; or in the case of children have a chronic condition or health problem.

ageing. The Māori population in general is ageing, and at a faster rate than the general population, therefore disabilities caused by ageing are likely to become more pertinent in the near future.

Parents or caregivers of approximately 10% (5,300) of disabled Māori children required help with their child's personal care or household tasks in the 12 months before the survey. Almost one third of disabled Māori adults required help with daily activities, including personal care. Approximately one quarter of disabled Māori got help with daily activities from informal caregivers such as partners, whānau or friends. An estimated 10% (6,500) disabled Māori adults received formal care for these activities compared to 18% of non-Māori (ODI & SNZ 2010).

The number of people with disabilities is likely to grow, as will the need for special care dentistry, due to increasing numbers of children surviving into adulthood, increased numbers of people undergoing and surviving treatment for head and neck cancers, an ageing population, increased expectations of retaining natural teeth, and greater value placed on the cosmetic appearance of teeth among people with disabilities (British Society of Disability and Oral Health 2006).

Living conditions, socioeconomic indicators

In 2006, disabled Māori adults (aged 15–64 years) were less likely to be employed (45%) than disabled non-Māori adults (62%), more likely to have lower annual personal incomes than disabled non-Māori or non-disabled Māori and non-Māori, and more likely to live in the more socio-economically deprived areas. Forty two percent of disabled Māori lived in the areas of greatest deprivation (NZDep 2006 deciles 9–10) compared with 17% disabled non-Māori, 34% of non-disabled Māori, and 11% of non-disabled non-Māori (ODI & SNZ 2010). Furthermore, in areas of high Māori population there is lower receipt of accommodation supplement and disability allowance (NHC 2003). This indicates that disabled Māori are more likely than others to live in households where whānau have fewer financial resources and the economic capacity to provide or obtain necessary specialist oral health care is more limited. Lower rates of remuneration for whānau caregivers may be a factor compounding this situation (Macdonald et al 2002).

Oral health status and access to care

Disabled Māori living in households report higher levels of unmet need for health services (22% compared to 12% for non-Māori adults, and 19% compared to 14% for non-Māori children), transport costs, housing modifications, and disability-related equipment (ODI & SNZ 2010).

The 2006 New Zealand Disability Survey found 67% of disabled Māori children aged 0–14 years and 74% of non-Māori disabled children had visited a dentist or dental nurse in the previous 12 months (ODI & SNZ 2010). A study of children with special education needs in Glasgow found they were receiving

lower levels of dental care than the rest of the population, had more extractions and fewer restorations, were more likely to have general anaesthetic, and had a more traumatic experience of dental disease (NHS Greater Glasgow 2005). The focus group interview with Māori parents of children with special needs conducted for this project indicates that this may also reflect the experience of Māori children (see Chapter 2 Community Voices).

Oral health is costly for all low-income adults, but for people requiring special care dental treatment or oral health protection, extra resources are required to maintain and restore good oral health. The dental service (if available) is less likely to be close to home, transport may be more difficult and costly, and more time is likely to be required at the service to achieve a successful outcome. In the 2006 NZ Disability Survey 25% of disabled Māori aged 15–64 years reported having seen a dental professional in the past year compared to 38% of disabled non-Māori. Among those aged 65 years and over, 11% of disabled Māori and 29% of disabled non-Māori reported having visited a dentist or dental nurse (ODI & SNZ 2010).

Access to health care and disability support is particularly difficult in rural areas, and a lack of information about and access to culturally appropriate services has been identified (NHC 2007c). Māori are also less likely to access mainstream services (NHC 2007c). Factors increasing barriers to disability support and other services include low income, unemployment, legal, institutional and attitudinal barriers, lack of transport, lack of Māori support staff and lack of cultural appropriateness of service delivery (Nikora et al 2004). Māori whānau carers have described the stress from dealing with health and disability support services, operating in a cumbersome system, and finding they needed to be aggressive in advocating for family members to get what they needed (Collins and Willson 2008; Wiley 2009). In one study, consumers and caregivers alike were frustrated and disappointed that service providers were not aware of, nor acknowledged, their cultural needs, nor provided opportunities to take part in Māori cultural life (Wiley 2009).

> Often what organisations and ministries mistakenly perceive as Māori refusing to utilise services is actually the population's reluctance to give up their autonomy or have their input ignored. (Wiley 2009: 1212)

The development of kaupapa Māori disability support services has formed part of the response from Māori communities to these challenges. For example, Te Roopu Taurima o Manukau, a service for adults with an intellectual impairment and their whānau, aims to provide services encompassing tikanga Māori that support self-determination for all Māori (Ratima and Ratima 2007).

People with physical and sensory disabilities

Mobility disabilities were the most commonly reported types in the 2006 New Zealand Disability Survey. Eight percent of Māori adults aged 15–64 years and

37% of Māori aged 65 years and over were estimated to have a mobility disability (36,200 people), and 29,000 Māori adults were estimated to have an agility disability. 800 Māori children and 8,600 Māori adults used special equipment to move about (ODI & SNZ 2010).

The extent to which dental services are physically accessible for wheelchair users (including safe transfers to dental chairs) has been identified as an issue for disabled people. Although entrances and toilets may be wheelchair accessible, the environs of the dental clinic or surgery and the dental chair may or may not be. Some people also need to be treated from their wheelchair as it can be unsafe to transfer to a dental chair, which requires equipment such as wheelchair platforms to tilt the chair back (Dougall & Fiske 2008a).

> When I was in secondary school the only dentists in [provincial town], or the dentist that we used anyway, was upstairs so my mother or my father had to come with me and literally carry me up the stairs.... But with my current requirements I use a dentist just down the road here in [central city street] and it is reasonably accessible and they've got the high-low chairs that are easy to get on and off (Key Informant).

The lack of community based dental services (including mobile dental clinics) that are wheelchair accessible means that the hospital based clinics are expected to fill the gap. However, the need for hospitals to prioritise emergency care can make it harder to get care for dental maintenance. In addition, this creates extra burden for families.

> The family has to arrange to get to the hospital and more often than not there are transport issues you know, income issues, taking time off work, it's pretty difficult for a lot of these disability issues actually (Key Informant).

For the visually impaired, potential issues include physical access to dental services (safe passage to and through the buildings and clinics), the need to reduce anxiety and dental fear by establishing rapport between the staff and patient and ensuring clear communication about the procedures being done, and providing oral health information in appropriate forms such as large print, Braille, or audio (Mahoney et al 2008). In 2006 3,300 Māori children were estimated to have a seeing disability (blindness or trouble with eyesight, even when wearing corrective lenses) and 8,800 Māori adults (defined as a difficulty or inability to see ordinary newsprint and/or the face of someone from across a room, even when wearing corrective lenses) (ODI & SNZ 2010).

The 2006 New Zealand Disability Survey estimated there were 5,100 Māori children with a hearing disability and 19,300 Māori adults. A recent review of services for the Deaf* found Deaf health service users face significant difficulties,

* "The word deaf or hearing impaired refers to people with a hearing loss in general. The word Deaf refers to cultural membership of the Deaf community." (Fitzgerald & Associates 2010: 59).

presenting a challenge to health services to uphold the rights of patients to use all three official languages of New Zealand, including New Zealand Sign Language (Fitzgerald & Associates 2010). "Fear, mistrust, frustration and feelings of powerlessness are common experiences of deaf health service users. Deaf people felt they were expected to adapt by lip-reading, speaking or writing, while hearing people are not seen to change to meet their needs. They are frustrated by the idea that the interpreter is widely considered only for them rather than for both parties. Positive experiences were found where there were skilled interpreters and health practitioners with signing skills" (Fitzgerald & Associates 2010:25). Other issues included the need to ensure text messaging is an allowable means of contact or communicating with services (including transport services) and the need for trilingual interpreters familiar with Māori as well as Deaf culture (Fitzgerald & Associates 2010).

US research with members of the Deaf community identified that respect for intelligence was important in health care interactions, with concerns about "being perceived as 'dumb'" (Meador & Zazove 2005). The study also highlighted the need for health professionals to realise that the syntax of English may differ from that of Sign Language and to verify that patients understand all recommendations. The need for oral health information in forms accessible to and appropriate for Māori Deaf was one of the main issues raised by a key informant for this project.

People with intellectual disability

The NZ Household Disability Survey 2006 (ODI & SNZ 2010) estimated that 2% of Māori children aged 0–14 years (4,300 children) and 2% of Māori adults aged 15–64 years had an intellectual disability (7,600 adults). Among non-Māori the proportion of children with an intellectual disability was similar at 2% but the proportion of adults was lower at 1%. Forty-three percent of Māori adults with an intellectual disability also had a hearing disability and 43% had a speaking disability. For just under half, the disability was present at birth, a further 20% was caused by disease/illness, and 11% by accident/injury.

Access to dental care can be problematic for adults with intellectual disability, due to cost, communication issues, and a lack of readily available special care. According to one key informant, paediatricians give excellent coordinated health care for disabled children, but for adults aged 18 years and over dental care becomes a personal responsibility, both in terms of cost, initiation of care, and navigation through the system. Most require some level of support to obtain suitable health care when needed, and some require profound levels of support.

> The social model always said that people would need specialist care for their requirements but the deinstitutionalisation programme, particularly in New Zealand, largely hurtled everybody out to be in the community and to be treated like everyone else, and to access it like everyone else. But the health care system itself made no accommodations. (Key informant).

The National Health Committee's enquiry into the citizenship rights of adults with intellectual disabilities (To Have an Ordinary Life) found disturbing evidence that this group receive inadequate and improper health care (NHC 2003). Grave concern was expressed at the level of treatable, relievable, or curable conditions that were left unmanaged. The enquiry noted the low incomes that present significant barriers to timely care and that "adults with an intellectual disability need access to income assistance to pay for health services in the same way as other New Zealanders." (NHC 2003: 26). Since 2006 (after the enquiry) people with intellectual disabilities living in residential care have been able to access the disability allowance of up to $50 per week (personal communication Valerie Smith, Ministry of Health). Nevertheless, meagre financial resources are still required to stretch a long way:

> In adulthood, if you're in residential care then the responsibility for your medical and dental type of health care is actually your individual responsibility .... they get left with a personal allowance of just over $50 a week basically. Then to actually fund dental care, as well as medical care, as well as your haircut, and your social activities, and your personal gifts, and having a good life, and your social recreation, of course is, it just gets exhausted. (Key informant).

Overmedication to control behavioural problems among people with intellectual disability was a significant issue identified by the National Health Committee. Forty percent of people being treated with psychotropic medicines had never been diagnosed as having a psychiatric condition (NHC 2003). In addition to the critical human rights issue arising from this finding (Hunt 2007), this has implications for oral health. Many medicines commonly taken by people with intellectual disability have high sugar content, and cause dry mouth (which is harmful as saliva buffers the acid attack on the enamel, and also helps to clear food particles), disturbance of the natural oral microflora leading to thrush, and enlarged gums (Dental Health Services Victoria 2008). These medicines significantly increase the risk of oral health problems, estimated to be seven times more common among people with intellectual disability (DHSV 2008).

The National Health Committee (2003) recommended that the systemic neglect of adults with intellectual disability be urgently addressed by ensuring that primary care organisations have policies for access to services, comprehensive health assessment tools, appropriate staff education programmes, and health promotion suitable for this group. In regard to oral health, it is important to: include dental reviews as part of the annual health assessments; provide staff education related to oral health; and develop oral health promotion resources, programmes, and policies appropriate for Māori with intellectual disability.

> Disabled people are often set apart, which shows they aren't valued. Poor dress, haircuts, and bad teeth all cause people to stand out. This might be okay for an astrophysicist who has high status, but it is important for

intellectually disabled people to be taught good clothing styles, to have good teeth, and so on. (Jan Scown, Office for Disability Issues*)

People with dementia

Particular challenges are faced in the provision of oral health care to people with dementia. Daily oral health care can become quite difficult with increasing disability and communication issues. The illnesses causing the symptoms of dementia (memory loss, disorientation and decreasing cognitive functioning) predominantly affect people over the age of 65 years but can occur in people in their 40s onward.

Although not well measured, some dementias are likely to be more common among Māori, given the current higher prevalence of conditions such as diabetes and vascular disease that can lead to multi-infarct dementia, for example. Improving cardiovascular health should help reduce the incidence of these dementias among Māori. Nevertheless, the number of Māori with dementia is increasing as the population ages, currently estimated at 0.2% of the total Māori population or around 1,500 people, rising to over 4,300 by 2026 (Access Economics 2008). There is a need to ensure that culturally safe and technically sound services and strategies are developed that will successfully support Māori with dementia and their whānau living in the community, and those who require residential care.

People with dementia have worse oral health than others, with dental problems often remaining undetected and undertreated among those living in the community (Chalmers et al 2005) and in residential care (Cohen-Mansfield & Lipson 2002). Specific strategies are required to support people to maintain good oral health given that dementia is associated with medications, diet, oral hygiene difficulties, communication problems, that increase the risk of dry mouth, caries, gum disease, pain, and infection, and that there is limited access to dental care. Good oral health supports good nutrition, emotional wellbeing, and freedom from dental pain. Māori values recognise and respect the unique personhood of all our relations. *He aha te mea nui o te ao? He tangata, he tangata, he tangata.*

PEOPLE WITH CHRONIC MEDICAL CONDITIONS

Māori have higher rates of many of the medical conditions requiring more complex dental care or that increase the risk of dental problems. These include rheumatic fever, cardiovascular disease, diabetes, asthma, chronic obstructive pulmonary disease, hepatitis B and C, mental illness and addictions (Robson & Harris 2007). The links between oral health and general health are brought more sharply into focus when considering the high levels of chronic disease among Māori. Incorporating good preventive oral health care and prompt treatment of

* Key informant interview

any dental problems into the management of these conditions fits well with recent developments in models of chronic care (National Health Committee 2007).

Conclusion

In summary, this chapter has outlined the reasons why low-income Māori adults, kaumātua, and Māori of all ages with disabilities, special needs, or health conditions affecting oral health must be prioritised in oral health research and policy initiatives. Widening gaps between Māori and non-Māori socioeconomic conditions, an increasingly regressive tax regime, and planned cuts to workers' rights, welfare provisions and government services, echo the disastrous trends of the 1980s and 1990s. Māori became the 'shock absorbers of the economy' leading to stalled Māori life expectancy and leaving a lasting legacy for younger generations.

The predominantly unsubsidised private dental care for adults in Aotearoa makes oral health one of the sentinel markers of social inequalities in health. Inequities in the conditions for health and in access to affordable, appropriate, safe and effective health care are evidence of a breach of the right to health for all (Asher 2004). While the main legal responsibility for protecting, respecting, and securing our right to health rests with governments, all of us must ensure our actions, or inaction, do not prejudice the right to health and work toward equitable oral health outcomes for all.

2 Mai ngā hapori
Community voices

The aim of this aspect of the project was to work out Māori oral health needs and priorities through focus groups and interviews with Māori in a variety of contexts (urban, rural, with and without access to hospital services), with particular reference to low-income Māori adults, older Māori, and Māori with special needs, disabilities, or who are medically compromised (COPD and dementia) and whānau members.

A qualitative approach was the main methodology. Qualitative research interprets everyday experiences in terms of the meaning of these phenomena as conveyed by the research participants. A descriptive approach has been adopted so that the information from the interviews can be presented in everyday language, staying close to the words of the people interviewed (Sandelowski 2000). There was also one survey of Tipu Ora's clients. The study was approved by the Multi-region Ethics Committee. Recruitment was through the research partner community organisations: Kōkiri Marae, Ngāti Pāhauwera Incorporated Society Hauora, Ora Toa Health Services, Rata Te Āwhina Trust, Tipu Ora Charitable Trust, Alzheimers Northland and Alzheimers Society Eastern Bay of Plenty. (See Appendix One for more information on the partner organisations.)

Data collection methods were mainly semi-structured family and focus group interviews (148 participants) so as to allow the researchers to respond to issues raised by the participants. The interviews were tape recorded and transcribed. The survey questionnaire (126 respondents) collected quantitative and qualitative data. The research questions covered areas such as oral health problems, accessing oral health services, everyday practices aimed at maintaining and improving oral health and ideas for improved services.

The qualitative data was analysed thematically. Thematic analysis is a widely used and flexible qualitative analytic approach and involves identifying and reporting the themes or patterns apparent in the interview text that relate to the research questions (Braun & Clarke 2006). All texts were read and compared, themes identified and supported by verbatim quotes from the participants. The survey quantitative data analysis is presented in descriptive statistics.

Low-income Māori adults

The findings in this section are from six focus groups of adults, including one kaumātua group (39 participants) using the Ngāti Pāhauwera Hauora services; brief interviews with 50 Māori clients of the Rata Te Āwhina Trust from Te Tai Poutini; one focus group held with six people recruited through Ora Toa Health Services and one focus group of nine young mothers from Nāku Ēnei Tamariki.

ACCESS TO ORAL HEALTH CARE SERVICES

Access to oral healthcare services was a dominant theme. Subthemes related to access included location, cost and the associated need to make treatment choices, the administration of entitlements and variation in access according to age.

Financial cost was the most 'talked' about topic, a critical barrier to accessing dental care, with many explicitly referring to the cost of dental treatment in strongly worded statements: "at the end of the day it's always financial, always, you know and I look at it, you see those guys out there, look at them, their teeth is beyond a joke". The cost of care dictated forced choices between dental treatment and the need to provide necessities such as food.

> But the thing is though, they don't care that's your bill money or your store money aye, they just 'oh no cash up or no tooth out', you stay in pain. Yeah you just can't part with that $300 straight away cause that's your food and stores for your kids, you know.

> And if it's emergency too aye you can't like dip in to your food money for it aye.

The geographic placement of dental practices and availability were a barrier for some participants.

> The price is what almost $2000 now for a set of dentures you know and that's what it is, plus travel over to Christchurch to get them done; you've got to go over a few times cause you have to go and get your teeth moulded, the time factor, the accommodation over there and even though the teeth are about $1700 to $2000 us over here are paying the extras in accommodation, travel and how many times you have to go back.

> The dental department at the Christchurch hospital, easier access to that and maybe something like that on the coast because it's such a big area. Because that is cheaper care for people.

In rural areas there was a barrier in getting appointments and in the increased cost of travel when services were distant from home. The access issues were also compounded if there were previous experiences that had reduced satisfaction with sole or limited numbers of local dental practitioners. As one participant commented "if you in the past had a bad time with that dentist or had an account

that took a long time to pay off and didn't pay off you're less likely to attempt to try and go back".

Dental treatment access for beneficiaries or people who qualify for a Community Services Card (CSC) is subsidised in New Zealand. All Work and Income New Zealand (WINZ) beneficiaries such as those on an Unemployment, Sickness, Widow's or Invalid's benefit automatically qualify for a CSC. The support offered by WINZ dental grants and the services for those under 18 years old was commented on as useful.

> I'm happy with everything that's really going on. I can go to WINZ and get help from them to do anything with my teeth up to $300 I think it is.

But other participants commented on issues with the administration of the dental subsidy, such as case managers rationing or omitting information about entitlements or making decisions that contravened policy and people's rights.

> I think with social welfare it's who you get, who is your case manager, whatever. Some will give you all of the information in the world and some hold it all back and they expect you to find out.

> I went with one Kaumātua and I said 'you are allowed so and so' and when she went in for the thing they said 'oh no you are not allowed that money', and I said (she called me over) 'yes you are', she said 'whereabouts in the manual does it say?' and she pulled out this big manual. Lucky that I knew where it was so I said 'here, right there' so she gave it to him, and ever since then man she hated me.

Participants were also concerned about how much treatment would be required if they did visit the dentist for a check.

> I don't like going because if I've got one that has pain then they'll point out all the other ones that need to be fixed as well and I'm like I only came for this one – can you just pull this out and I'll ignore the rest until I can find some spare money to pay for it?

Offering low cost or free dental treatment was the most frequently commented on improvement option. Another suggestion was that dentists could offer an initial free check and develop a dental care plan to enable people to financially prepare for dental care. Arrangements with dentists to pay the bill incrementally was also useful.

> I only found him through ringing around and he allows me to pay it off if I accumulate a big bill, which I did, when I first went to him, because I had toothache. Now because I paid my bill off and it was more affordable that way, either way I had to be seen, otherwise I was going to lose all my teeth, I'm grateful to him because he saved my teeth. He also allowed me to pay it off.

Participants commented on the free dental care criteria for children and adolescents. Children are entitled to free dental care from birth until they are 18 years old regardless of whether they are still at school. Many were focused on the oral health of their tamariki/mokopuna more than their own oral health needs. There was comment about the lack of support after 18 years of age:

> Because the age stops at 18 there is no real follow on support and that is probably the, a bit of a crucial period that 18 to 20, that maturing stage aye … once they finish school and they have to go to the dentist, that's when they start going backwards.

IMPACT OF ORAL HEALTH PROBLEMS

Participants talked about how oral health is important for self esteem and how missing teeth can have an impact on confidence leading to feelings of being whakamā (shy). Whakamā from oral health problems affected the wider whānau lifestyle socially and at work, which could also affect mana and wairua. As one koroua noted, "I used to have trouble, I mean I can't talk to the people, once I pull all my teeth out, they can't understand you". Having no teeth had a big impact on whether people participated in their usual activities, as the next two comments show.

> One of our workers he was coming to work hiding his mouth all the time cause he had two teeth missing and he actually wouldn't look at anybody, he was always looking at the floor and he was always talking with his hand over his mouth.

> When I had my teeth out I refused to go without teeth and I demanded they do my teeth straight away and they had to but I didn't have it for like a couple of days, I remember wouldn't go anywhere, stuck in my yard.

Nutrition was also affected, one issue was difficulty with chewing food because of missing teeth and another problem was being able to afford a nutritionally healthy diet. Access to certain foods was also difficult in rural areas.

> Who wants to give your kids milk when what is it, $4, just about $4 for a milk and when you are in the country and you buy milk well you know buy two but that's to last you till you go back to town.

Many participants talked about the self-care treatment that they had endured or had heard of from others treating themselves. Drivers for resorting to self-care rather than visiting a dentist included the cost barrier and fear of the dentist formed by personal and family experience. For example, tissue paper was used to pack dentures so they were more secure. One respondent also talked about managing ulceration caused by worn-out dentures.

> I just put soft tissue paper on top and set my teeth back on and it works until the ulcer clears up but I'm doing it more often now because I think my gums

> are really, I've worn my gums out so and if I go to the trouble and expense of new dentures, the same thing is going to happen anyway so it's pointless really getting new dentures so I just go along.

Pain, along with desperation, led to some participants resorting to a range of remedies as the following comments show.

> Baking soda, a whole lot of remedies, even some poking it with a needle to try and kill the nerve.

> I walked around for ages with a tooth wiggling and I got sick of it in the end so I got the pliers and, through the pain but I got it out.

> Whiskey, aspirin, Māori aspirin aye, whiskey.

Pain was more than an individual problem and affected whānau partly because of the way the person behaved and also the cost of treatment affected family resources.

> The other thing too is probably while they are going through that pain period they will be a lot grumpy to whoever is around them, kids and what not.

> I guess it affects the whānau too, the whole household disposable income. If someone in the family has to go get treatment it sort of impacts everything but you have to go, teeth are one of those things when you get paid you have to do it because it can be incredibly painful.

ORAL HEALTH PRACTICES

Oral health practices are underpinned by knowledge, experience, and the resources available. The ability to be able to communicate with oral health practitioners helps grow a trusting relationship and good rapport, helpful factors for supporting access to services and treatment. However, people's personal history with dentists and dental nurses left lasting impressions that shaped their current engagement with services and treatment.

> I think another thing about going to the dentist is you don't, my personal experience is I don't like being told off about not having looked after my teeth so well and I know my husband's had the same experience, like, I felt so stink after leaving the dentist just because after having a real growling you know.

There was comment "we used to call it the murder house because it was so painful to go to the dentist and we passed that on to our family, being scared to go to the dentist". Another participant in a similar vein noted that "a lot of that dentist thing goes back to when you were a kid when you had to go to the dentist at school, she drilled and drilled and drilled". There was also comment that the management of treatment pain had improved greatly.

Rongoā, traditional Māori medicine, includes medicines made from native plants in Aotearoa. This form of traditional practice is still used by many participants in the rural community focus group with many knowing where to access some of these native plants from nearby native bush. The most talked about and frequently used rongoā for toothache was kawakawa, which was taken orally, as one participant describes: "Oh it's mostly the leaves got a sort of antiseptic and you make them chewy, you can make them chew it, put it where the thing is and it numbs the gums."

There was discussion about broader whānau oral health concerns especially in the area of awareness and education. Most noted that there was very little or non-existent information regarding dental care, that "lack of knowledge would be a big one". Lack of information on service availability and entitlement was recognised as a barrier to accessing oral care treatment.

> He didn't realise that his two missing teeth could be covered by ACC, that's why he didn't go to the dentist because he thought he couldn't afford it.

> My partner had his tooth kicked in, he was eight and it's been black since then. He's been to the dentist since then but the dentist said did you know you can get that under ACC to whiten it and he said yeah? He's 30 now so he's been going for 23 years and no one told him there was such funding and that because it was an accident he could get it whitened. So he had it whitened but it's like it's funny that no one had mentioned it to him.

Some parents commented on some of their college students not knowing what they could access and that "kids slip through the system because they don't tell them that they can get their teeth cleaned for nothing, they don't even tell them in the college unless they are made aware of it".

> I've got one teenager and he doesn't seem to be actively followed up by anybody so we've had to make sure he's, well I've had to put pressure on him, make sure he goes to the dentist. It doesn't come from anywhere else, there doesn't seem to be anything at school either, no reminders to go to the dentist and then it's hard to find a dentist that does the free care for adolescences.

One participant talked about the value of a school holiday programme where an oral health professional delivered a session on oral health in an interactive manner with quizzes and other exercises.

Concerns were also expressed about the limited scope of practice of oral health professional providing school dental checks and issues caused by the need to refer on for more complex treatment with long waits at times, "there's a six month wait and your kid's got no front teeth".

A large number of participants from a rural community stressed the need for people to be made aware of good oral health education and awareness and that oral health can have an effect on general health. This stress on the importance of oral health arose from the sad loss of one of their whānau members from an infected tooth that led to a systemic infection. Having the right to know and

being aware of all their oral health treatment choices when visiting an oral health service was very important for many of the whānau.

Some identified a need for dental promotion and a more educational response from the health sector noting that:

> They don't give you much in the way of the big picture stuff, talk about, you know, should be doing this and eating this... fix the problem and you're out the door again.

> Even antenatal classes, you know most whānau go to those but even then oral health isn't a big issue at that point. So I think it's about getting information and getting it at the right time, like getting it when the child's first teeth are coming through and maybe another hit when the child, just before they start school, so linked in to that transition to school, and I think also our teenagers.

> So for me it's about someone championing oral health, you know dedicated to making sure that message gets out there, all the aspects, like drinking, kids not drinking out of those sipper bottles.

> That would be so good to get information around dental care and the different types of brushes. I think the really hard brushes are used for dentures aye, I've been using a hard brush since Adam was around. It would be good to get some education around that.

SUMMARY: LOW-INCOME MĀORI ADULTS

- Financial cost a critical barrier to accessing dental treatment
- Lack of dental treatment options in rural areas
- Issues around administration of WINZ dental treatment entitlements
- Whakamā from oral health problems affected work and social life
- Harsh self care remedies driven by pain, fear of dental treatment and cost
- Earlier experiences shaped current engagement with dental services and treatment
- Victim blaming communication from dental professionals a disincentive to seeking dental treatment
- Concerns about gaps in adolescent oral health education
- More information required on ACC entitlements
- Kawakawa was the most commonly discussed form of rongoā for toothache
- The need for education to increase knowledge of oral health resources and prevention of problems was stressed.
- Low cost services and dental health plans to enable people to prepare financially.

Tipu Ora Charitable Trust Community Survey

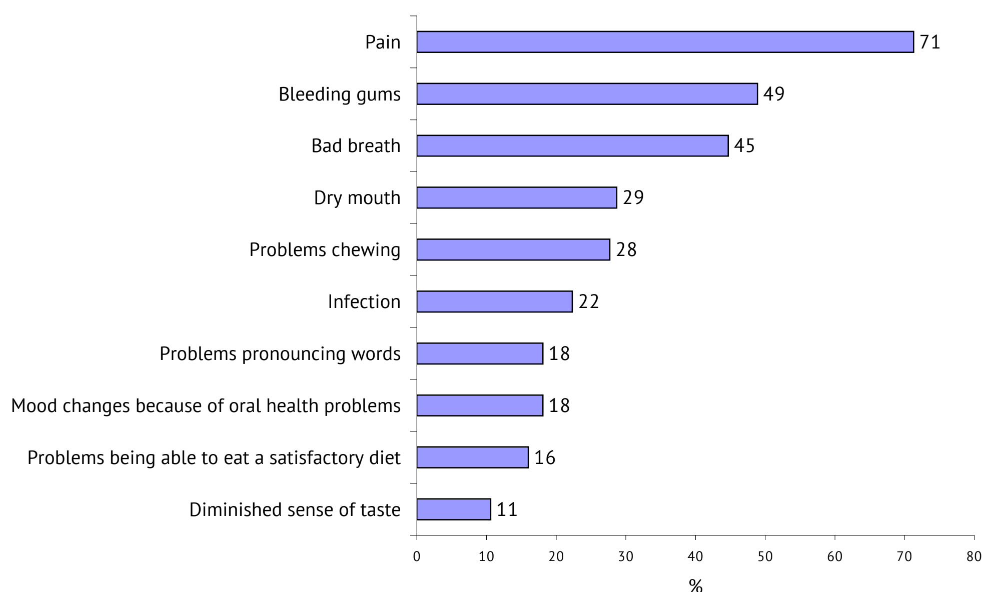
A postal questionnaire was sent to 150 clients of the various services provided by Tipu Ora Charitable Trust. The services include Well Child Tamariki Ora, oral health, smoking cessation, health promotion, Family Start, Parents as First Teachers, and Teen Parents and their Children Service Coordination. Tipu Ora Oranga Niho, the Community Dental Service, has a two-chair mobile dental facility and a fixed dental clinic. Dental care is provided to low-income adults with a community services card, adolescents and children referred by a dental therapist and preschool children through base contracts with Lakes DHB, and fee for service contracts with Ministry of Health, ACC and WINZ.

One hundred and twenty-six respondents completed the questionnaire (84% response rate). Eighty nine percent (109) identified as Māori, 9% (11) as Pakeha and the rest were of various ethnicities. Eleven percent (13) said they have a medical condition, special needs, or disability that affects their oral health or health care and 76% (94) held a CSC. The majority (73%) of respondents were aged between 18 and 34 years, 25% were aged between 35–54 years. Three were aged 55 years and older (including one who was 90 years) and four were aged 14–16 years.

ORAL HEALTH PROBLEMS

Pain was the most common oral health problem, experienced by around 70% of respondents (Figure 2.1). Close to half had experienced bleeding gums or bad breath. Just over a quarter reported having a dry mouth or problems chewing.

Figure 2.1 Oral health problems of Tipu Ora clients



Infection was reported by over a fifth, mood changes or problems pronouncing words were reported by 18%, problems eating by 16% and diminished sense of taste by 11%.

ACCESS TO DENTAL SERVICES

Sixty percent of respondents reported that they had satisfactory access to dental services. Cost was the most commonly reported barrier to access to dental health services (88%) and the attitude of the dentist or the willingness of the dentist to give treatment were the least reported barriers (Figure 2.2). Half of the respondents said they would prefer to access the provider with the lowest costs and close to half said a Māori provider was their preferred choice. A third specified a hospital provider, 22% a community provider, 14% private provider and 6% teaching/training provider.

Most comment about oral health services was on the cost of dental services generally and particularly private practice costs, and availability; some also commented favourably on the style of service offered by Tipu Ora Oranga Niho (see Table 2.1).

ORAL HEALTH INFORMATION

The most common sources of oral health information were television and the dentist (58% and 56% respectively), followed by magazines/newspapers (29%). Fifteen percent reported receiving information from the radio, 12% from the

Figure 2.2 Barriers to accessing oral health services

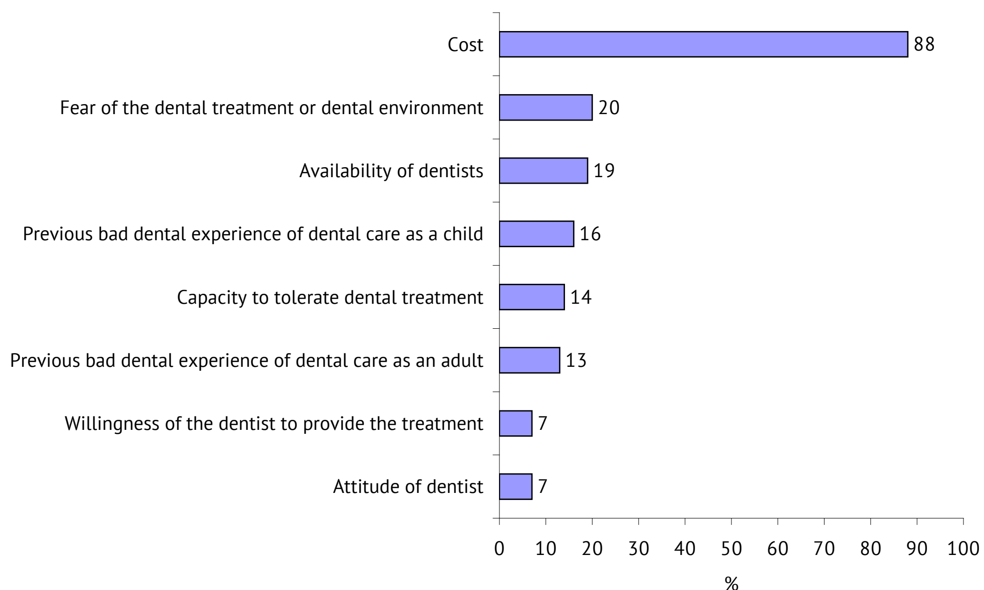


Table 2.1 General comments on access barriers

Themes	Number	Comments
Cost	42	▪ I usually can't pay for it because it costs too much ▪ The cost is so expensive, I tend to worry about other bills ▪ I think that's why people let their teeth go, cos they can't afford it
Tipu Ora Oranga Niho	10	▪ I have enjoyed being a patient at Tipu Ora, the ladies are friendly and know you by name
Availability	9	▪ Booking an appointment isn't easy ▪ When in pain you can wait for at least two weeks for an appointment
Fear	6	▪ My teeth and gums are in such a bad condition right now because I am scared of going to the dentist
Self esteem	2	▪ I've had bad teeth and they make me feel embarrassed

Table 2.2 Research priorities nominated by Tipu Ora clients

Themes	Number	Comments
Low cost services Affordable services	18	▪ To give low cost oral health care to whānau ▪ Making the service affordable
Health Education Health Promotion	13	▪ Importance of oral health ▪ Preventive information – especially during pregnancy
Raising awareness	10	▪ Our people need to be made more aware of the implications of a lack of, or no dental care for their own well being.

SUMMARY: TIPU ORA CHARITABLE TRUST COMMUNITY SURVEY

- Most respondents had experienced a range of oral health problems
- Forty percent did not have satisfactory access to dental health services
- Cost was the major barrier
- The need for more information on oral health.

internet, 8% from an oral health educator and 6% from a dental therapist. Eight respondents also mentioned Tipu Ora as their source. Other sources were pictures, whānau, friends, kaitiaki and the GP/doctor.

RESEARCH PRIORITIES

Researching the affordability of dental treatment was the most frequently nominated research priority along with research on the provision of health education and promotion for oral health and generally raising awareness of the contribution of oral health to well-being (Table 2.2).

Children with special needs and disabilities

Members of the support group for parents of children with special needs and disabilities were recruited for a focus group interview to discuss oral health issues for their children. Participants included nine mothers, one father and a kaumātua.

ASSESSMENT

The lack of routine oral health assessment was discussed by the group. One mother said:

> If you've got a child with high needs you have a lot of screenings seen by all different types of people but as far as I know... there's never been any dental screening ... they have the eyes and ears and everything's checked out regularly but never dental. He just goes through the normal pre-school stuff then onto school dental. And ... I feel for him because he's now going into adolescence and um he doesn't have good teeth you know.

One parent talked about proactive assessment when the dental nurse visited her in the maternity ward and enrolled her children. Knowing the oral health professionals was beneficial according to the kōrero of participants as they felt they were able to engage and communicate with them.

> I think we're very lucky in our community too is that we have dental nurses that are very community based, everybody knows who they are, they've been here a long time, they're approachable.
>
> In school they know who they are, they know the children and your children and there's this whole community base around them and the same with the dentist.

ORAL HEALTH CARE CHALLENGES

Parents talked about the oral health challenges and issues they encountered in providing oral health care to their children. A major barrier to oral health care was children refusing to open their mouths and allow tooth brushing,

> I've taken him to see the dentist and the thing is he won't open his mouth ... I can't get the toothbrush in there to brush it, he doesn't like it and he doesn't really chew his food, he sucks it, sucks it down, so I got to make sure his kai is really broken up and what the dentist told me was that I have to take him back after his 4th birthday because they are rotten, you can see they are, and they'll put him to sleep to take the whole lot out.

Even when children were taught to brush their teeth they wouldn't necessary allow the dentist to examine their teeth.

NEED FOR EDUCATION

People in the group stressed the need for education. They believed there was the need for education on how to provide oral health care when the child has a disability. As one mother stated,

> Right from the beginning you need to be given some education on what children's teeth might look like. I don't mean like physically look like but what happens to them because it is a disability. Yeah and I don't think I ever thought about it. And still not now.

Parents also needed education about the side effects from medication such as inhalers, one parent talking about how her son's teeth were blackened as a side effect of inhalers. Comment was made that

> Parents aren't told when say like when their children have to have inhalers, they are not actually told about the risk and what they can do to um counteract it, or at least counteract it. It does come back to maybe the doctor or the chemist or someone giving them good information as well.

SUMMARY: CHILDREN WITH SPECIAL NEEDS AND DISABILITIES

- Lack of routine oral health assessment for children with disability
- Relationship with knowledgeable oral health professionals important
- Major barrier to oral health care was problems accessing the children's mouths
- Need for specific education on how to provide oral health care when the child has a disability
- Need for education about the side effects from medication.

Kaumātua with health conditions

Sixteen kaumātua from a Chronic Obstructive Pulmonary Disease (COPD) support group took part in the focus group.

MEDICATION EFFECTS ON ORAL HEALTH

A major concern for kaumātua in the group was the effect of medications on their oral health. Effects included a dry mouth from inhalers, ulceration and changes to taste.

> I find with this oral health thing is when I'm taking my puffers and using the puffers it changes the smell in my mouth it changes everything in my mouth so that does have an effect.
>
> I find it dries out my mouth very much. Very, you know, I'm always thirsty with it you know after I've used the puffers...I also find through the puffers and sometimes other medications I get a dreadful ulcerated mouth then I find it very difficult to chew my food and eat.

BARRIERS TO ACCESSING ORAL HEALTH CARE

Three of the kaumātua in the group had not been to the dentist in the last 10 years. The cost of treatment was repeatedly stressed as the major barrier.

> I asked her to take them all out and she said no there's a lot that can be saved and I'd have to go back for three sittings and then she said I have to make some false ones and she pulled out about five and when they came to making the new teeth the price went from little to very much and I just couldn't afford it.

The cost of new false teeth was particularly burdensome with prices quoted as being from $650 to $1600, one participant commenting that "We're actually walking around with a goldmine in our mouth because of the dentist". The group shared their knowledge of the support available for superannuitants through Work and Income New Zealand:

> For the senior citizens you go, what you do is you find out through WINZ who works on their behalf for their clients so if you were on NZ super they'll say yes go to a dentist and get a quote and bring it back to us then they'll yay or

Te Hā Oranga group, Kōkiri Marae.

> nay and then they'll say to you right then yes you can go and get your teeth done you've got to give us $10 extra a fortnight out of your pension.

Fear from early dental care experiences also created a significant barrier to accessing dental treatment for the kaumātua.

> I'm still not having any daily oral health care because I keep referring and blaming my upbringing when I was at primary school because our dental nurse at that time she was quite rough and tearing our mouths open and what not and we used to call her.. the killer nurse was the name for her when she came to our school.

> If I had to go back my fear would be the dentist chair because my recollection was the old foot drill and the nurse used to hit us if we didn't sit still, it was dreadful, it was torture.

Consequences of lack of oral health care: whakamā and self management

One consequence of poor oral health is "bad breath". One participant talked about the impact of bad breath over time.

> I guess for me in my experiences, for me I haven't had any dental care since I was at primary school um... and then saying that the impacts that it's had on me, it's a bit like to do like with my social life, it's when I'm having conversations with people [Kei te haunga ke o taku ha] you know people pull back from you.... People sort of stick back from me aye. Sometimes I'm not even aware of it and it's not until later on down the track people will mention it to me and I say why didn't you tell me in the first place and I would have done something about it.

Early-life self care practices included pulling out teeth, "Dad just got the pliers", or waiting until they fall out and one respondent talked about chewing tar.

> We never had toothbrushes or toothpaste I can remember and when they were laying the new roads when [name of suburb] was just beginning to be built and my nan or mother used to say get out there and get a bit of tar and we used to chew that and we'd get a great big piece and we were allowed to bite it off and chew the tar and it would whiten and clean our teeth.

"KNOWLEDGE IS POWER"

There was discussion about the need for education about oral health, including information on prevention, nutrition, and what services are available. The research focus group itself was seen as a valuable exercise in raising awareness:

> I think a lot of it too will be having more workshops like this because knowledge is power and power is knowledge and that's where you get it from is from that knowledge and power its having wānanga like this.

The relationship with the educator was also seen as critical with the need for Māori educators to work with Māori.

> And like for Māori I'm only speaking from like through my life experience and for the educators they need to be brown so the people they're educating they can commit to the educator and that's very important I think within our Māori society.

SUMMARY: KAUMĀTUA WITH HEALTH CONDITIONS

- COPD medication affected oral health
- The cost of dental care was prohibitive over a lifetime
- Historical trauma from dental care drove later avoidance of professional dental care
- Education to improve knowledge of oral health resources and prevention of problems was promoted

Māori with dementia

Thirteen interviews were held with 17 whānau members. Some interviews were with the person with dementia, some with whānau as well and others with whānau members only.

ORAL HEALTH CARE CHALLENGES

Oral health and hygiene was important to many participants in this study as one caregiver explained.

> I believe that it's important to manage the care of your teeth because it prevents tooth decay as well as dental decay, it prevents gum decay, all, any bacteria that may sort of either get into your gums which could cause prolonged injury, brain injury.

However, the effect of memory loss and lack of comprehension of the person with dementia created difficulties with managing oral health tasks. All but two of the people with dementia in this study had lost their teeth. Whānau caregivers stated that visits to the dentist to get dentures were too difficult in the circumstances and talked about not wanting to "traumatise" the person or create a "big ordeal".

Another issue for whānau was the increasing need to help with activities of daily living as providing oral hygiene was a difficult task. One caregiver talked about how it was hard getting dentures out of her mother's mouth and once they were out "it was a bit of a job trying to get them back into her mouth." While oral

health may have been valued in normal circumstances it diminished in priority when there were competing demands for overall care, health needs and caring for other family as well, with comments such as "getting T (person with dementia) to visit his local doctor is a huge issue so oral health problems for the family are not a priority".

STRATEGIES TO PROVIDE ORAL HEALTH CARE

The key useful oral health strategy commented on was maintaining habitual denture and oral care routines. Some participants had an established routine that did work for them and one person with dementia explained his routine in detail which included brushing every night: "toothpaste … do mouthwash then I brush my tongue and my roof of my mouth". There was also comment that not having to care for teeth made life more straightforward with dentures being easier to clean; one person with dementia who did not have teeth stated that she didn't need to see a dentist; "I can eat as well as I am with my gums". Other participants continued to manage as one caregiver explained,

> In the case of my father who has dementia, he enjoys wearing dentures although it did take him a while to get used to and managing his dentures … he finds dentures quite efficient because it is easier for him to clean and soak at nights.

IMPROVING SERVICES

In relation to supporting improved oral health for whānau members with dementia, participants thought that better access to community based services where the dentist travelled to rural areas would be directly helpful. The cost of care was seen as prohibitive and it was stated that oral health services for people with dementia should be subsidised or free, "I'd like to see free services for our Māori women out there with dementia". There were also suggestions that oral health providers needed specific education about dementia and that services should be delivered in such a way as to avoid stressing the person with dementia unduly e.g. avoiding long waits in reception at appointment times. Oral health information and education targeted at caregivers was also a need.

SUMMARY: MĀORI WITH DEMENTIA

- The symptoms of dementia created difficulties with managing oral health tasks
- There are specific barriers to dental care for people with dementia because of their ability to cope with dental visits
- Oral health care can diminish in caregivers' priorities because of other competing demands
- The maintenance of habitual denture and oral care routines is important
- Suggested improvements in services included provider education about dementia, community based services accommodating people with dementia needs, and information for caregivers.

Summary of themes

The findings can be grouped into three major themes: the impact of oral health problems; access to oral health services; and influences on oral health practices (Table 2.3). The study findings are limited to those people who contributed to this research. However, there was considerable agreement about the issues and concerns identified in each theme.

Impact of oral health problems: The stigma of damaged or missing teeth, including denture problems affected people's work and social life. Problems with communication, bad breath, and mood were described. Some talked about having to make the choice between dental treatment and other family necessities, resulting in problems remaining untreated or severe self-care remedies. One community had sadly been through the trauma of losing a family member due to an untreated oral infection.

Access issues: The high cost of dental care affecting access featured highly in the responses from each of the communities. The lack of choice of dental providers in rural areas was a problem for some, resulting in extra costs of having to travel a long way to obtain care acceptable to participants. Arrangements to make payments over time enabled some participants to receive care.

Previous early life or more recent negative experiences of dental care, including pain, feeling judged, disrespected or discriminated, affected people's willingness to engage with services, in some cases influencing the next generation. This indicates a need for oral health services to make an extra effort to rebuild trust and the need to acknowledge previous experiences to overcome emotional barriers.

People's experience of obtaining grants or loans from Work and Income New Zealand for dental care varied. Most groups felt information on entitlements to ACC funded care and WINZ subsidies or loans should be more proactively disseminated.

Table 2.3 Summary of themes from community interviews

ORAL HEALTH		
Impact of oral health problems	Access to oral health services	Oral health practices
▪ Whakamaa ▪ Self-care and hauora ▪ Diminished whānau ora ▪ Forced choices ▪ Pain	▪ Location ▪ Cost ▪ Forced priorities ▪ Age state ▪ Entitlement policy application	▪ Relationship with oral health practicioners ▪ Rongoā ▪ Lifespan influences ▪ Education and awareness ▪ Nutritional requirements ▪ Community resources

The parents of children with special needs reported that dental checks were lacking from the annual health screening schedule. The need for community-based dental services better able to accommodate people with special needs was noted by caregivers of people with dementia and parents of children with special needs.

Oral health practices: All groups talked about the importance of knowledge about oral health management and disease prevention, and the need for more information on what services are available and how best to access care (not just for themselves but for their children and other family members). People with chronic conditions or special needs described some of the difficulties with managing oral health and wanted more information on the specific impacts related to their condition, including the effects of medications.

3 Mai ngā ratonga hauora *Views from the health and disability sector*

The views of organisations and individuals working in the oral health and Māori health sector were elicited using surveys and key informant interviews. This chapter reports the views of staff involved with the research partnership community organisations – Tipu Ora, Ora Toa Health Service, Kōkiri Marae, Alzheimers Society, and members of Te Ao Mārama. The study was approved by the Multi-region Ethics Committee. Questions covered demographic details, what factors supported and didn't support working in oral health services, barriers to delivering oral health services to Māori, access issues and Māori oral health priorities. The analysis of the quantitative data is presented in descriptive statistics. A content analysis was carried out on the data from the open ended questions. The findings from each survey are reported in the following discussion along with the characteristics of each organisation. A synthesis of the overall findings is presented in the concluding summary.

Te Ao Marama members

An online survey of members of Te Ao Marama (the New Zealand Māori Dental Association) was conducted to seek members' views about oral health research priorities for Māori. Established in 1995, Te Ao Marama membership consists of a range of professionals and groups committed to Māori oral health development. These include dentists, dental therapists and hygienists, health promoters, researchers, policy analysts, and others. The 70 members were asked to take part in the survey. Thirty-nine members started the survey and 33 completed it in August and September 2009 (47% response rate). The most common role was dental therapist (51%), followed by oral health educators (20%) and promoters (20%), dental management (17%) and dentists and dental assistants (14% each). The mean number of years respondents had been members of Te Ao Marama was 5.8 years, the duration ranging from foundation members to those who joined in 2009.

The respondents collectively had considerable experience in oral health, with a mean of 19 years working in oral health. Thirteen respondents (40%) worked in a Māori provider setting, 15 (47%) for a DHB provider, six (19%) for a private

Eru Pomare Centre workshop with Te Ao Marama, at Hopuhopu, Ngāruawāhia, February 2009.

provider, and the rest in a range of settings. Twenty-six (85%) give direct support to Māori families. Seventeen (68%) had been working with Māori families for eleven years or more, four (16%) for six to ten years and four (16%) for two to five years. Twenty-nine respondents answered the ethnicity question and of these 90% identified as Māori.

WORKING IN ORAL HEALTH SETTINGS

Several themes emerged from the content analysis of the open-ended question "what do you enjoy about working in oral health?" Working with people in a practical way was important and particularly working with Māori. The challenge of the work, along with the variety, were other positive factors.

> The people, the challenge of making a mouth that needs work on it to become functional and attractive and that the client is happy with the work. It is like doing good art work.

Enabling people through education and access to good dental care was another significant aspect of the role.

> Enabling people to better care for themselves and their whānau through education, giving people a good dental experience, the technical challenges of restorative and other dentistry. Working in a Māori provider environment.

One of the major themes emerging from the question "what don't you like about working in oral health?" was the policy environment and administration requirements with comments such as "too much red tape", "paper work that we seem to be constantly inundated with" and issues with oral health being taken out of the Ministry of Health priorities. As one respondent stated:

> The bureaucratic structure of the present New Zealand state funded oral health system. The multiple levels serve to effectively block innovation in developing approaches to address the appalling state of child, adolescent and adult oral health of Māori in Te Tai Tokerau.

Another major theme in the context of commenting on negative aspects of working in the oral health workforce was work setting issues such as working in DHBs with limited "materials and pay", being "short staffed, working in isolation, working environment & equipment not good" and financial constraints limiting access to treatment. There was also comment that the "hierarchy between oral health educators, therapists and dentists" was a barrier for rangatahi who might otherwise want to qualify as therapists and had "a detrimental impact on the standard of care for whānau."

Attitudes to oral health also emerged as an issue for the oral health workers. Adult influences, parental and others, was one area of concern.

> The perception which many parents and grandparents still have that this is a "Murder House" and pass all their past experiences onto their children/grandchildren.

There were also a few comments about negativity from other colleagues.

The factors that respondents thought would improve working in oral health are outlined in Table 3.1. Workforce factors were very significant, particularly

Table 3.1 Te Ao Marama members – What would make your job more enjoyable?

Theme	Number	Comments
Workforce	5	▪ To work in a well-resourced, supportive team. ▪ Having a colleague
Lower cost	4	▪ Lowering costs to adults and whānau
Remuneration	4	▪ Having better pay
Oral Health Educators	3	▪ Having educator in the community to increase awareness
Transport	3	▪ Having a vehicle – because of the vastness of the coast it takes two to three hours travel
Resourcing	3	▪ Adequate resourcing of the necessary services
Improved oral health	2	▪ Adults who have good oral health so it reflects onto their kids and moko

increasing opportunities for collaboration and developing a team approach to care. Improving access to oral health care was also an important theme, along with a salary more commensurate with that received by other health care workers. One respondent argued that working in the sector would be more satisfying if:

> Dental professionals both Māori and non-Māori accepted that current poor Māori health outcomes is the result of history and accept that not all ethnic groups should be treated the same. That to improve the acceptability of oral health care to Māori and then improve the oral health outcomes, dental professionals need to change attitudes and the way to approach Māori in the community.

BARRIERS TO THE DELIVERY OF ORAL HEALTH SERVICES TO MĀORI

The predominant responses to the question "what barriers do you face that stop you from delivering oral health services to your Māori patients/whānau?" focused on the cost of dental treatment as the following comment illustrates.

> Rural kura not having access to services, cost for whānau to get into the city, and not having a caravan to service all secondary schools. Cost of dental treatment, lack of Māori Therapist.

The other barriers detailed in Table 3.2 are workforce scarcity, time consuming administrative demands, narrow scopes of practice, patient factors including a lack of knowledge and motivation or prioritising to seek treatment, and lack of resources.

The majority of respondents thought their Māori clients did not have satisfactory access to dental services (Table 3.3).

Respondents commented on issues such as lack of public transport to dental appointments, cost, no affordable oral health services for adults, lack of awareness of services and avoidance because of previous experiences.

> There are basically no oral health services available to Māori adults/kaumātua/kuia in Bay of Islands area which are affordable – the WINZ funding is a joke as its nearly impossible to access; those with special needs can only be seen in private, or by NDHB at Whangarei; there is a three-month wait list for children's GAs [general anaesthetic] at Kaitaia; a five-month wait at Whangarei for our referred patients–this is an improvement however and DHB is striving to address this better.

> Having worked in the field for so long, I know that most rangatahi do not turn up for dental appointments. They still feature as being three times more 'drilled & filled" so when they can choose to come, they don't want a continuation of this. At 25, they start turning up to the extraction clinics, in pain.

Table 3.2 Te Ao Marama members – What barriers do you face that stop you from delivering oral health services to your Māori patients/whānau?

Theme	Number	Comments
Funding	7	▪ The cost of dental treatment is too high for many of our whānau
Workforce	6	▪ There's not enough of us ▪ I find it really hard to get a DT to attend our oral health promotion hui as they are always too busy to attend
Administration	5	▪ The paperwork needed for SDS, ADO and CSC holders
Access	3	▪ Rural kura have poor access ▪ No vehicle
Patient motivation	3	▪ Lack of patient motivation
Fear	3	▪ Patients fear pain or fear treatment
Resources	3	▪ No te reo or Māori oral health pamphlets
Scope of practise	2	▪ Allowing dental therapists to treat adults

Table 3.3 Te Ao Marama members – In your opinion, do your Māori clients have satisfactory access to dental services?

Population	Yes	No	Unsure
Low-income adults	6	23	2
Kaumātua	5	20	5
Adults or children with disabilities, special needs, or who are medically compromised	10	14	8

Cost was the most frequently identified barrier to oral health care for low-income adults, followed by travel, previous experience of dental care, availability of dentists, dentists' attitudes to the person, the willingness of the dentist to give treatment (in order) (see Figure 3.1). The four leading barriers identified for low-income adults (cost, travel, previous history, dentist availability) were also the leading barriers identified for older adults. However, the family caregiver's interest in dental care ranked higher for older adults.

Cost and the capacity of the person to tolerate dental treatment were the most commonly identified barriers to care for people with special needs, disability, or who are medically compromised. This was followed by travel and the family caregivers' interest in dental care. The availability of dentists, the dentists' attitudes to the person and their willingness to give treatment were also seen as

Figure 3.1 Te Ao Marama members' views of barriers to accessing oral health care: low-income adults

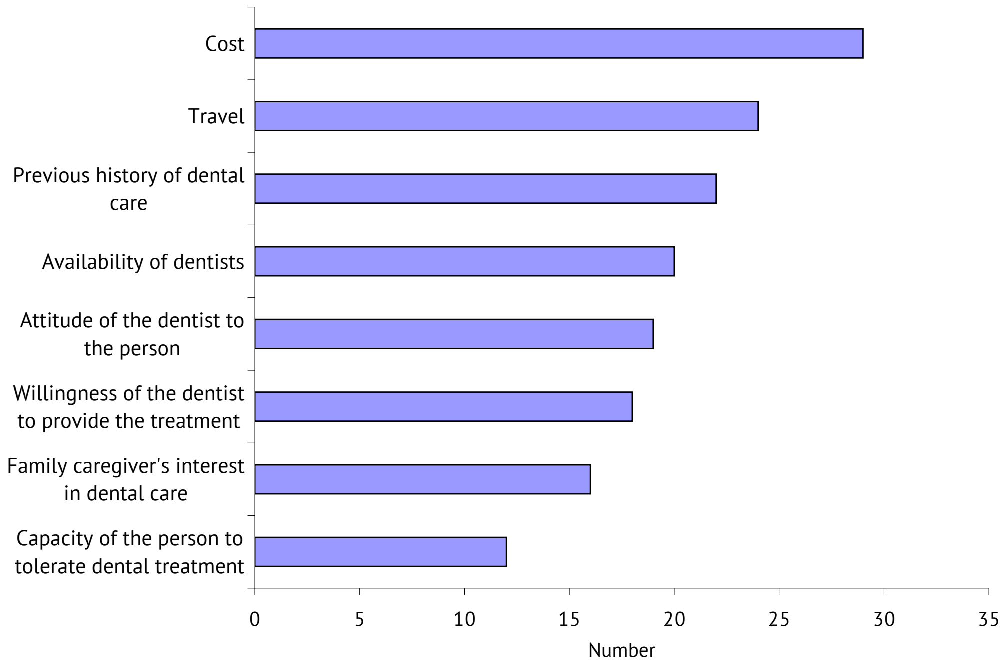
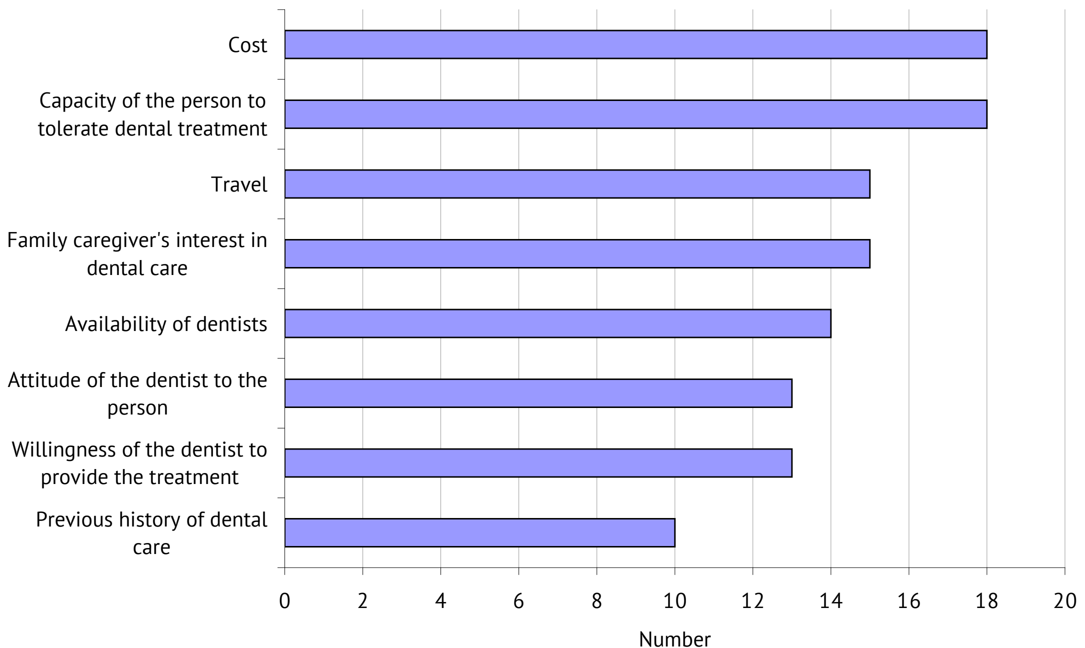


Figure 3.2 Te Ao Marama members' views of barriers to accessing oral health care: people with special needs



barriers. Previous history of dental care was the lowest ranked barrier, but was also identified by ten respondents.

Other barriers suggested by respondents (not in relation to a specific population) included the fear of being told off, being judged; lack of knowledge/ advice by other health professionals; and access.

> Our clients are seen by other health professionals frequently in a number of other situations – however there appears to be little or no interest on their part to identifying any other health issues (i.e dental) which a particular patient may be facing when they visit, and no interest in any referral on to an OHS provider – they only "treat" the issue they are "trained" to do for the patient–this whole "silo" focus needs to be shifted so they consider key pre-referral conditions – i.e. bad breath, ulcers, eating problems, colouration, head aches, pain as well.

ORAL HEALTH CARE INFORMATION

Eighty two percent of respondents provided information about oral care to Māori clients. Some resources are in te reo.

> We have an Oral Health Educator, to provide information in the clinic and out on family home visits with our other services. We also have a Health Promoter who goes into the Kōhanga and provides oral health information in Te Reo. We provide handouts, toothbrushes, paste, floss. Some pamphlets and tamariki handouts are in te reo. I think just being Māori and delivering this message our people are more likely to listen, ask questions and actually try to do the mahi at home.

Table 3.4 Te Ao Marama activities to increase Māori oral health workforce numbers

Theme	Number	Comments
Workforce/career promotional secondary schools	13	▪ Members could liaise with local secondary school careers staff with the view of presenting to senior students to raise their awareness ▪ Career Bus ▪ We could have some resources from Te Ao Mārama which promote our Māori oral health workers
Mentoring	10	▪ Have a support person with them all the way through their study like a mentor ▪ Continue financial support for enrolled students to attend hui
Workforce/career promotion to hapu and iwi	8	▪ Māori Oral Health day ▪ Look at working with iwi providers to offer scholarships/ paid training ▪ Fluoridation talks to iwi/hapū etc

HEALTH AND DISABILITY SECTOR

MĀORI AND ORAL HEALTH CAREERS

Respondents thought there were a numbers of barriers preventing Māori from choosing oral health as a career option, the most frequently mentioned being the financial cost (13), along with a lack of Māori role models (10). The location of educational institutions (7), insufficient information (5), lack of science education at secondary school (4) and lack of cultural connection (4) as illustrated by the comment that "dentistry only offered at Otago, a lot of our Māori are whānau orientated and leaving home could be a barrier", were also mentioned.

Ideas for activities Te Ao Marama could do to increase the Māori oral health workforce included career promotion at secondary schools, and with hapū and iwi, and mentoring (Table 3.4).

SERVICE, RESEARCH AND POLICY PRIORITIES

Respondents stressed oral health promotion as a key priority along with access issues. Other priority areas were associated with cost and funding models, the impact of poor oral health on quality of life, assessing the effectiveness of Māori health provider models and attitudes to oral health (Table 3.5).

SUMMARY: TE AO MARAMA MEMBERS

- Oral health careers are challenging, practical and enabling
- Negative role aspects include administrative demands, insufficient funding, professional hierarchies and general public attitudes to maintaining oral health
- Factors that could increase satisfaction include a team approach, increasing accessibility of oral care by lowering cost, and improving the resources supporting the workforce
- The leading barriers for Māori accessing oral health care are, in the respondents' view, cost, travel, previous history, and dentist availability for people with low income and for older adults
- Leading issues for Māori with special needs, disability or medically compromised, in addition to cost, are the capacity of the person to tolerate dental treatment along with travel and the family caregivers interest in dental care
- Useful activities to increase the Māori oral health workforce were stated as being workforce promotion in secondary schools, mentoring and career promotion with hapū and iwi groups.

Table 3.5 Te Ao Marama members' service, research and policy priorities

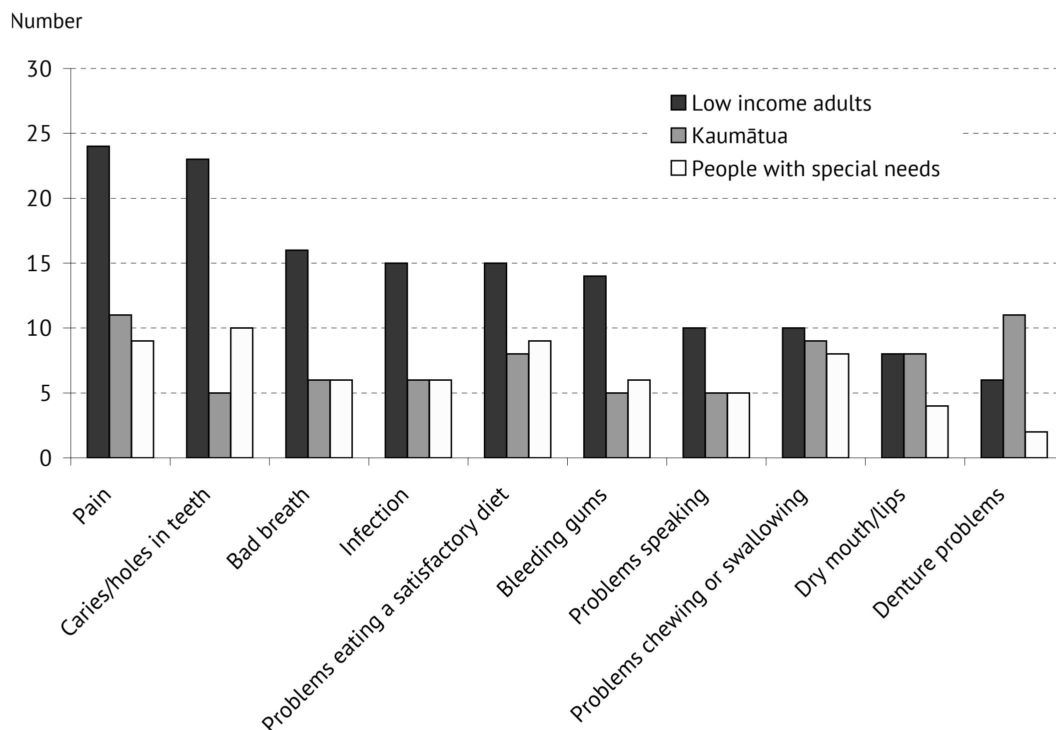
Theme	Number	Comments
Oral Health Promotion	11	▪ Promoting the importance of good oral health ▪ Prevention strategies understood and accepted by Māori
Access	9	▪ Find out from whānau why services aren't being accessed
Cost	5	▪ How to reduce costs of services
Attitude	5	▪ Parents/whānau /grandparents view of oral health ▪ Why Māori do not value oral health
Quality of life	5	▪ Effects of poor oral health on learning and development
Services	5	▪ Effectiveness of Māori Health providers ▪ Whānau ora approaches
Workforce	4	▪ Why Māori do not enter clinical workforce
Policy	3	▪ Improved funding for Māori oral health service providers ▪ WINZ subsidies to cover preventative costs
Fluoridation	1	▪ Impact of water fluoridation on oral health

Tipu Ora Charitable Trust staff

Tipu Ora staff completed an online survey seeking their views on oral health, policy and research priorities for Māori. Tipu Ora Charitable Trust is a Māori health and social service provider in the Te Arawa region. Services include: Well Child Tamariki Ora, Aukati Kaipaipa Smoking Cessation, Health Promotion, Family Start Programme, Teenage Parents and their Children Service Coordination, Parents as First Teachers, and NZQA accredited Hauora Māori programmes. The Trust also has a community dental service, Tipu Ora Oranga Niho, which has a two-chair mobile dental facility and a fixed dental clinic. Dental care is provided to low-income adults with a community services card, adolescents and children referred by a dental therapist and preschool children through base contracts with Lakes DHB, and fee for service contracts with Ministry of Health, ACC, and Work and Income New Zealand.

Fifty-two staff were invited to take part in the survey and 38 completed the questionnaire in September 2009 (73% response rate). Roles were varied and included 11 Whānau Kaitiaki, three support workers, six support services staff, three nurses, three health promoters, one dentist, one dental assistant, one dental therapist, one social worker and one staff member in the Tamariki Ora service. Ninety percent were Māori.

Figure 3.3 Tipu Ora staff views of oral problems experienced by clients



ORAL HEALTH PROBLEMS/BARRIERS EXPERIENCED BY CLIENTS

Pain was the most frequently identified oral health problem encountered for low-income adults, followed by caries, bad breath, infections, problems eating and bleeding gums (see Figure 3.3). Pain was also leading problem for Kaumātua then followed by denture problems, and problems eating. Caries was the leading problem for people with special needs, disability, or who are medically compromised followed by pain and problems with eating.

The majority of respondents (65.5%) thought their Māori clients did have satisfactory access to dental services, 20.7% did not agree and 13.8% were unsure. The predominant responses to the question about the barriers to oral health care for low-income adults were cost (26), fear (20), previous history of dental care (18) lack of information (15), followed by travel (14), no dentist available (9) and the attitude of dentist (9). The highest ranked barriers for Kaumātua were once again cost (14) and fear (12), travel also ranked highly (12) followed by lack of information (9), history of dental care (8), attitude of dentist (6) and no dentist available (5). With regards to people with special needs, fear was ranked highest (9) followed by cost, travel, and previous history of dental care (all with 7 responses each) followed by attitude of dentist (5), lack of information (4) and no dentist available (4).

There were specific comments about information gaps:

> For most of my parents their last dental treatment was at Intermediate school, not informed about registering with a Dental Service before attending High School, and if they had been dentists weren't available, and also lucky to be seen once a year.
>
> Special needs children's parents face barriers of not knowing how service will work for them and their children. What and how their children are treated or how.

Comments about possible solutions to barriers to oral health care included education, low cost services and using the Community Service Card for low cost care, more Māori in the oral health workforce and television advertising with a Māori orientation.

> Meeting the whānau in their home environment. Tipu Ora Dental oral health educator has been visiting alongside our Ahuru Mowai Kaitiaki for around seven months. Her relationship with clients has broken down those barriers around oral health hygiene and care. Kanohi ki te Kanohi I think is the key.

The staff also commented on barriers to delivering oral health services to their clients. Staff considered that fear, memories of childhood experiences, and other priorities competing with oral health all created barriers to care for adults in their community.

> For many of our low socio-economic, high needs, Māori families, who are also most vulnerable to poor oral health outcomes personal health is at the bottom of the list when it comes to their priorities. In working with these families when it comes to dental, mothers/parents/caregivers are most interested in when to expect first teeth and will they get a free toothpaste and toothbrush for baby, than taking care of their own dental needs.

Once again funding issues were very significant and one respondent commented on wanting to "be able to offer Tipu Ora dental services for those Māori clients that do not qualify for community services card; as for many of them, they would prefer to access Māori oriented dental services".

ORAL HEALTH CARE INFORMATION

Ninety-three percent of respondents provided information about oral care to Māori clients using a range of materials and by demonstration. The oral health educator support on whānau visits was an important resource.

STRATEGIES SUPPORTING MĀORI ORAL HEALTH

In answer to the question "what do you think is working well for Māori health and why?" staff stressed the effectiveness of Māori provided services which enable

Table 3.6 Tipu Ora staff's views of effective strategies supporting Māori oral health

Theme	Comments	Number
Māori health services	▪ Māori working for Māori ▪ Provider Māori dental providers	9
Low cost/subsidised oral health care	▪ The Otago dental service we provide access to is a positive because it's free* ▪ Subsidised oral health for income earners with Community Services card.	6
Māori-centred education/information	▪ Having oral information shared in their home – Kanohi ki te kanohi ▪ Education by the Māori educator	3

* Final year dental students placed at Tipu Ora for a week provided a free service for several years. This service is now a formal agreement with the Dental School and is fee-for-service based.

Table 3.7 Tipu Ora staff's research and policy priorities

Theme	Comments	Number
Cost	▪ Accessibility and funding	12
Education	▪ Outcomes of education ▪ Dental expert providing education	6
Nutrition	▪ The relation between oral care, nutrition and self care	6
Workforce	▪ Increasing Māori workforce ▪ Capacity building	5
Policy	▪ Outcomes research ▪ Research on future needs for Māori	4
Attitude	▪ Effects of colonisation on the attitudes people take towards their own health ▪ How are parents encouraging the child, teenagers?	3
Health disparities	▪ How to eliminate oral health disparities	2
Elderly	▪ Issues with getting to services and the cost	2
Fluoridation	▪ Fluoridation and oral health	2
Pre-European practices	▪ Pre-European cultural oral health attitudes / practices	1

access by providing low cost options, visiting at home, and Māori staff interaction with Māori clients (Table 3.6). Low cost and subsidised oral health services were also seen as important components of effective strategies to support Māori oral health along with Māori-centred education/information.

SERVICE, RESEARCH AND POLICY PRIORITIES

Researching the cost of oral health care was the dominant theme with other main interests in the areas of education, nutrition, workforce and outcomes (Table 3.7).

SUMMARY: TIPU ORA CHARITABLE TRUST STAFF

- Pain was the most frequently identified oral health problem encountered for low-income adults, followed by caries, bad breath, infections, problems eating and bleeding gums
- Pain was also the leading problem identified for kaumātua, followed by denture problems, and problems eating
- Caries was the leading problem for people with special needs, disability, or who are medically compromised followed by pain and problems with eating
- Cost and fear were the most frequently ranked barriers to accessing oral health care for low-income Māori, kaumātua and people with special needs identified by respondents
- Information gaps about how to access appropriate services was an issue
- Effective strategies to improve access included Māori provided services, visiting at home, low cost and subsidised oral health services, and Māori centred education/ information.

Kōkiri Marae staff

Kōkiri Marae, Seaview provides a range of health and social services to Māori communities in Lower Hutt. An online survey of Kōkiri Marae staff was conducted about their views on oral health, policy and research priorities for Māori in July 2009.

There were eight respondents to the survey (N=13, response rate 61%) and all provided care to Māori in the research priority groups. The roles in the workplace included health promoters (4), a nurse (1), and community health workers (2). The length of time working in current roles ranged from 20 years to 15 months. Five staff were Māori.

ORAL HEALTH PROBLEMS/BARRIERS EXPERIENCED BY CLIENTS

The majority of respondents identified pain as a leading dental problem for low-income adults along with bad breath, bleeding gums and caries. Problems with eating a satisfactory diet was the most commonly identified problem for older adults along with problems chewing or swallowing and caries. The most frequently known problems experienced by clients with special needs, disability or chronic medical conditions were bad breath, caries, infection and problems eating a satisfactory diet.

Six of the eight respondents felt that their Māori clients did not have satisfactory access to oral health care. Cost was cited as the main barrier along with travel and fear. Specific comments about barriers include "WINZ lack of advertising of grants each year $300", "parents' attitude to dental care", and lack of finance for nutritious food and for buying new toothbrushes, toothpaste and dental floss.

Responses to the question on barriers to delivering oral health services focused on lack of knowledge and information, and on the lack of a contract to provide oral health education. Financial constraint was consistently cited as the key barrier.

> The delivery is fine it's when we talk about the cost. The cost is the biggest barrier, Māori would prefer to have their teeth pulled out than have ongoing costs for example a root canal. Plus because of the cost this has prevented regular check ups therefore increasing their treatment plan.

Suggested solutions to barriers included free oral care and extended dental roles, "free oral care for all. Bring back the dental nurses for adults as well, almost like an Nurse Practitioner role, rather a Dental Practitioner role (training required)". Increasing the Māori oral health workforce was also promoted along with funding Māori providers to work in the community. Greater training opportunities for staff and more information and "resource toolkits that include toothbrushes" were also suggested. A useful strategy in place was a "credit account, clients can put money towards their treatment plan and when they have enough then they can have treatment".

ORAL HEALTH CARE INFORMATION

Four of the respondents said they provide information on oral health care to their Māori clients such as dental enrolment forms for young people, information about dental services and on accessing WINZ benefits.

STRATEGIES SUPPORTING MĀORI ORAL HEALTH

In answer to the question "what do you think is working well for Māori health and why?" staff referred to the local low cost dental service associated with their

PHO and "the resources provided to us from DHB for our Kōhanga xmas pack"* and commented that "the Māori led community clinics seem to work well, we have seen articles re Tipu Ora and are envious". Staff wanted to know more about what information is available promoting oral health care and would like "more positive Māori stories of dental health care and more Māori-friendly resources" along with a survey of Māori to assess need and barriers.

RESEARCH AND POLICY PRIORITIES

Research areas suggested by the respondents included the role of medication and nutrition in oral health; the effects of poor dental health on Māori and lifestyle; if the fear of going to the dentist is passed through generations; what would encourage Māori to seek oral care and what are the barriers; and if greater education in the Kōhanga Reo would make a difference to oral health practices.

SUMMARY: KŌKIRI MARAE STAFF

- Pain was the most highly ranked dental problem for low-income adults along with bad breath, bleeding gums and caries
- Problems with eating a satisfactory diet was the most common problem for older adults identified by staff along with problems chewing or swallowing and caries
- The most frequent problems experienced by clients with special needs, disability or who are medically compromised that were commented on by staff were bad breath, caries, infection and problems eating a satisfactory diet
- Six of the eight respondents felt that their Māori clients did not have satisfactory access to oral health care
- Cost was cited as the main access barrier along with travel and fear
- Suggested solutions to barriers included free oral care, extended dental roles, and more training and resources for non-dental staff.

Ora Toa Health Services staff

The Ora Toa Health Unit and the Ora Toa PHO provide a range of health services, including health promotion, whānau wellbeing programmes, general practices. The PHO has two dental chairs and has recently started providing low cost dental

* The Kōhanga Xmas pack is made up at Kokiri and includes information about child re-registration, toothbrushes, toothpaste, stickers, a mouth rinsing plastic cup and a sticker chart to put on the fridge recording when the children had brushed their teeth.

care. An online survey of Ora Toa staff was conducted about their views on oral health, policy and research priorities for Māori in July and August 2009.

Six staff members started the survey and five completed it. Two staff were Māori. Three respondents were nurses, one was a health promoter, and one a dentist. Three had been working in their role at Ora Toa for four years, one for six years with Ora Toa and two for 12 years.

ORAL HEALTH PROBLEMS/BARRIERS EXPERIENCED BY CLIENTS

All respondents thought low-income adults experienced dental caries or broken teeth, five of the six were aware of problems with bleeding gums, and four were aware of pain, bad breath and infection. Problems chewing or swallowing was the most common problem for older adults identified by Ora Toa staff (five staff), followed by pain, problems eating a satisfactory diet, dry mouth or lips and denture problems (four staff). All problems except bleeding gums were identified by two staff as being experienced by clients with special needs, disabilities or who were medically compromised.

Cost and travel were the most frequently identified barriers to accessing oral health care. Specific comments about barriers included the need to increase funding to oral health services, "ensuring the teenagers who leave school early do not fall through the cracks and turn up in their adulthood with bad teeth and having to pay a lot of money to fix them", and "more acute slots available in the hospital system as people are told to call at 8 am to get an appointment and when they can't they are told to call back next day". Attitudinal issues were commented on: "attitude of fear and neglect passed on to future generations" along with problems with diet and smoking and "poor access to dentists and dental nurses due to cost barriers and unwillingness to see dentists until too late, reactive approach to dental care".

Suggested solutions to access barriers included free dental care and "information to know where to refer people, criteria for acceptance or some form of 0800 helpline as I have found teeth a very frustrating problem to deal with".

ORAL HEALTH CARE INFORMATION

All respondents said they provide information on oral health care to their Māori clients, including dental enrolment forms for adolescents, information about using inhaled steroids and on accessing WINZ benefits.

STRATEGIES SUPPORTING MĀORI ORAL HEALTH

In answer to the question "what do you think is working well for Māori health and why?" staff referred to the free services for under-18s and a low cost dental service in the medical centre aimed at Māori.

> Our low cost dental service is working well so far as people are already confident to use our medical services and this is an extension of that.

RESEARCH AND POLICY PRIORITIES

Research areas suggested as priorities included questions on Māori youth access to free dental care, comparisons between Māori and non-Māori dental nurse visits and age of receiving first dental check up, education issues, patient non-attendance and access barriers.

SUMMARY: ORA TOA HEALTH SERVICES STAFF

- Highest ranked problems for low-income adults were dental caries or broken teeth, problems with bleeding gums pain, bad breath and infection.
- Problems chewing or swallowing was the most common problem for older adults followed by pain, problems eating a satisfactory diet, dry mouth or lips and denture problems.
- Cost and travel were the most frequently identified barrier to oral care.
- Solutions to barriers included free dental care and the need for a helpline
- Having a dental service embedded with the primary health care organisation which was already accessible and acceptable to Māori helped overcome financial and non-financial access barriers.

Alzheimers Society staff

A total of 91 questionnaires were sent out to all employees of Alzheimers New Zealand's 23 member organisations in May 2009 with 34 responses (response rate 37%). The majority of staff who responded had Māori clients (72%), mainly from Northland, Auckland, the East Coast and Lower North Island. Ninety percent of respondents identified as New Zealand European (n=29) and 10% Māori (n=3).

Twelve community workers with Māori clients responded to the question of oral health problems experienced by Māori clients (Figure 3.4).

ORAL HEALTH PROBLEMS/BARRIERS EXPERIENCED BY CLIENTS

Problems with chewing, dentures, swallowing and pain were the most frequent oral health issues identified by Alzheimers Society staff. Comments were made about difficulties with the communication of pain and discomfort with dentures

Figure 3.4 Alzheimers Society staff views of oral health problems experienced by clients with dementia

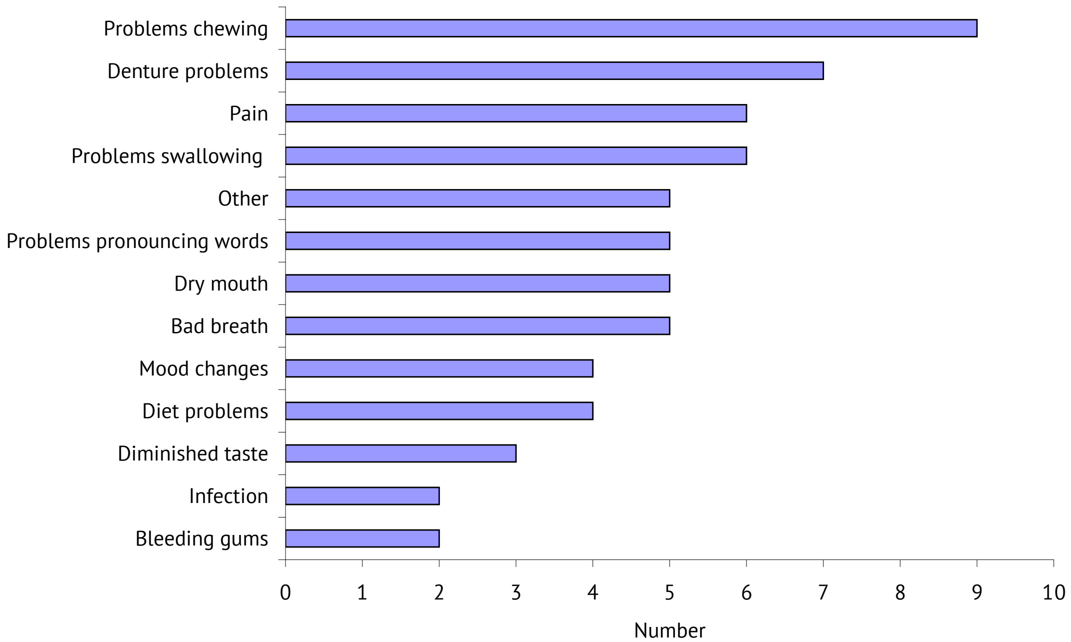
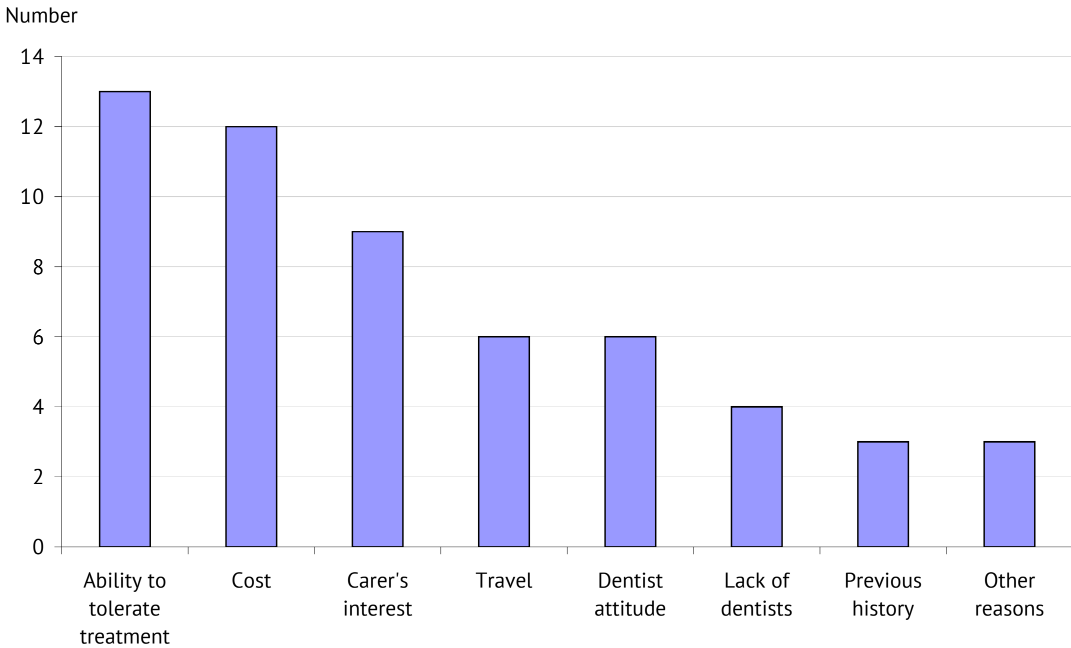


Figure 3.5 Alzheimers Society staff views of access barriers for Māori with dementia



or natural teeth, that many people had missing and decayed teeth, and that there were issues with cleaning dentures and their fit.

In answer to the question "In your opinion do your Māori members/clients have satisfactory access to dental services?", of the 19 responses, 15 answered yes. However, 14 respondents then went on to answer the later question on barriers to accessing dental health services (Figure 3.5). The main barriers to accessing dental health services included the person with dementia's ability to tolerate treatment, the cost of treatment and families not recognising the importance of good dental care. Other issues included carer overload with multiple demands, transport difficulties and long waiting times for appointments.

ORAL HEALTH CARE INFORMATION

The majority of respondents did not provide oral health information to people with dementia (20 out of 23 respondents) and whānau members (16 out of 23 respondents). Reasons for not providing information included the need for staff education about oral health issues, a lack of oral health information resources for whānau, not being asked for information, oral health not seen as a part of a dementia specific role, and that there were more urgent issues. In response, an oral health information sheet has been developed as part of the research project (see Appendix Two).

RESEARCH AND POLICY PRIORITIES

Comments about the oral health priorities for services and research for Māori people with dementia included (i) attention to pain because of the communication issues with dementia, (ii) the accessibility, affordability and availability of fluoride, (iii) access to services in relation to cost and travel and (iv) oral health education.

> What sorts of oral health problems might people with dementia suffer? What should our carers or health professionals dealing with agitated behaviour be looking for in the demented person? How do we know it is an oral health problem rather than arthritis, eyes and ears.

SUMMARY: ALZHEIMERS SOCIETY STAFF

- Problems with chewing, dentures, swallowing and pain were the most frequent oral health issues identified
- Main access barriers to dental care included the person with dementia's ability to tolerate treatment, the cost of treatment, and families not recognising the importance of good dental care
- Oral health information was generally not provided by community workers to whānau.

Summary of findings

All groups identified oral health problems experienced by their clients, including caries, pain, denture problems, bad breath and gum disease and problems with eating. Cost was the most frequently cited barrier to oral health care, followed by transport issues, and fear (possibly related to previous experiences). For people with special needs, staff recognised that caregivers had an important role in facilitating access to dental care. The person's ability to tolerate the treatment provided was also considered important.

There was variation between groups in the provision of oral health information to whānau, with staff from providers who had dental services embedded in the organisation feeling better equipped and more likely to provide information than others. Staff from services without a dental provider noted the need for more staff training and resources on oral health. The existence of a dental service within a Māori provider organisation appeared to reduce both financial barriers and fear or emotional barriers, as the community already had confidence in the other medical or social services provided.

Strategies seen as useful to improve access for Māori included: by Māori for Māori services, Māori-centred education/information; visiting at home; the provision of free, low cost or subsidised oral health services; training on oral health and resources for non-dental staff; extended dental roles.

Those working in oral health enjoyed the challenge, the art, and the practical and enabling dimensions of their job, with many appreciating the opportunity to contribute to Māori oral health development. Negative aspects included insufficient funding, administrative demands and rigid contractual arrangements and narrow scopes of practice which were seen as barriers to being able to provide oral health care to Māori whānau. Workforce scarcity was identified as an issue, as was feeling isolated and unsupported. The perceived low value placed on oral health by the general public, and the lack of interest in or knowledge of oral health among non-dental health professionals were also seen as barriers to the provision of oral health care to Māori along with judgemental attitudes among dentists and the high cost of dental treatment. Suggestions to increase the Māori oral health workforce included career promotion at secondary schools and with iwi and hapu, and mentoring.

Priority areas for research, service and policy development included: cost and funding models to improve access; assessing the effectiveness of Māori health provider models; attitudes to oral health and the intergenerational impacts; the impact of poor oral health on quality of life; oral health promotion to increase prevention and environments conducive to oral health; increasing the Māori workforce; the impact of colonisation on oral health; and traditional (pre-European) oral health practices and values.

4 Ngā tatauranga hōhipera
Public hospitalisations

Key Points

ADULTS AGED 20 YEARS AND OVER

Main causes of admission in 2000–05

- Tooth and gum disease (caries, gum, pulp, impacted and embedded tooth disorders) comprised nearly 50% of Māori and non-Māori adult oral admissions.
- Injury (around 80% fractured jaw) comprised 30% of Māori and 20% of non-Māori oral admissions.
- Other oral diseases (of the salivary gland, soft tissue, jaw, tongue), accounted for 15% of Māori and non-Māori oral admissions.
- Cancer accounted for 7% of Māori and 18% of non-Māori oral admissions.

Disparities in admission rates by cause

- Māori age-sex-standardised admission rates (20 years and over) for tooth and gum disease were 23% higher than those of non-Māori for tooth and gum disease (dental caries 42% higher, pulp and periapical disease 134% higher, periodontal disease 80% higher) but 34% lower for impacted and other tooth development disorders and other tooth and gum disease.
- Māori rates of admission were also higher than non-Māori rates for diseases of the oral soft tissue (90% higher), salivary gland (61% higher), and of the jaws (36% higher).
- Admissions for orofacial injury were 80% higher among Māori than non-Māori (89% higher for fractured jaw, 45% higher for lip wound, 58% higher for broken teeth). The majority of admissions for injury were among males. Around 60% of Māori male and female admissions for fractured jaw were associated with assault or fights. Among non-

Māori, 50% of male admissions and around 20% of female admissions for fractured jaw were associated with assault or fights.

- Oral cancer hospitalisation rates were similar for Māori and non-Māori overall, but this varied by age with Māori rates lower than those of non-Māori in the older age groups.

Socioeconomic disparities

- Increased risk of hospitalisation for tooth and gum disease (caries and pulp disease in particular) was associated with higher levels of socioeconomic neighbourhood deprivation. Māori rates were higher than those of non-Māori in the two least deprived quintiles but similar in the three most deprived quintiles.
- Hospitalisations for orofacial injury were strongly associated with higher levels of area deprivation, with the rate for Māori living in the most deprived quintile 2.4 times the rate for Māori in the least deprived quintile areas. Non-Māori living in the most deprived quintile had 85% higher risk of admission for injury than those living in the least deprived quintile areas.
- Māori admission rates for injury were higher than those of non-Māori in each deprivation quintile with the greatest disparity in the most deprived quintile where Māori rates were 90% higher than the non-Māori rate.

Urban-rural variations

- Rural residents had lower admission rates for tooth and gum disease than residents of main urban areas or independent urban areas (small towns). Among Māori, main urban and small town residents had similar rates of admission, while among non-Māori small town residents had the highest rates.
- Injury admission rates were not significantly different by urban-rural residency for Māori but for non-Māori the rates were significantly higher among independent urban residents compared to main urban or rural residents. In each area type, Māori rates were higher than those of non-Māori (although the difference was lowest in independent urban areas).
- Rural residents had lower rates of admission for oral cancer compared to their main urban and independent urban counterparts among both Māori and non-Māori. Among non-Māori, the highest rates of admission for cancer were among residents of independent urban areas.

Regional variations

- There was wide variation between districts in Māori admission rates and in Māori:non-Māori rate ratios. The DHBs with highest rates of admission among Māori for tooth and gum disease were Whanganui, Southland, Taranaki, and South Canterbury.
- Non-Māori admission rates for tooth and gum disease were highest in Taranaki, Whanganui, South Canterbury, Nelson-Marlborough and MidCentral DHBs.
- Orofacial injury admission rates were highest for Māori in Northland, Auckland, Counties Manukau, Wairarapa, Hawkes Bay and Tairāwhiti residents. Disparities between Māori and non-Māori rates were also significant in these districts, and in Bay of Plenty, South Canterbury, Waikato, Waitematā and Lakes districts.

Procedure receipt

- Procedure receipt was similar for Māori and non-Māori in each tooth and gum disease category (caries, root disease, gum disease, tooth development disorders) with the exception of admissions for periodontal disease for which tooth extraction rates were higher for Māori, indicating more advanced disease at the time of admission.

ADULTS AGED 65 YEARS AND OVER

- Among Māori adults aged 65 years and over, tooth and gum disease accounted for only a third of all oral admissions, cancer 28%, oral soft tissue disease 17%, salivary gland disease 12%, and injury 5%.
- Dental caries was the principal diagnosis for over half the Māori admissions for tooth and gum disease in this age group (57%), periodontal disease for 27%, and pulp and periapical disease for 10%. Among non-Māori the proportions were 60%, 11%, and 12% respectively.
- Two-thirds of the admissions for injury were for fractured jaw among both Māori and non-Māori older adults.
- Among older non-Māori adults, cancer was the leading cause, accounting for 46% of all admissions for oral conditions, followed by tooth and gum disease (44%) and injury (10%).
- Māori age-sex-standardised admission rates for this age group were lower than non-Māori rates for cancer and injury, higher for diseases of the oral soft tissue, and similar for tooth and gum disease and salivary gland disease.

Introduction

This subproject analysed Māori and non-Māori oral health hospital admissions using public hospital discharge data for the period 2000–05. It examines patterns of admission for tooth and gum disease, other oral diseases, oral cancers, and orofacial injury. Dental procedure receipt and cause of injury are also examined briefly. The data is analysed by age, cause of admission, area deprivation, rural-urban residence, and District Health Board region.

Hospitalisations cannot give definitive information about the level of need for serious intervention. However, high rates of admission to hospital for tooth and gum disease may indicate a lack of appropriate access to effective primary dental care (ambulatory-sensitive hospitalisations) or population-based health promotion strategies (preventable hospitalisations).

Hospitalisations for injuries point to areas of focus for injury prevention and reducing the impact of oro-dental trauma. They are one of the more readily accessible sources of data on oral trauma able to be analysed at unit record level.

The hospital discharge data provides a very limited set of information about the populations of interest in this project. People with special needs, disabilities, or who are medically compromised are not easily distinguished in this dataset and work should be done to address this. Without such data, it is difficult to monitor whether rights to effective, appropriate health care are being met for all groups, especially for those known to have a higher risk of health problems and significant barriers in accessing appropriate health care.

Due to the absence of data on income in the hospital discharges, we used area deprivation as a proxy measure for 'low-income adults'. It is important to note that some residents of high deprivation areas have high incomes and vice versa (Blakely & Pearce 2002), and that at each level of area deprivation, Māori are more likely to have lower incomes than non-Māori.

Methods

This chapter presents numbers of public hospital admissions, age-specific and age-sex-standardised rates per 100,000 for Māori and non-Māori aged 20 years and over, and for 65 years and over, admitted to public hospitals with a primary diagnosis of oral disease or orofacial injury during 2000–05. Although we focus mostly on data for the adult age group (20 years and over), the majority of admissions for tooth and gum disease are among children. We therefore analysed admissions for tooth and gum disease and for orofacial injury by five-year age groups to show the pattern of admissions for all age groups. However, the more detailed analyses by deprivation, rural-urban residency, and DHB are presented for adult age groups only.

Publicly funded hospital discharge data was obtained from the New Zealand Health Information Service.* The data includes public hospital daypatients (admitted and discharged on the same day) and inpatients (who stay at least one night) but not outpatients. The ICD codes for principal diagnoses and procedures can be found in Appendix 3. Denominators were constructed from Māori and non-Māori population estimates obtained from Statistics New Zealand. Specific population estimates by deprivation and rural-urban status were constructed using the methods described in Robson et al (2010).†

Rates were age-sex-standardised to the 2001 Māori population. Confidence intervals were calculated using the log-transformation methods (Clayton & Hills 1993). Socioeconomic deprivation was measured using the NZDep2001 index of small area deprivation (Salmond & Crampton 2002). Ethnicity adjusters were used to account for the undercount of Māori admissions for the national data, with specific adjusters calculated by age, deprivation, and rural-urban status, but not for analyses by DHB. For analyses by area (DHB or area deprivation), the data refers to the person's place of residence, not the hospital to which they were admitted.

* Originally sourced for the data analyses in Robson B, Harris R. (2007). Hauora: Māori standards of health IV. A study of the years 2000–2005. Wellington: Te Rōpū Rangahau Hauora a Eru Pōmare. www.hauora.maori.nz

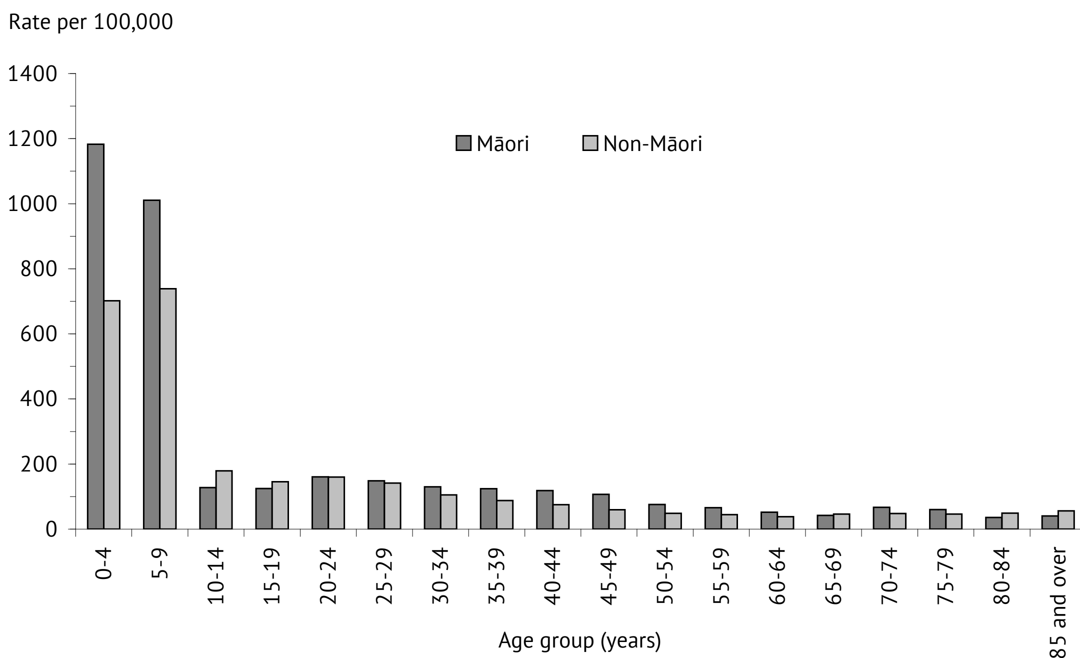
† See Appendix 2 in Robson B, Purdie G, Cormack D. (2010). Unequal Impact II: Māori and non-Māori cancer statistics by area deprivation and rural-urban status 2000–2005. Wellington: Ministry of Health.

Results

HOSPITALISATIONS FOR ORAL CONDITIONS BY AGE GROUP

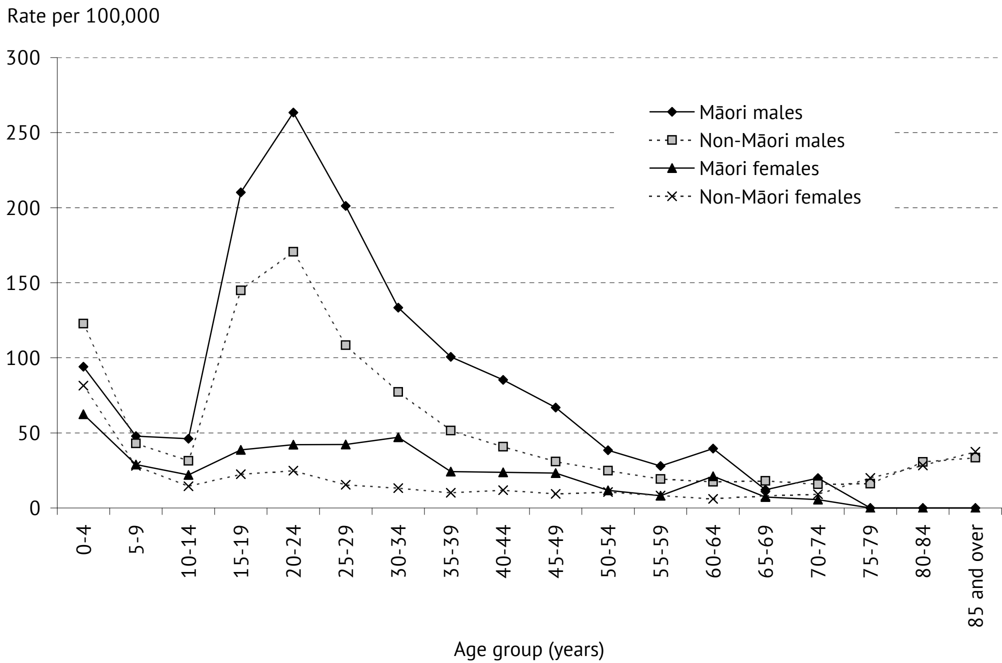
Children under the age of 10 years old had the highest rate of admissions to public hospital for tooth and gum disease during 2000–05. Māori rates were significantly higher than non-Māori rates in the under 10 year age groups, lower in the 10–19 year age groups, similar at ages 20–29 years, higher at ages 30–59 years, and similar in those aged 60 years and over (Figure 4.1).

Figure 4.1 Hospitalisations for tooth and gum disease by age group, 2000–05



Males had higher rates of admission for oral injury than females, highest in young adulthood and peaking at ages 20–24 years. Māori rates were higher than those of non-Māori from ages 10 to 64 years, but lower among young children and older adults (Figure 4.2).

Figure 4.2 Hospitalisations for orofacial injury by sex and age group, 2000–05



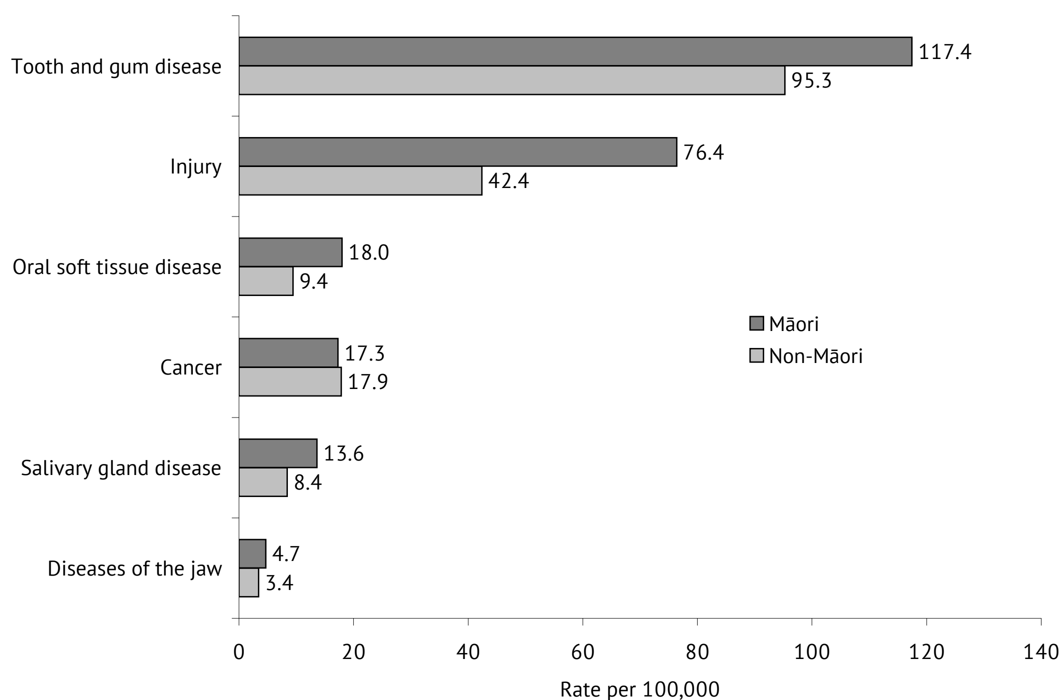
ADULTS AGED 20 YEARS AND OVER

Major causes of oral health hospital admissions

Tooth and gum disease was the most common cause of admission to hospital among adults aged 20 years and over during 2000–05, comprising just under half of both Māori and non-Māori oral health admissions. On average there were 380 Māori admissions per year for tooth and gum disease and 1,960 non-Māori admissions per year in this age group. The Māori age-sex-standardised rate was 23% higher than the non-Māori rate of admission (Figure 4.3 and Table 4.1).

Among tooth and gum disease admissions, caries was the most common cause, with Māori adults admitted at a rate 40% higher than non-Māori adults. Pulp and periapical disease was the next most common cause for Māori, at a rate 130% higher than non-Māori and tooth development disorders (embedded, impacted teeth) ranked third. However, for non-Māori, tooth development disorders were the second most common and the non-Māori admission rate was 50% higher than the Māori rate. Periodontal (gum) disease was the fourth most common cause for both Māori and non-Māori, with the Māori rate 80% higher

Figure 4.3 Public hospital admissions for oral disease and injury by major cause, 20 years and over, 2000–05



Rates age-sex-standardised to 2001 Māori population

Table 4.1 Public hospital admissions for oral diseases and injury, 20 years and over, numbers, age-sex-standardised rates and rate ratios, 2000–05

Cause of admission	Māori			Non-Māori			Māori/Non-Māori rate ratio (95% CI)	
	Number	Rate	(95% CI)	Number	Rate	(95% CI)		
Diseases of oral cavity, salivary glands, and jaws	3,038	155.7	(150.1,161.5)	15,648	118.4	(115.9,120.9)	**1.32**	**(1.26,1.37)**
Teeth and gums	2,290	117.4	(112.6,122.5)	11,770	95.3	(93.1,97.5)	**1.23**	**(1.17,1.29)**
–Dental caries	1,058	54.1	(50.8,57.5)	5,261	38.0	(36.7,39.4)	**1.42**	**(1.32,1.53)**
–Pulp and periapical disease	438	22.6	(20.5,24.9)	1,263	9.7	(8.9,10.5)	**2.34**	**(2.06,2.66)**
–Tooth development disorders	376	19.5	(17.5,21.6)	2,882	29.4	(28.2,30.6)	**0.66**	**(0.59,0.74)**
–Periodontal diseases	287	14.6	(12.9,16.4)	1,097	8.1	(7.5,8.8)	**1.80**	**(1.56,2.08)**
–Other tooth and gum disease	130	6.7	(5.6,8.0)	1,268	10.1	(9.5,10.8)	**0.66**	**(0.54,0.79)**
Diseases of the oral soft tissues	350	18.0	(16.1,20.0)	1,511	9.4	(8.8,10.2)	**1.90**	**(1.67,2.17)**
Diseases of the salivary glands	265	13.6	(12.0,15.4)	1,446	8.4	(7.8,9.1)	**1.61**	**(1.40,1.87)**
Diseases of the jaws	92	4.7	(3.8,5.8)	568	3.4	(3.1,3.9)	**1.36**	**(1.07,1.73)**
Diseases of the tongue	40	2.0	(1.5,2.8)	354	1.8	(1.6,2.1)	1.11	(0.79,1.57)
Injury	1,444	76.4	(72.4,80.6)	4,953	42.4	(40.8,44.1)	**1.80**	**(1.69,1.93)**
Fractured jaw	1,169	62.0	(58.4,65.8)	3,753	32.9	(31.4,34.4)	**1.89**	**(1.75,2.03)**
Lip wound	169	8.9	(7.6,10.3)	754	6.1	(5.5,6.7)	**1.45**	**(1.21,1.74)**
Wound inside mouth	75	3.9	(3.1,4.9)	279	2.3	(2.0,2.7)	**1.70**	**(1.28,2.25)**
–Broken tooth	39	2.0	(1.5,2.8)	151	1.3	(1.0,1.6)	**1.58**	**(1.07,2.32)**
–Other internal mouth wound	36	1.9	(1.3,2.6)	128	1.0	(0.8,1.3)	**1.85**	**(1.22,2.81)**
Foreign body in mouth	12	0.6	(0.3,1.1)	49	0.3	(0.2,0.4)	**2.06**	**(1.01,4.20)**
Burn of mouth and pharynx	6	0.3	(0.1,0.7)	14	0.1	(0.0,0.2)	**3.23**	**(1.03,10.11)**
Dislocation of jaw	5	0.3	(0.1,0.7)	56	0.3	(0.2,0.4)	0.90	(0.35,2.32)
Jaw sprains and strains	4	0.2	(0.1,0.6)	12	0.1	(0.1,0.2)	1.90	(0.58,6.28)
Jaw wound	4	0.2	(0.1,0.6)	36	0.3	(0.2,0.4)	0.74	(0.26,2.12)
Cancer	336	17.3	(15.5,19.3)	4,630	17.9	(17.2,18.6)	0.97	(0.86,1.09)

Rates age-sex-standardised to 2001 Māori population. Ratios in **bold** are significant at the 5% level.

than that of non-Māori. Māori admissions for other tooth and gum diseases were lower than those of non-Māori (Table 4.1).

Injury was the second most common cause of admission, accounting for 30% of Māori and 20% of non-Māori oral health admissions. There were 240 Māori and 825 non-Māori admissions per year on average for injury, giving an age-sex-standardised rate of 76 per 100,000 among Māori, 92% higher than the non-Māori rate of 42 per 100,000 (Table 4.1).

Fractured jaw was the most common type of injury, making up 81% of Māori and 76% of non-Māori orofacial injury admissions. Over 80% of the admissions for fractured jaw were among males. Admissions for other orofacial injuries (wounds of the lip, broken teeth, other internal mouth wounds, foreign body in the mouth, and burns) were less frequent, but admission rates were higher among Māori than non-Māori (Table 4.1).

Other oral disease admissions included diseases of the oral soft tissue, salivary gland, jaw, and tongue. Apart from diseases of the tongue, admission rates for these diseases were significantly higher for Māori than non-Māori (Table 4.1).

Oral cancer admission rates were similar for Māori and non-Māori (Table 4.1).

For males aged 20 years and over, around 60% of Māori admissions and around 50% of non-Māori admissions for fractured jaw were associated with assault or fights (Table 4.2).

For females aged 20 years and over, around 60% of Māori admissions and around 20% of non-Māori admissions for fractured jaw were associated with assault or fights (Table 4.2). For non-Māori females, falls were the most common cause of fractured jaw accounting for 40% of admissions, followed by transport accidents (22%).

Table 4.2 Causes of injury among public hospital admissions for fractured jaw, 20 years and over, 2000–05

	Māori		Non-Māori	
Cause of fractured jaw	Number	%	Number	%
Females				
Fight, brawl	86	42.6	71	10.6
Assault	39	19.3	59	8.8
Transport accidents	28	13.9	151	22.5
Falls	21	10.4	273	40.6
Striking against or struck accidentally by objects or persons	11	5.4	33	4.9
Other	9	4.5	11	1.6
Complications of medical and surgical care	5	2.5	11	1.6
Struck accidentally by falling object	2	1.0	7	1.0
Unspecified accident	1	0.5	12	1.8
Accidents caused by machinery	0	0.0	2	0.3
Accidents due to natural and environmental factors	0	0.0	42	6.3
Males				
Fight, brawl	407	42.8	1136	35.1
Assault	162	17.0	439	13.5
Striking against or struck accidentally by objects or persons	111	11.7	499	15.4
Transport accidents	104	10.9	451	13.9
Falls	89	9.3	429	13.2
Unspecified accident	26	2.7	82	2.5
Other	18	1.9	57	1.8
Struck accidentally by falling object	15	1.6	45	1.4
Complications of medical and surgical care	9	0.9	29	0.9
Accidents caused by machinery	6	0.6	22	0.7
Accidents due to natural and environmental factors	5	0.5	51	1.6

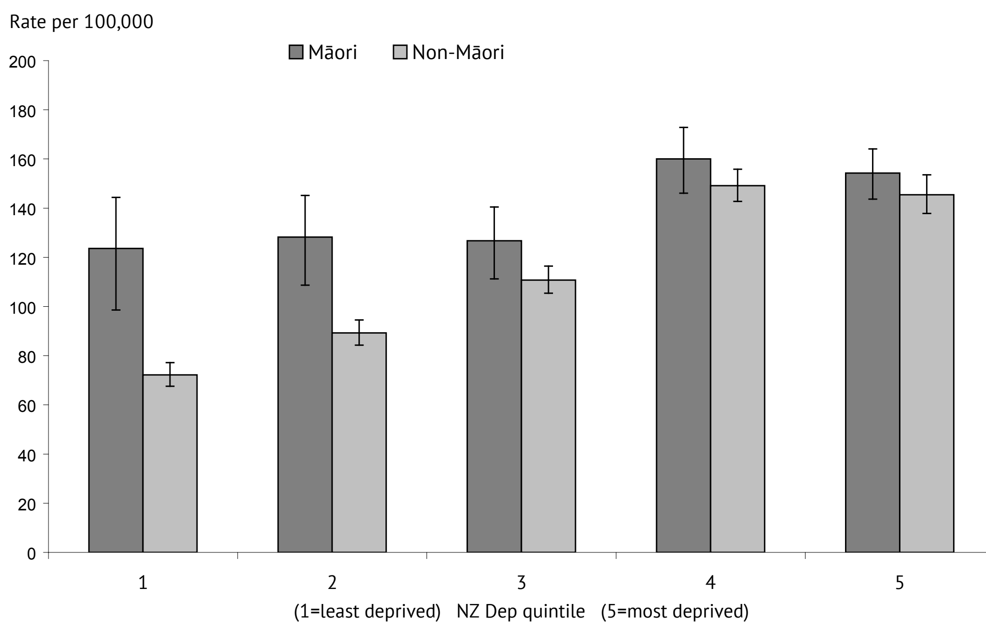
Oral health public hospital admissions by area deprivation

Tooth and gum disease admission rates increase with increasing levels of area deprivation (Figure 4.4). Māori admission rates in the two most deprived quintiles were around 25% higher than the rates in the least deprived quintile. The association with deprivation was strongest for caries and pulp disease with admission rates in the most deprived quintile more than two and a half times those in the least deprived quintile for these two causes. There was no association between admissions for tooth development disorders or periodontal disease and deprivation among Māori (data not shown).

Among non-Māori the deprivation gradient for tooth and gum disease was steeper than for Māori. Residents of the most deprived quintile areas had twice the rate of admissions of residents of the least deprived quintile areas.

Age-standardised rates for Māori aged 20 years and over were significantly higher than non-Māori rates among residents of the two least deprived quintiles but among residents of quintiles three to five Māori and non-Māori rates were similar.

Figure 4.4 Public hospital admissions for tooth and gum disease by deprivation quintile, 20 years and over, 2000–05

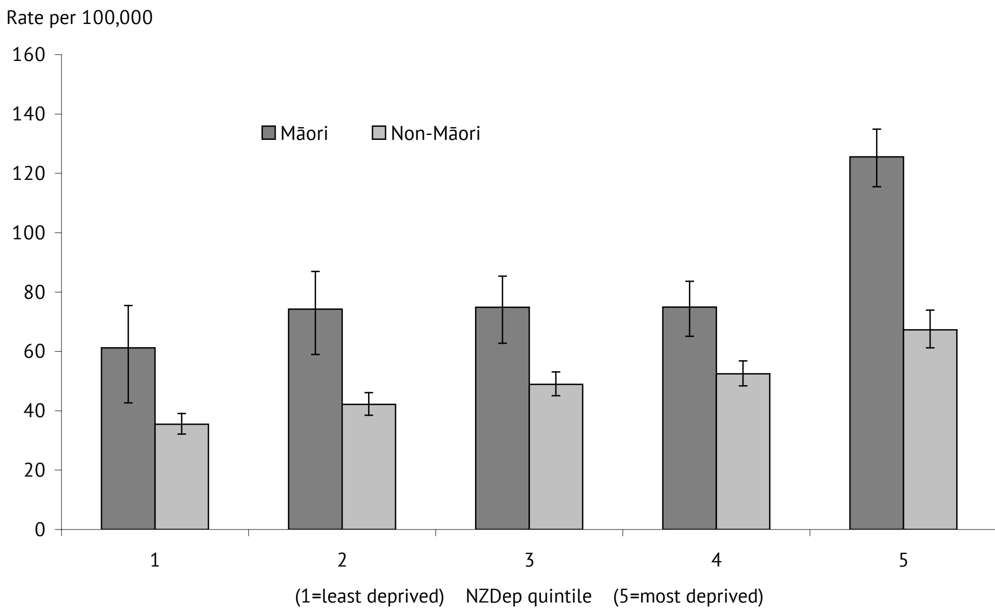


Rates age-sex-standardised to 2001 Māori population

Public hospital admission rates for orofacial injuries grew with increasing deprivation among both Māori and non-Māori, showing a very sharp increase in the rate for Māori living in the most deprived quintile (Figure 4.5). Māori rates in the most deprived quintile were twice those of Māori in the least deprived quintile. Non-Māori living in the most deprived quintile had a 90% higher risk of hospitalisation for oral injury compared to their least deprived counterparts. The pattern closely mirrors that of admissions for fractured jaw.

Māori rates were significantly higher than non-Māori rates in each quintile, ranging from 43% higher (in quintile four) to 87% higher in quintile five.

Figure 4.5 Public hospital admissions for orofacial injury by deprivation quintile, 20 years and over, 2000–05



Rates age-sex-standardised to 2001 Māori population

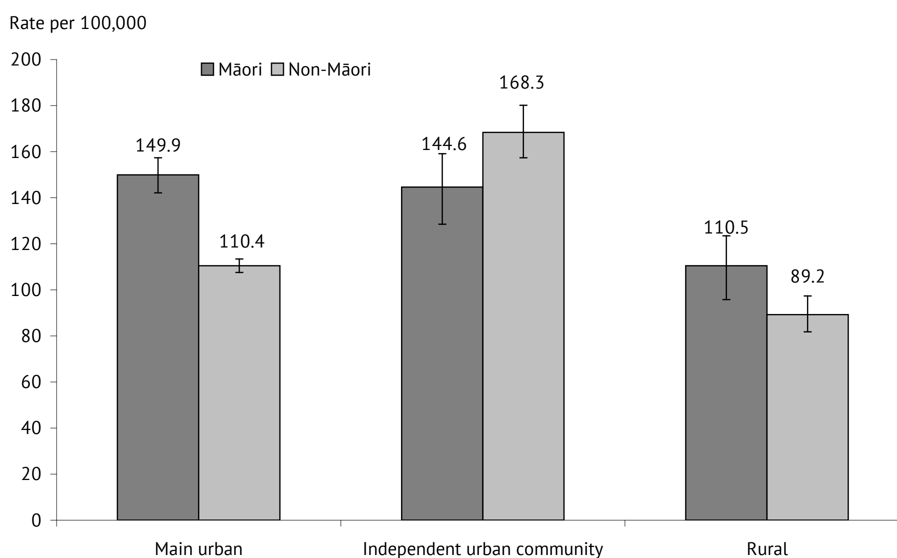
Oral health admissions by urban-rural status

Tooth and gum disease admissions

Māori adults living in rural areas had the lowest rates of admission to hospital for tooth and gum disease, admitted at a rate three quarters that of main urban and independent urban (small town) Māori residents. Rates of admission among main urban and independent urban Māori residents were similar (Figure 4.6).

Among non-Māori, residents of independent urban communities had the highest rate of admission for tooth and gum disease, with a rate 50% higher than main urban non-Māori, and 88% higher than rural non-Māori residents (Figure 4.6).

Figure 4.6 Public hospital admissions for tooth and gum disease by urban-rural residence, 20 years and over, 2000–05



Caries was the most common cause of admission among each residential group. Among Māori, main urban residents were significantly more likely to be admitted for embedded/impacted teeth than independent urban or rural residents, but there was no pronounced difference among non-Māori (Table 4.3).

Māori rates were significantly higher than non-Māori rates among main urban and among rural residents and significantly lower than non-Māori rates among residents of independent urban areas.

Injury admissions

Māori living in main urban areas had the highest rate of admissions for orofacial injury and rural residents the lowest, but there were no significant differences in the Māori rates by area type (Table 4.3). Among non-Māori, injury admission rates were highest for residents of independent urban communities and lowest for rural residents. The pattern for jaw fractures was similar (Table 4.3).

Table 4.3 Public hospital admissions for oral disease and injury by cause of admission and urban-rural status, ages 20 years and over 2000–05

Cause of admission	Urban-rural status	Māori			Non-Māori				
		No.	Rate	(95% CI)	No.	Rate	(95% CI)	Ratio	(95% CI)
Diseases of oral cavity, salivary glands, jaws	Main urban	2,268	201.7	(193.0, 210.8)	11,926	138.4	(135.2, 141.7)	1.46	(1.39, 1.53)
	Independent urban	466	186.2	(169.6, 204.5)	2,119	199.0	(187.0, 211.9)	0.94	(0.84, 1.05)
	Rural	361	142.0	(127.3, 158.5)	1,451	109.2	(101.0, 118.1)	1.30	(1.14, 1.49)
Tooth and gum disease	Main urban	1,694	149.9	(142.5, 157.8)	8,943	110.4	(107.6, 113.4)	1.36	(1.28, 1.44)
	Independent urban	363	144.6	(130.1, 160.7)	1,637	168.3	(157.3, 180.1)	0.86	(0.76, 0.97)
	Rural	276	110.5	(97.5, 125.2)	1,087	89.2	(81.8, 97.4)	1.24	(1.06, 1.44)
- Dental caries	Main urban	735	65.9	(61.1, 71.1)	3,761	41.8	(40.0, 43.6)	1.58	(1.45, 1.72)
	Independent urban	203	79.4	(69.0, 91.5)	924	87.1	(79.5, 95.4)	0.91	(0.77, 1.08)
	Rural	139	53.5	(44.9, 63.7)	539	37.8	(33.4, 42.9)	1.41	(1.14, 1.75)
- Embedded/ impacted teeth	Main urban	342	29.0	(26.0, 32.5)	2,411	36.1	(34.5, 37.8)	0.80	(0.71, 0.91)
	Independent urban	17	7.6	(4.7, 12.2)	241	33.8	(29.1, 39.2)	0.22	(0.14, 0.37)
	Rural	29	14.3	(9.8, 20.9)	208	26.3	(22.2, 31.1)	0.54	(0.36, 0.83)
- Pulp and periapical disease	Main urban	309	27.6	(24.5, 31.0)	910	10.7	(9.7, 11.8)	2.58	(2.22, 3.00)
	Independent urban	78	32.2	(25.7, 40.4)	193	19.6	(15.5, 24.8)	1.64	(1.19, 2.28)
	Rural	56	23.3	(17.6, 30.6)	136	9.3	(6.8, 12.6)	2.51	(1.66, 3.79)
- Periodontal disease	Main urban	206	18.5	(16.0, 21.3)	848	9.5	(8.7, 10.4)	1.93	(1.63, 2.29)
	Independent urban	45	17.6	(13.0, 23.8)	142	13.1	(10.3, 16.8)	1.34	(0.91, 1.98)
	Rural	41	14.7	(10.6, 20.4)	93	7.5	(5.5, 10.3)	1.95	(1.24, 3.06)
- Other tooth and gum disease	Main urban	102	8.9	(7.3, 10.9)	1,013	12.3	(11.5, 13.3)	0.72	(0.58, 0.90)
	Independent urban	20	7.8	(5.0, 12.3)	137	14.8	(11.9, 18.3)	0.53	(0.32, 0.87)
	Rural	11	4.8	(2.6, 8.8)	111	8.3	(6.4, 10.7)	0.58	(0.30, 1.12)
Salivary gland disease	Main urban	208	18.8	(16.3, 21.7)	1,092	10.1	(9.3, 11.0)	1.86	(1.57, 2.19)
	Independent urban	36	14.2	(10.1, 19.9)	196	11.3	(8.9, 14.3)	1.26	(0.83, 1.90)
	Rural	27	10.1	(6.8, 15.1)	140	7.2	(5.6, 9.3)	1.40	(0.87, 2.26)

Table 4.3 continued

Oral soft tissue disease	Main urban	263	23.9	(21.0, 27.1)	1,179	11.5	(10.6, 12.5)	2.08	(1.79, 2.42)
	Independent urban	51	20.9	(15.8, 27.7)	176	12.0	(9.0, 16.0)	1.74	(1.16, 2.61)
	Rural	42	15.6	(11.3, 21.5)	136	8.6	(6.5, 11.4)	1.81	(1.18, 2.77)
Diseases of the jaws	Main urban	71	6.3	(4.9, 8.0)	427	4.1	(3.6, 4.6)	1.54	(1.17, 2.04)
	Independent urban	11	4.7	(2.6, 8.5)	77	5.4	(3.7, 7.8)	0.87	(0.43, 1.75)
	Rural	12	4.6	(2.5, 8.7)	57	3.0	(1.8, 4.8)	1.55	(0.70, 3.43)
Diseases of the tongue	Main urban	32	2.9	(2.0, 4.1)	285	2.3	(2.0, 2.7)	1.23	(0.83, 1.83)
	Independent urban	5	1.9	(0.8, 4.5)	33	2.0	(1.3, 3.2)	0.92	(0.34, 2.49)
	Rural	4	1.2	(0.5, 3.2)	32	1.2	(0.8, 1.8)	1.00	(0.34, 2.90)
Injury	Main urban	1,071	97.1	(91.1, 103.5)	3,732	48.4	(46.3, 50.6)	2.00	(1.85, 2.17)
	Independent urban	210	91.0	(79.3, 104.5)	560	66.7	(58.6, 75.8)	1.37	(1.13, 1.65)
	Rural	179	82.9	(71.0, 96.7)	499	42.8	(36.9, 49.60	1.94	(1.56, 2.40)
Jaw fracture	Main urban	841	76.4	(71.1, 82.1)	2,789	37.2	(35.4, 39.2)	2.05	(1.88, 2.24)
	Independent urban	184	79.7	(68.8, 92.4)	462	55.0	(47.6, 63.5)	1.45	(1.18, 1.78)
	Rural	155	71.7	(60.8, 84.6)	375	32.1	(26.9, 38.4)	2.23	(1.75, 2.85)
Lip wound	Main urban	138	12.3	(10.3, 14.7)	595	7.2	(6.4, 8.0)	1.71	(1.39, 2.10)
	Independent urban	19	7.9	(4.9, 12.5)	63	7.9	(5.7, 11.2)	0.99	(0.56, 1.76)
	Rural	17	8.0	(4.8, 13.1)	74	6.5	(4.7, 9.1)	1.22	(0.67, 2.22)
Wound inside mouth	Main urban	68	6.1	(4.8, 7.9)	212	2.7	(2.2, 3.2)	2.30	(1.68, 3.15)
	Independent urban	3	1.3	(0.4, 4.0)	24	2.7	(1.6, 4.4)	0.48	(0.14, 1.66)
	Rural	5	2.5	(1.0, 6.1)	32	2.7	(1.6, 4.5)	0.92	(0.33, 2.57)
Broken tooth	Main urban	37	3.3	(2.4, 4.7)	123	1.6	(1.3, 2.0)	2.08	(1.37, 3.15)
	Independent urban	2	0.8	(0.2, 3.4)	11	1.1	(0.5, 2.1)	0.79	(0.17, 3.68)
	Rural	1	0.6	(0.1, 4.0)	12	1.0	(0.5, 2.2)	0.56	(0.07, 4.64)
Cancer	Main urban	234	22.4	(19.5, 25.6)	3,255	20.1	(19.2, 21.0)	1.11	(0.96, 1.28)
	Independent urban	69	24.3	(19.0, 31.2)	836	31.6	(28.6, 35.0)	0.77	(0.59, 1.00)
	Rural	38	12.8	(9.2, 17.8)	512	17.5	(15.6, 19.5)	0.73	(0.52, 1.04)

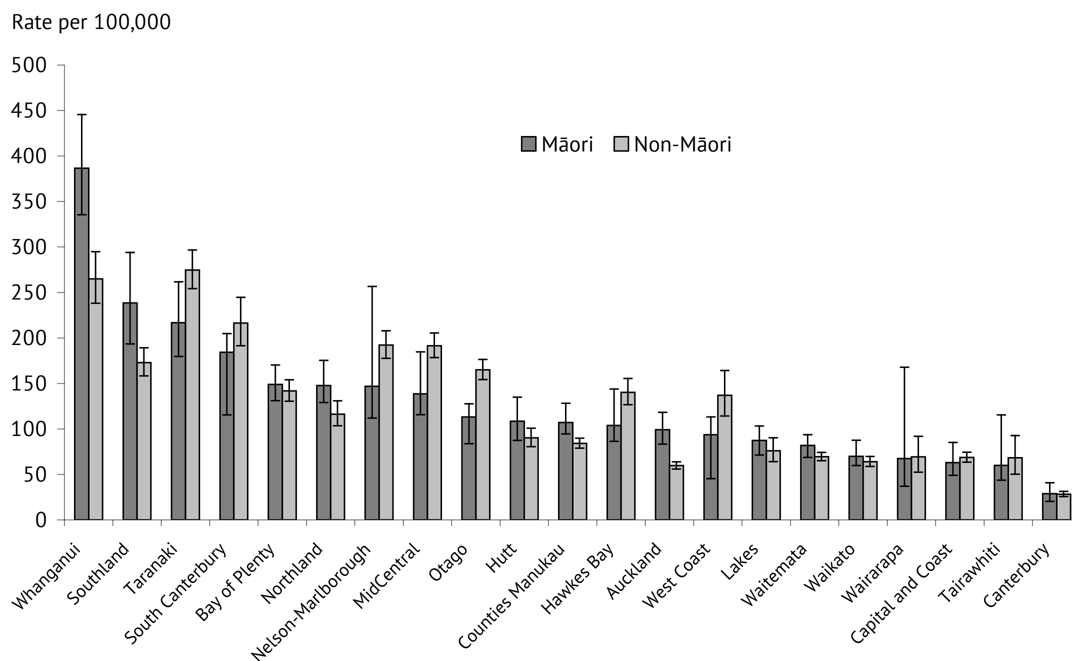
Rates per 100,000 age-sex-standardised to the 2001 Māori population.

Oral health admissions by DHB

Adult public hospital admissions for tooth and gum disease for the period 2000–05 varied considerably by district. For Māori, adult public hospital admissions for tooth and gum disease appear to be extremely high among residents of the Whanganui district and lowest in the Canterbury district. Other districts with high rates for Māori included Southland, Taranaki, and South Canterbury, with rates around three times those of Māori living in the Capital and Coast district for example. Māori rates in Bay of Plenty, Northland, Nelson-Marlborough and MidCentral were about twice those of Capital and Coast.

Among non-Māori, rates were highest in Taranaki and also lowest in Canterbury (Figure 4.7). Māori age-sex-standardised rates were significantly higher than non-Māori rates for residents of the Whanganui, Southland, Northland, Counties Manukau, and Auckland districts, and significantly lower among residents of the Taranaki, Hawkes Bay, MidCentral, and Otago districts.

Figure 4.7 Public hospital admissions for tooth and gum disease by DHB, 20 years and over, 2000–05

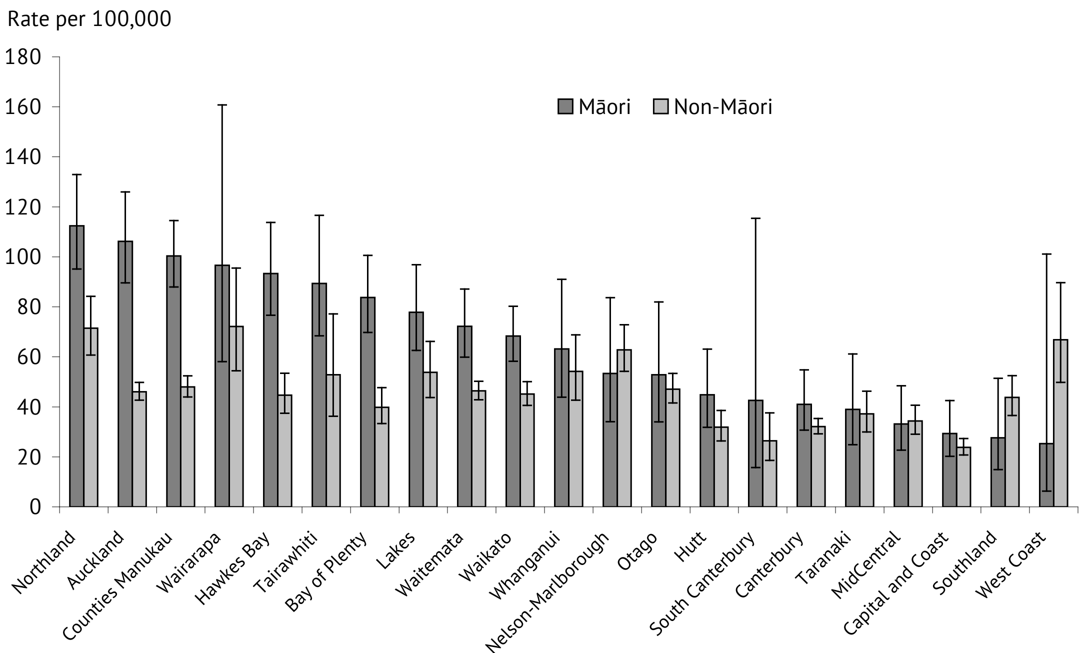


Rates age-sex-standardised to 2001 Māori population. Ethnicity unadjusted. Rates are based on place of residence, not the hospitals in the DHBs.

There was also much geographic variation in the rates of hospitalisation for injury among adults aged 20 years and over. Northland, Auckland, Counties Manukau, Wairarapa, Hawkes Bay and Tairawhiti residents had the highest rates of admission among Māori. Admission rates for Māori in these areas were over three times the rates in the Capital and Coast district for example. For non-Māori, the rates were highest for Northland, Wairarapa, West Coast, and Nelson-Marlborough residents (Figure 4.8).

Māori rates of admission for injury were significantly higher than non-Māori rates in Auckland, Bay of Plenty, Counties Manukau, Hawkes Bay, Tairāwhiti, South Canterbury, Northland, Waikato, Waitematā, and Lakes districts. Southland and West Coast districts had higher rates for non-Māori but these were not statistically significant. There were no other significant differences between Māori and non-Māori rates.

Figure 4.8 Public hospital admissions for orofacial injury, by DHB, 20 years and over, 2000–05



Rates age-sex-standardised to 2001 Māori population. Ethnicity unadjusted. Rates are based on place of residence, not hospital of the DHB.

Oral procedures performed during public hospital admissions

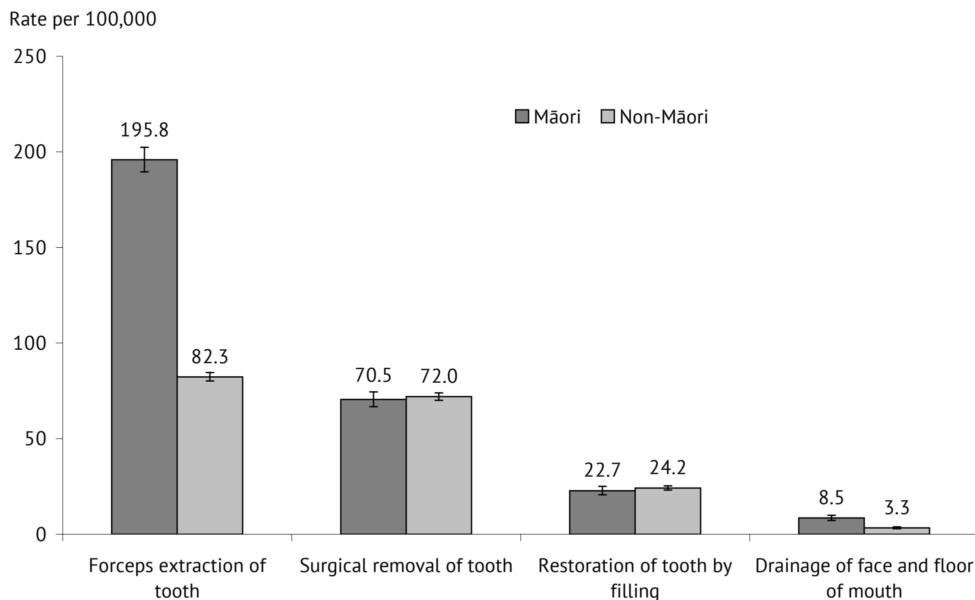
Māori adults had twice the risk of non-Māori adults of having a tooth extracted by forceps in a hospital admission, similar risk of having teeth removed surgically or restored by filling, and a higher risk of having a drainage procedure (Figure 4.9).

However, among those admitted for tooth and gum disease, the tooth extraction rates were similar for Māori and non-Māori. No teeth were extracted in around a quarter of Māori and non-Māori admissions. One tooth was extracted in half the admissions, two teeth were extracted in 16%, and in 6–7% of admissions, three or more teeth were extracted.

When examined by tooth and gum disease category (caries, root disease, gum disease, tooth development disorders), the patterns of procedure receipt were similar for Māori and non-Māori in each category, with the exception of admissions for periodontal for which tooth extraction rates were higher for Māori, indicating more advanced disease at the time of admission.

In summary, Māori were more likely than non-Māori to be admitted to public hospital for tooth and gum disease, but tooth extraction rates for those admitted were generally similar for Māori and non-Māori.

Figure 4.9 Public hospital oral procedure rates, ages 20 years and over, 2000–05



Rates age-sex-standardised to 2001 Māori population.

OLDER ADULTS AGED 65 YEARS AND OVER

Major causes of oral health hospital admissions

Tooth and gum disease was the leading cause of oral health admissions to public hospital for Māori adults aged 65 years and over, during 2000–05, comprising 33% of all oral admissions, followed by cancer (28%) oral soft tissue disease (17%), salivary gland disease (12%), and injury (5%) (Figure 4.10 and Table 4.4).

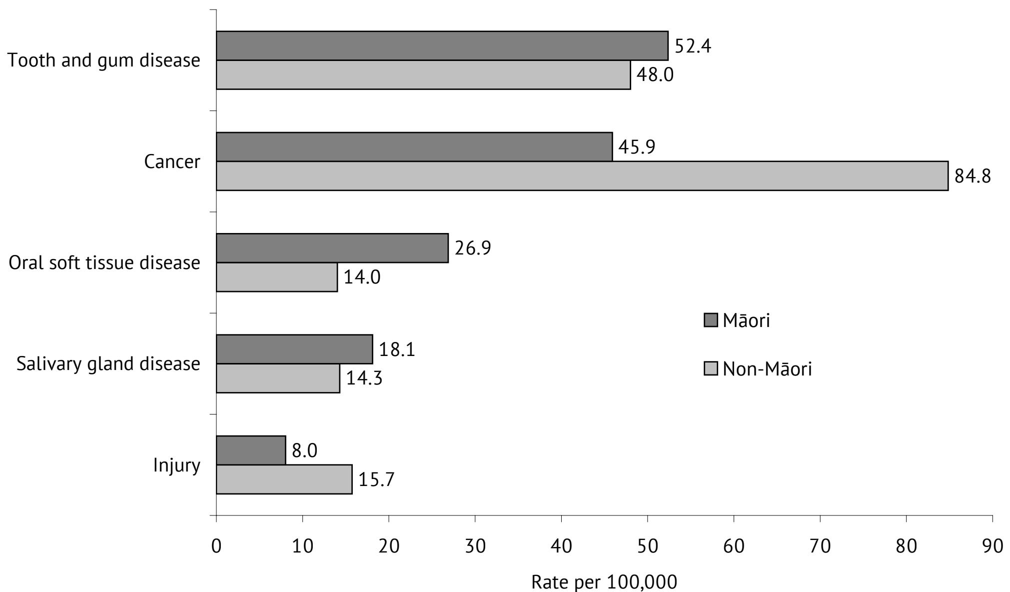
Cancer was the leading cause of admission for non-Māori in this age group, comprising 46% of all oral admissions, followed by tooth and gum disease (44%), and injury (10%).

Cancer admission rates were nearly twice as high for non-Māori compared to Māori, as were injury admissions. Rates of admission for diseases of the oral soft tissue were higher for Māori than non-Māori, while admissions for tooth and gum disease and salivary gland disease were similar for both groups.

Dental caries accounted for over half the Māori admissions for tooth and gum disease, periodontal disease a quarter, and pulp and periapical disease a further 10% (Table 4.4). Two-thirds of the hospitalisations for injury were for fractured jaw.

There were insufficient numbers of Māori admissions in the age group 65 years and over to show analyses of admissions by deprivation or by DHB.

Figure 4.10 Public hospital admissions for oral disease and injury by major cause, 65 years and over, 2000–05



Rates age-sex-standardised to 2001 Māori population.

Table 4.4 Public hospital admissions for oral diseases and injury, 65 years and over, numbers, age-sex-standardised rates and rate ratios, 2000–05

Cause of admission	Māori			Non-Māori			Māori/Non-Māori rate ratio (95% CI)	
	Number	Rate	(95% CI)	Number	Rate	(95% CI)		
Diseases of oral cavity, salivary glands, and jaws	136	105.1	(87.9,125.7)	2,384	86.4	(82.3,90.6)	1.22	(1.01,1.46)
Tooth and gum disease	67	52.4	(40.6,67.6)	1,310	48.0	(45.0,51.2)	1.09	(0.84,1.42)
–Dental caries	38	29.2	(20.8,41.0)	806	29.4	(27.1,31.9)	0.99	(0.70,1.41)
–Periodontal diseases	18	14.1	(8.6,23.0)	141	5.7	(4.6,7.0)	2.46	(1.44,4.19)
–Pulp and periapical disease	7	5.4	(2.4,12.1)	159	5.6	(4.7,6.7)	0.97	(0.42,2.22)
–Other tooth and gum disease	4	3.7	(1.4,9.8)	151	5.2	(4.3,6.3)	0.70	(0.26,1.92)
–Tooth development disorders				53	2.1	(1.6,2.8)		
Diseases of the oral soft tissues	34	26.9	(18.9,38.3)	378	14.0	(12.4,15.9)	1.92	(1.32,2.79)
Diseases of the salivary glands	24	18.1	(11.7,28.0)	432	14.3	(12.8,16.0)	1.27	(0.81,1.98)
Diseases of the jaws	9	6.1	(3.0,12.3)	144	5.7	(4.8,6.9)	1.07	(0.52,2.21)
Diseases of the tongue	2	1.6	(0.4,6.5)	120	4.3	(3.5,5.3)	0.38	(0.09,1.53)
Cancer	57	45.9	(34.8,60.5)	2,486	84.8	(81.1,88.8)	0.54	(0.41,0.72)
Injury	10	8.0	(4.2,15.5)	513	15.7	(14.2,17.5)	0.51	(0.26,0.99)
Fractured jaw	7	5.3	(2.4,11.8)	336	10.5	(9.2,11.9)	0.51	(0.23,1.14)
Wound inside mouth	2	1.8	(0.4,7.1)	31	1.1	(0.7,1.7)	1.61	(0.37,6.92)
–Broken tooth	2	1.8	(0.4,7.1)	17	0.6	(0.4,1.1)	2.84	(0.63,12.74)
–Other internal mouth wound				14	0.5	(0.3,0.9)		
Lip wound	1	1.0	(0.1,6.8)	104	3.1	(2.5,3.9)	0.30	(0.04,2.19)
Foreign body in mouth				21	0.4	(0.3,0.7)		
Dislocation of jaw				13	0.4	(0.2,0.8)		
Burn of mouth and pharynx				4	0.1	(0.0,0.4)		
Jaw wound				4	0.1	(0.0,0.2)		

Discussion

This sub-project analysed Māori and non-Māori public hospital admissions for oral health related conditions during 2000–05. Significant disparities between the two populations exist in rates of admission for oral diseases and injury. The differences in rates varied by age and sex, cause of admission, area deprivation, rural-urban status, and by DHB.

VARIATIONS BY CAUSE OF ADMISSION

Māori adults were 23% more likely than non-Māori adults to be admitted for dental caries, pulp and periapical disease and periodontitis, but less likely to be admitted for embedded and impacted tooth disorders (mostly wisdom teeth removals). In other words, Māori were more likely than non-Māori to be admitted for preventable conditions and less likely to be admitted for non-preventable conditions. Māori were 80% more likely to be admitted to hospital for orofacial injury than non-Māori. In relation to other oral diseases, Māori had higher admission rates for diseases of the oral soft tissue, salivary glands, and jaws, and similar rates of admission for diseases of the tongue and oral cancers.

TOOTH AND GUM DISEASE ADMISSIONS

Children under 10 years of age had the highest rate of public hospital admissions for tooth and gum disease (mostly caries) with the rate for Māori children more than 50% higher than the rate for non-Māori children. For the ages 10–19 years Māori rates were lower than those of non-Māori with much of the difference accounted for by higher rates of admission among non-Māori for embedded and impacted tooth disorders.

Among those aged in their 20's Māori rates of overall admissions for tooth and gum disease appear similar to those of non-Māori, but in this age group Māori rates of admission for caries, pulp/periapical disease, and periodontal disease were higher than those of non-Māori, while rates for embedded and impacted teeth were significantly lower. By the age of 30 years, Māori rates of tooth and gum disease admissions are higher than Māori, although embedded and impacted tooth disorder admissions remain lower.

It is interesting that Māori admission rates for impacted teeth (wisdom teeth removal) are lower than those of non-Māori – this may indicate a lower level of access for this service, especially as this procedure is also provided in private care which is known to be less affordable for Māori.

VARIATIONS BY PLACE OF RESIDENCE

Area deprivation

This study found a strong association between the level of deprivation of a person's neighbourhood and admission to hospital for oral diseases and an even stronger association with injury admissions. Because Māori are more likely to live in more highly deprived areas, a higher proportion of Māori are living with a higher risk of being hospitalised for oral disease and injury. Māori rates of admission for tooth and gum disease were similar to those of non-Māori in the three most deprived area quintiles (although higher in the two least deprived quintiles). The differential distribution of socioeconomic deprivation between the Māori and non-Māori populations accounts for a significant proportion of the disparity in admission rates for tooth and gum disease.

The 2006/07 New Zealand Health Survey found an increasing gradient in the level of unmet need for oral health care with increasing area deprivation. Conversely residents of the most deprived quintile were the least likely to have seen a dental care provider in the previous 12 months. Furthermore, in each level of deprivation, Māori adults under 65 years were more likely than non-Māori non-Pacific adults to report unmet need and less likely to have received dental care (Chua 2009).

Urban-rural areas

Urban-rural patterns of admission varied between Māori and non-Māori. Among Māori, residents of main urban areas and small towns had similar rates of admission for tooth and gum disease and rural residents had lower admission rates. Among non-Māori, small town residents had the highest rates, rural residents the lowest rates, and the rates for main urban residents were intermediary. Māori rates were higher than those of non-Māori in main urban and rural areas but lower in independent urban communities (small towns). Cancer admission rates were lowest among rural residents among both Māori and non-Māori. This is consistent with the lower overall cancer incidence among rural residents (Robson et al 2010).

District Health Board

The DHBS with the highest rates of hospitalisation for tooth and gum disease among resident Māori adults included Whanganui, Southland, Taranaki, South Canterbury, Bay of Plenty, Northland, MidCentral. These rates were all above the national age-standardised rate for Māori aged 20 years and over. For non-Māori adults, the highest rates were in Taranaki, Whanganui, South Canterbury, Nelson-Marlborough, MidCentral, Southland, Otago, Bay of Plenty, Hawkes Bay, and Northland, all of which had rates higher than the national rate for non-Māori.

The New Zealand Health Survey 2006/07 found the age-standardised prevalence of tooth loss due to decay, abscess, infection or gum disease was above

the national average in Northland, Tairawhiti, Bay of Plenty, Whanganui, Lakes, Taranaki, and Counties Manukau (Chua 2009). Chua notes that these DHBS also have a high proportion of Māori and Pacific individuals. When we consider that the most common procedure done in hospital admissions is tooth removal, (three-quarter of admissions involved one or more teeth being extracted) the overlap between these DHBS and the DHBS with high Māori rates of admission could be consistent.

It is interesting to note the contrast between the districts with the highest levels of reported unmet need among all adults in the 2006/07 New Zealand Health Survey – Northland, Tairawhiti, Hawkes Bay, Lakes, Whanganui, and Waikato districts and the DHBS with highest hospitalisations. While Whanganui showed by far the highest rate of admission for Māori adults – perhaps consistent with high unmet need levels, Māori admission rates were relatively low in the Tairawhiti, Hawkes Bay, Lakes, and Waikato districts compared to national levels. So, high Māori hospitalisation rates perhaps do not correlate well with high levels of unmet need for dental care, assuming similar ranking of DHBS of unmet need for Māori and non-Māori.

INJURIES

The extremely high rates of serious orofacial injury, particularly among young Māori men, were striking. Males dominated the injury rates up to the age of 75 years. The extremely high serious injury rates among young Māori men (ages 15–34 years) are of grave concern, peaking at over 250 per 100,000 in the 20–24 year age group. Even up to the age of 45–49 years Māori men's injury rates are very high.

Māori female rates of hospitalisation for orofacial injury were higher than non-Māori female rates from ages 15 to 49 years (while lower than non-Māori rates in the preschool years and the older age groups – 75 years and over).

The majority of injury admissions (80% of Māori and 75% of non-Māori admissions) were for fractured jaw. For Māori men and women, 60% of the admissions for fractured jaws were caused by involvement in fights or assaults. Transport accidents, falls, and accidentally striking against or being struck by an object were the next most common causes.

The fact that these injuries were serious enough to be hospitalised indicates that they may be the tip of the iceberg of orofacial trauma, despite the rate reaching as high as 250 per 100,000 among Māori men aged 25–29 years.

The Public Health Advisory Committee (2003) notes that little data is available on inequalities in dental trauma, although ACC does collect ethnicity data on

dental claims.* This hospitalisation data indicates there are likely to be large disparities between Māori and non-Māori rates of dental trauma. The impact of changes to ACC funding and entitlement regimes will also need evaluating for its impact on Māori.

It would help to know more about the setting (e.g., workplace, sports, home, pub/club) in which the injuries occurred to appropriately target injury prevention programmes related to orofacial injuries, and whether alcohol was involved.

The high proportion of fractured jaws caused by involvement in violence points to the need for intensified work on violence prevention tailored to Māori men on safety from violence.

The strong association between deprivation and hospitalisations for injury indicates a need to look further at where resources are being channelled for injury prevention, anti-violence strategies, and potential contributing environmental factors such as the number of liquor outlets and their opening hours. Māori rates of admission for injury were highest in Northland, Auckland, Counties Manukau – with significant disparities in the rates between Māori and non-Māori in these districts.

There is a need to identify injury rates among disabled Māori (which was not able to be disaggregated in our dataset). Falls may be a particular risk for some types of disability. A survey of injury and intellectual disability found that 44% of fall-related injuries were to the face and head (Bray et al 2002). In addition, people with intellectual disabilities may be exposed to a high rate of interpersonal violence in workplaces or group homes (Strand et al 2004).

MONITORING ISSUES AND LIMITATIONS

An important limitation to this study was the lack of information on whether people who were admitted had disabilities, special needs or were medically compromised. There is a significant gap in our ability to monitor trends for this particular group that is known to have higher risk of poor oral health and worse access to oral health care (National Health Committee 2003; Thomson et al 2003).

Hospitable admission would be the most practicable point of data collection on disability status, and would be useful to the service providers, DHB funders and planners, and to the Crown, beacuse of its obligation to monitor the right to health and accessible health care for disabled people. Other data such as age, ethnicity, sex and address is collected on admission and is included in the National Health Index dataset.

* The claims data would also likely underestimate the incidence of dental trauma among Māori as there is some evidence of underclaiming by Māori (Bismark et al 2006; ACC 2008). In addition, the qualitative component of our research revealed that some whānau are unaware that ACC can fund treatment for dental injury.

Hospital admissions data do not show the level of need or morbidity in the community – especially as many services have long waiting lists. Neither can it tell us how long people have had to wait to be admitted for treatment. Anecdotal evidence of children and older people having to wait a long time before being admitted surfaced in the course of our project.

CONCLUSION

Māori adults are more likely than non-Māori adults to be admitted to hospital for preventable oral health diseases – caries, periodontitis, root disease – while non-Māori have higher rates of admission for removal of embedded/impacted teeth. The lower rates of admission among rural residents may indicate better oral health status or reduced access to secondary care. The high rates associated with more deprived areas reflects a failure of primary dental care to reach those in most need. In each category – whether region, neighbourhood deprivation level, or rural-urban status – disparities are evident between Māori and non-Māori.

The high rate of admission for fractured jaws among Māori males in high deprivation areas, and in certain health districts provides impetus for injury prevention, including violence prevention, to be prioritised in those areas. The possibility that some injuries are going untreated in some regions may also need investigation.

The lack of information on how dental care services, primary, secondary, or tertiary, are performing for those with disabilities or special needs is a significant concern. The only special needs dental specialist in New Zealand commented that he rarely sees Māori patients, despite practising in an area with a relatively high Māori population. There is a need to set up effective ways to collect data on disability status in routinely collected health service data.

5 Ngā tatauranga mate pukupuku *Oral cancers*

Key Points

ADULTS AGED 20 YEARS AND OVER

Oral Cancer Registrations (2000–06)

- Māori were diagnosed with oral cancer at approximately the same rate as non-Māori.
- For both Māori and non-Māori, the incidence of oral cancer was more than twice as high for males compared to females.

Mortality (2000–06)

- Māori males had a significantly higher death rate from oral cancer compared to non-Māori males. No significant difference could be detected in the death rate of females.

Deprivation (2000–06)

- Māori had lower incidence of oral cancer than non-Māori in more deprived areas.
- Māori had a higher rate of death from oral cancer at all levels of deprivation.

Stage at diagnosis (1996–2006)

- After adjusting for age and sex, Māori had lower odds of being diagnosed at localised stage of disease spread, and higher odds of being diagnosed and distant stage than non-Maori.
- Māori had higher odds of being registered with unknown stage compared to non-Māori, although the odds ratio was not statistically significant.

Survival (1996–2006)

- Once diagnosed with oral cancer, Māori males had a higher risk of death from this disease after adjusting for age at diagnosis. The risk was almost double for Māori males compared to non-Māori males.
- Stage at diagnosis contributed almost 30% to the survival disparity between Māori and non-Māori males.
- The survival disparities between Māori and non-Māori females were not statistically significant.

Introduction

Cancer is a major cause of illness and death in Aotearoa. Disparities between Māori and non-Māori are evident in cancer incidence, mortality, stage at diagnosis and survival for almost all cancers. Increases in the incidence of oral cancer and male mortality in New Zealand were observed up to the mid-1990s (Cox et al 1995). However, there is little detailed research on differences in oral cancer between Māori and non-Māori. This research sought to look more closely at more recent patterns of oral cancer registrations, stage at diagnosis, survival and deaths in New Zealand to find potential priority areas for future research and policy development for Māori.

There is international evidence of ethnic disparities in oral cancer. These are attributed mostly to tobacco and alcohol, but also to poor diet, some occupational exposures, access to dental and general health services, and inequalities in the type and timing of treatment (Kerr et al 2004; Morse & Kerr, 2006; Shavers & Brown 2002). Late stage of diagnosis may contribute to some mortality disparities, (Kerr et al 2004) however ethnic disparities in mortality have also been demonstrated in each stage of disease (Shavers et al 2003).

Other risk factors include viral infections, particularly those of the herpes strain (Aldington et al 2008; Carnelio & Rodrigues 2004), infections such as syphillis and candida (Carnelio & Rodrigues 2004), some occupational exposures (Aldington et al 2008; Carnelio & Rodrigues 2004; McLean et al 2004; Reichman et al 2008) and dietary deficiencies (Carnelio & Rodrigues 2004). Poor oral hygiene, faulty restorations, sharp teeth and ill-fitting dentures have also been implied as risk factors (Carnelio & Rodrigues 2004; Moore et al 2001). A diet high in fruit and vegetables may confer protection against oral cancer (Aldington et al 2008; Chainani-Wu 2002; Kerr et al 2004).

Oral cancer has an asymptomatic phase with painless lesions that can be present for several years before the cancer develops (Arbes & Slade 1996; Kerr et al 2004). The oral cavity and oropharynx are easily accessible for self examination

or opportunistic examination by an oral health professional (Arbes & Slade 1996; Carnelio & Rodrigues 2004). Therefore access to oral health and general health services is likely to play a crucial role in diagnosis, early detection and treatment.

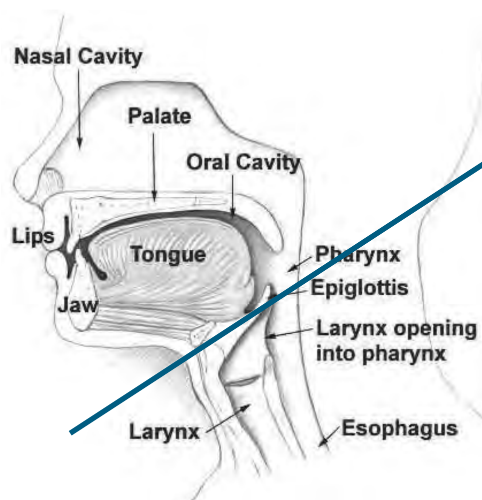
For the purpose of this project, oral cancer sites have been defined as those likely to be visually detected by an oral health professional, and include cancers of lip, oral cavity and pharynx and also bones, nerves and soft tissue of the head, face and neck. It was hypothesised that lower access to oral health care for Māori would give less opportunity for early detection of oral cancer and could therefore contribute to disparities in late stage diagnosis, survival and mortality.

Methods

This chapter presents data on oral cancer registrations, stage at diagnosis, survival, mortality and deprivation for Māori and non-Māori age 20 years and over, and aged 65 years and over.

All cancers in New Zealand are registered with the New Zealand Cancer Registry (NZCR). Data on cancer registrations and deaths were sourced from the NZCR and the New Zealand Health Information Service (NZHIS) mortality data. Cancer registrations were extracted on 14 September 2009. Oral cancers included those of the mouth, lip and oral cavity, salivary glands, pharynx, nerves and soft tissue of the head, face and neck (see Figure 5.1). ICD-10-AM codes used were: C00–C10, C14, C31.0, C41.0, C41.1, C43.0, C44.0, C46.2, C47.0, C49.0 and ICD-9-CM codes 140–146, 149, 160.2, 170.0, 170.1, 172.0, 173.0, 176.2, 171.0. Cancer registrations flagged as 'multiple' were excluded.

Figure 5.1 Areas of the head and neck above the line in this diagram indicate the sites included in the definition for oral cancer in this report



Rates were age-sex-standardised to the 2001 Māori population (males and females combined) using five-year age groups up to 84, then 85+. Confidence intervals were calculated using the log-transformation method (Clayton & Hills 1993). Socio-economic deprivation was measured using NZDep2001 (Salmond & Crampton, 2002).

Māori:non-Māori hazard ratios (HR) were calculated to estimate the relative risk of death from oral cancer after diagnosis. Odds ratios were calculated to estimate the odds of being diagnosed at a certain stage for Māori compared to non-Māori. A hazard ratio or odds ratio greater than 1.0 indicates greater risk for Māori. Oral cancer incidence and mortality data are calculated for 2000–06.

Stage of diagnosis and survival data were analysed for 1996–2006 to maximize numbers for analysis.

For the calculation of mortality rates anyone recorded as Māori on the death registration was classified as Māori. For registration rates, stage at diagnosis, and survival, anyone recorded as Māori on the cancer registry was classified as Māori. Everyone else was classified as non-Māori. For the calculation of cancer registration rates, ethnicity adjusters were used to 'adjust' for the undercount of Māori.*

Denominators were constructed from Māori and non-Māori population estimates obtained from Statistics New Zealand. Specific population estimates by deprivation were constructed using the methods described in Robson et al (2010).†

Results

ORAL CANCER INCIDENCE

The total number of Māori adult registrations for oral cancer in 2000–06 was 142 (46 women, 96 men). Māori adults (age 20+) were diagnosed with oral cancer at a similar rate to non-Māori (6.1 per 100,000 for Māori, 6.0 for non-Māori, rate ratio 1.01).

For both Māori and non-Māori adults age 20+, the incidence was more than twice as high for males (8.5 per 100,000 for Māori and 8.3 for non-Māori, rate ratio 1.02) compared to females (3.6 per 100,000 for Māori, 3.7 for non-Māori, rate ratio 0.98) as seen in Figure 5.2 and Table 5.1.

Oral cancer incidence appears to have a strong relationship with age (Table 5.1).

ORAL CANCER MORTALITY

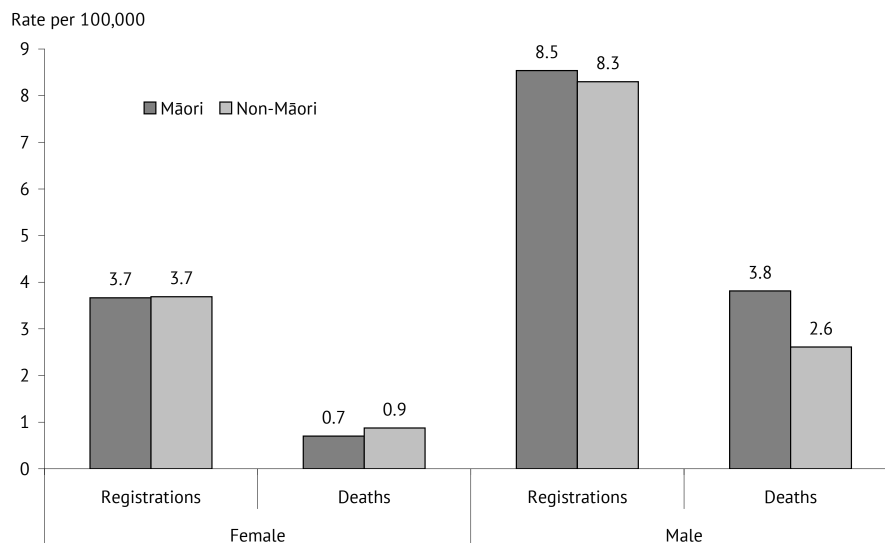
During 2000–06, 62 Māori adults aged 20 and over died from oral cancer (nine women and 53 men). The age-sex standardised death rate for Māori adults was almost 50% higher than that for non-Māori (2.7 per 100,000 for Māori, 1.8 for non-Māori, rate ratio 1.49, significant) (see Figure 5.2).

The mortality rate for Māori females was similar to that for non-Māori females (0.7 per 100,000 for Māori, 0.9 for non-Māori, rate ratio 0.79, not significant), however, there were only nine Māori females in this sample. The mortality rate

* For details of adjusters, see Appendix 3 in Robson B, Purdie G, Cormack D. (2010) Unequal Impact II: Māori and non-Māori cancer statistics by area deprivation and rural-urban status 2000–2005. Wellington: Ministry of Health.

† See Appendix 2 in Robson B, Purdie G, Cormack D. (2010) Unequal Impact II: Māori and non-Māori cancer statistics by area deprivation and rural-urban status 2000–2005. Wellington: Ministry of Health.

Figure 5.2 Māori and non-Māori oral cancer registration and death rates by sex, 20 years and over, 2000–06



Rates age-standardised to 2001 Māori population.

Table 5.1 Oral cancer registrations and deaths, Māori and non-Māori age-standardised rates per 100,000, 2000–06

Age-sex-group		Māori Number	Māori Rate	(95% CI)	Non-Māori Number	Non-Māori Rate	(95% CI)	Māori:non-Māori Rate ratio	(95% CI)
Registrations									
Age 20+	Total*	142	6.1	(5.1,7.2)	1,802	6.0	(5.7,6.4)	1.01	(0.84,1.21)
	Female	46	3.6	(2.7,4.9)	639	3.7	(3.3,4.2)	0.98	(0.71,1.35)
	Male	96	8.5	(6.9,10.5)	1,163	8.3	(7.8,9.0)	1.02	(0.82,1.27)
Age 65+	Total*	28	18.6	(12.5,27.6)	904	26.5	(24.5,28.6)	0.70	(0.47,1.05)
	Female	14	16.1	(9.1,28.4)	373	17.0	(14.9,19.4)	0.95	(0.53,1.70)
	Male	15	21.1	(12.2,36.4)	530	36.0	(32.7,39.5)	0.59	(0.34,1.02)
Deaths									
Age 20+	Total*	62	2.7	(2.1,3.5)	690	1.8	(1.7,2.0)	1.49	(1.15,1.95)
	Female	9	0.7	(0.4,1.3)	235	0.9	(0.7,1.0)	0.79	(0.40,1.56)
	Male	53	4.7	(3.6,6.1)	455	2.7	(2.5,3.0)	1.72	(1.29,2.29)
Age 65+	Total*	14	9.4	(5.5,15.8)	471	13.1	(11.9,14.5)	0.71	(0.42,1.22)
	Female	4	4.5	(1.7,12.1)	194	8.0	(6.8,9.5)	0.56	(0.21,1.53)
	Male	10	14.2	(7.6,26.4)	277	18.2	(16.1,20.7)	0.78	(0.41,1.47)

Rates age-standardised to 2001 Māori population. Rate ratios in **bold** are significant at the 5% level.

*Total rates were also standardised for sex

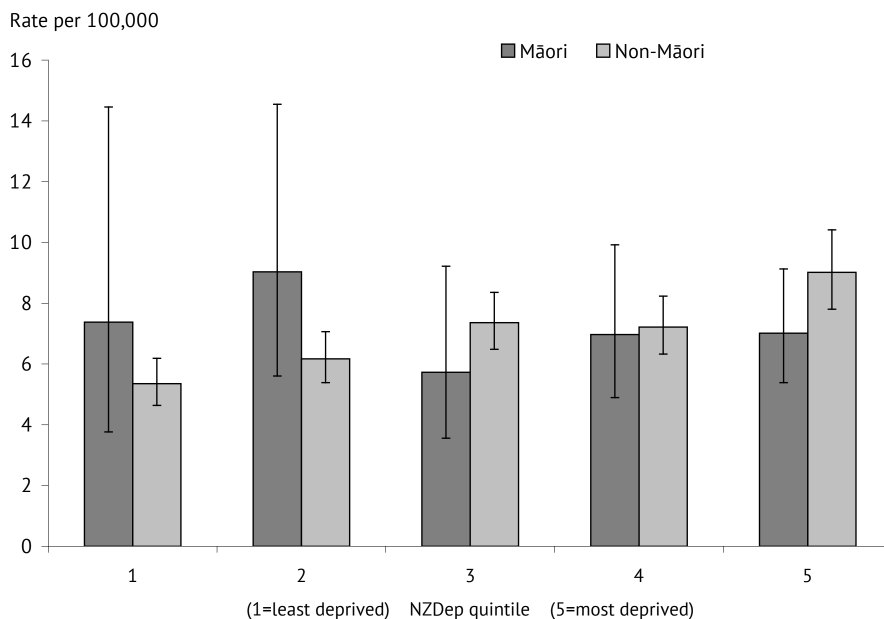
for Māori male adults was more than 70% higher than non-Māori males (4.7 per 100,000 for Māori, 2.7 for non-Māori, rate ratio 1.72, significant), see Table 5.1.

The risk of death from oral cancer appears to grow with age (Table 5.1).

DEPRIVATION AND ORAL CANCER

In general, for adults aged 20 years and over, Māori oral cancer incidence was higher than non-Māori incidence in the least deprived areas (quintiles 1–2) and lower than non-Māori incidence in more deprived areas (quintiles 3–5) for this period (although not statistically significant) (Figure 5.3).

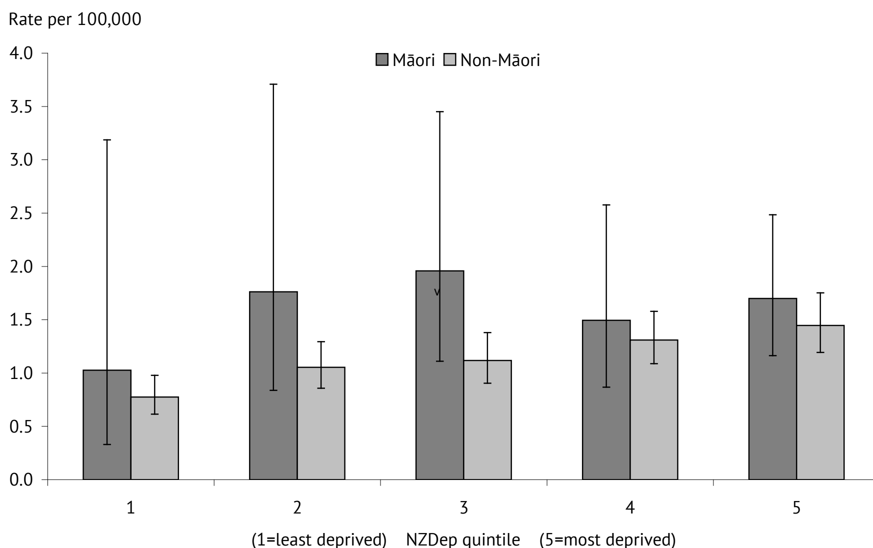
Figure 5.3 Māori and non-Māori oral cancer registration rates by NZDep quintile, 20 years and over, 2000–06



Rates age-sex-standardised to 2001 Māori population.

Māori mortality rates were consistently higher than those of non-Māori at each level of deprivation as seen in Figure 5.4. Māori mortality rates largely reflected the experience of Māori males as there were few Māori female deaths in this period (nine Māori female deaths, 49 Māori male deaths) (Table 5.1).

Figure 5.4 Māori and non-Māori oral cancer death rates by NZDep quintile, 20 years and over, 2000–06



Rates age-sex-standardised to 2001 Māori population.

STAGE AT DIAGNOSIS

Unadjusted data shows that Māori males had the smallest proportion of oral cancers diagnosed at localised stage (15.6% compared to 30.5% for non-Māori males), as seen in Figure 5.5. Māori males also experienced the greater proportion of oral cancers diagnosed at either regional (38.3% compared to 30.3% for non-Māori males) or distant (8.6% compared to 5.2% for non-Māori males). Over a third of Māori and non-Māori did not have stage recorded.

Figure 5.5 Distribution of stage at diagnosis on Māori and non-Māori oral cancer registrations, by sex, 20 years and over, 1996–2006 (unadjusted for age)

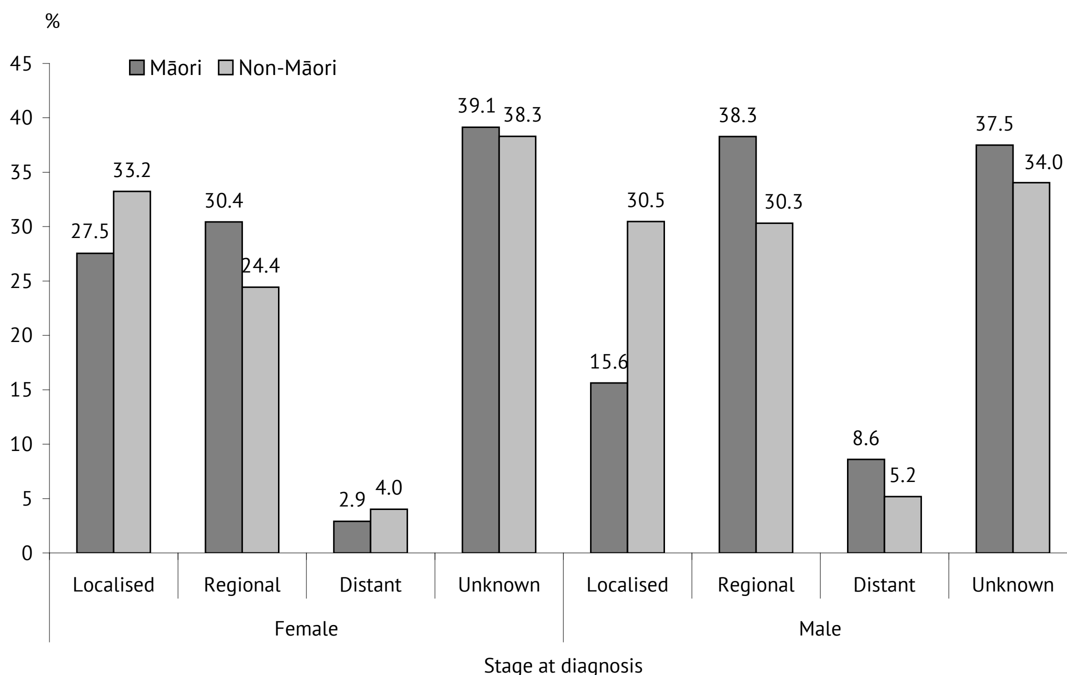
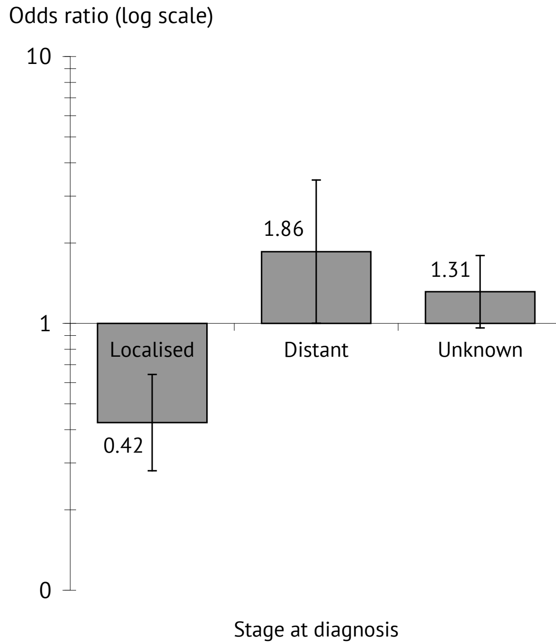


Figure 5.6 shows that for 1996–2006, Māori oral cancer patients were less likely than non-Māori to be diagnosed with localised stage of oral cancer after adjusting for age at diagnosis (OR = 0.42, CI 0.28–0.64, p<0.0001) and more likely to be diagnosed with distant stage of disease (OR= 1.86, CI 1.00–3.44, p = 0.049). This is likely to be largely influenced by the data for males.

Figure 5.6 Māori:non-Māori odds ratios for stage at diagnosis on oral cancer registrations, adjusted for age and sex, ages 20 years and over, 1996–2006



SURVIVAL

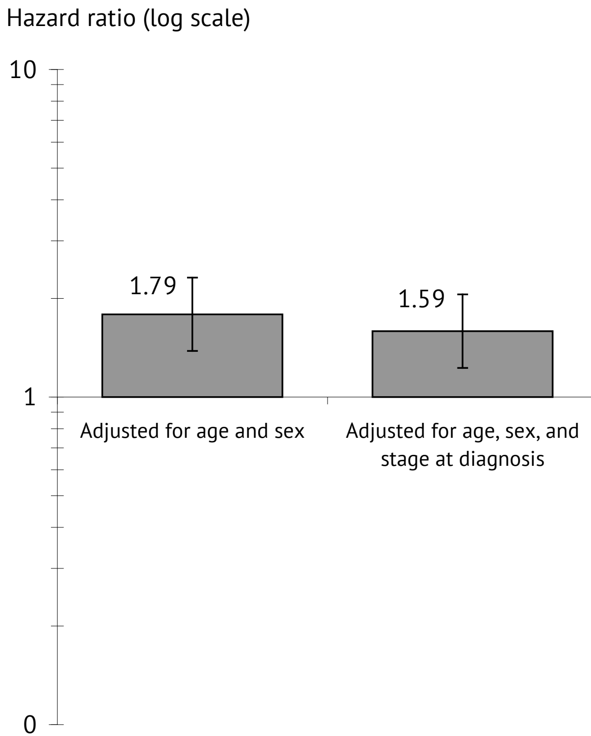
For 1996–2006, the risk of death from oral cancer following diagnosis for Māori males, was almost double that of non-Māori males (HR=1.92 (1.42–2.59). A statistically significant survival difference between Māori and non-Māori females was not detected (HR = 1.53, (0.93–2.53). (Table 5.2).

Adjusting for stage at diagnosis reduced this disparity by a similar proportion for females (27%) and males (28%), however the disparity still persisted (Table 5.2). The relative risk of death from oral cancer once detected, controlling for both age and stage at diagnosis was 66% higher for Māori men compared to non-Māori men (HR = 1.66, significant), a significant difference between Māori and non-Māori women was not detected (HR = 1.38, not significant).

Table 5.2 Māori:non-Māori hazard ratios for oral cancer-specific mortality after diagnosis, adjusted for age at diagnosis, and stage (including unstaged cancers) 1996–2006 by sex

Sex		Adjusted for age			Adjusted for age and stage			
	Time period	HR	95% CI	p value	HR	95% CI	p value	% change
Females	2000–2006	1.32	(0.66,2.62)	0.43	1.22	(0.61,2.44)	0.57	31
	1996–2006	1.53	(0.93,2.53)	0.097	1.38	(0.84,2.29)	0.20	27
Males	2000–2006	1.84	(1.26,2.69)	0.002	1.59	(1.08,2.33)	0.018	30
	1996–2006	1.92	(1.42,2.59)	<0.0001	1.66	(1.23,2.24)	0.001	28

Figure 5.7 Māori:non-Māori hazard ratios for oral cancer-specific mortality after diagnosis, adjusted for age, sex, and stage at diagnosis, 20 years and over, 1996–2006



Discussion

International evidence for oral cancer reveals disparities by sex, ethnicity and socioeconomic position (Arbes 2004; Morse & Kerr 2006). Some of the results in this study appear contrary to that seen in the literature for ethnic disparities in oral cancer. In Aotearoa oral cancer incidence is *similar* for Māori and non-Māori, for both males and females. This is surprising, given the distribution of major risk factors among Māori for oral cancer; particularly with regards to tobacco and alcohol.

Māori currently have considerably higher rates of smoking than non-Māori. Recent data from the Ministry of Health reports that 45.4% of Māori 15–64-year-olds currently smoke compared to 21.3% European/other (Ministry of Health 2009b). While the average alcohol consumption per day among Māori and non-Māori is similar and Māori are less likely to drink and drink less often, Māori drink more on a typical drinking occasion, when compared with non-Māori (Bramley at al 2003; Ministry of Health 2009a).

Māori have lower access to dental care (Koopu 2005). Cost is a considerable barrier to dental care, particularly for Māori adults who are more likely to live in deprived areas and earn less than non-Māori. Greater risk of oral cancers has been found in occupations such as meat works (McLean et al 2004), and sawmillers and forestry (Kawachi et al 1989). Many Māori work in these industries. Some evidence suggests that Māori have a lower fruit and vegetable intake compared to non-Māori (Lawes et al 2006; Ministry of Health 1999), however more recent evidence shows a similarity in fruit and vegetable intake for Māori and non-Māori (Ministry of Health 2010c).

Overall Māori appear to have a greater risk profile, and it could be expected that Māori would be diagnosed with oral cancer at a higher rate than non-Māori, which was not seen in these results. This raises the question of whether there could be higher rates of undiagnosed cancers in Māori.

Given the lag time for development of cancer, it is likely that smoking patterns of 10–20 years ago could more closely reflect the risk of oral cancer in the period of this study. Smoking prevalence for 15–79-year-olds shows that in 1981, 49.5% of Māori males and 51.7% of Māori females were current smokers. This decreased in 1996 to 38.3% for males and 44.6% for females. These figures differ slightly but are comparable to current smoking rates – 40.4% of Māori males and 49.7% of Māori females (Ministry of Health 2009b). For both time periods, the prevalence of smoking was considerably higher for the Māori population than for the non-Māori, non-Pacific population (Hill et al 2003).

Once diagnosed with oral cancer, the risk of death is greater for Māori compared to non-Māori adults. Māori are diagnosed at a later stage with more advanced oral cancer. The magnitude of the disparity in survival lessens (by around 30%) when stage of diagnosis is taken into account, however the disparity itself *persists*. Lower access to dental care may be affecting cancer outcomes, particularly for Māori males.

In other countries, disparities in survival are often attributed to stage of diagnosis, but also to the type of oral cancer experienced by different ethnic groups, and to differences in treatment. This level of analysis was not done in our study, and numbers are likely to be too small to detect statistically significant differences.

Ethnic inequalities in the type and timing of treatment for oral cancer have been documented in other countries (Arbes & Slade 1996; Morse & Kerr 2006; Shavers & Brown 2002). In an attempt to gain deeper understanding of the reasons for survival and mortality disparities between Māori and non-Māori, it could be beneficial to determine if there were similar inequalities in treatment of oral cancer in New Zealand.

CONCLUSION

In summary, while there don't appear to be disparities in incidence of oral cancer between Māori and non-Māori, Māori are diagnosed with more advanced disease, and more cancers of unknown stage, Māori males experience higher mortality and both males and female Māori have greater risk of death from oral cancer following diagnosis. Stage of disease accounts for only approximately 30% of this disparity in survival. Māori experience similar incidence by higher mortality compared to non-Māori across all levels of deprivation.

This study has generated further questions for research and policy.

Research questions

- How much does differential access to dental care contribute to differential outcomes in oral cancer
- Why is Māori/non-Māori incidence similar when the risk profiles for oral cancer are considerably different?
- What is the contribution of smoking to disparities in oral cancer mortality?
- Are there differences in the types of oral cancer experienced by Māori and non-Māori?
- What are the reasons for disparities in survival?
- What contribution does age at diagnosis make to the disparity in mortality/ survival?
- Are there disparities in treatment for oral cancer between Māori and non-Māori?
- What does the later stage at diagnosis mean for oral cancer care?

6 Ngā rauemi tatauranga
Oral health data

This chapter maps and assesses current health data for its utility to monitor and evaluate the oral health status, determinants of oral health, and oral health care provision for the three priority groups of Māori: low-income adults, older adults, and Māori of all ages with special needs, disabilities, and who are medically compromised. The review is also intended to give information on possible data sources for students, policymakers, and researchers concerned with the oral health of Māori. "There are gains to be made in realising the potential of current data collections by encouraging analysis of existing data before looking to collect new ones" (Statistics New Zealand 2009b: 17).

Monitoring the right to health

The right of everyone to the enjoyment of the highest attainable standard of physical and mental health includes a strong requirement for non-discrimination and equity (Yamin 2005). Meeting this right necessitates adequate disaggregated data to monitor the progressive realisation of the right on as many of the internationally prohibited grounds of discrimination as possible (eg. age, sex, indigenous status, ethnicity, disability) (Hunt 2007). The New Zealand Disability Strategy, He Korowai Oranga, and the Oral Health Vision all aim to contribute to the fulfilment of the right to health for the populations prioritised in this project. There is further development needed in some aspects however, particularly in monitoring oral health status and service performance for Māori with disabilities and special needs.

The Ministry of Health makes the following distinctions between monitoring, research, and evaluation:

> *Monitoring* involves the regular and ongoing collection, analysis and reporting of information, and this term is considered to be synonymous with (but preferred to) 'surveillance'. Monitoring is essentially descriptive, answering the 'what?' question. Insights are typically derived by comparing observed with expected or target levels of variables of interest, contrasts between population groups or geographic areas, or time trends.
>
> *Research* involves generating new knowledge and is essentially analytical, answering the 'why?' question.

> *Evaluation* involves assessing the effectiveness, cost-effectiveness, acceptability and impact of specific interventions, policies and programmes. It answers the 'what works?' question, and may involve a range of study designs and methods, often including qualitative techniques. (Ministry of Health 2005a, p.6).

In its report on child oral health, the Public Health Advisory Committee (2003) recommended monitoring the effectiveness of fluoridation in reducing inequalities. The background paper to the report also noted the underutilisation of ACC's data on dental trauma with no reports published on inequalities; the lack of data on periodontal status which limits understanding of when preventive intervention would be most timely; the lack of data on the effect of mental disabilities on oral health and treatment; the need to assess the accuracy and quality of ethnicity data; and the need to develop measures which encompass Māori and Pacific concepts of health.

Box 6.1 Results from consultation for the Strategic Research Agenda for He Korowai Oranga (MoH 2005b)

Propsed areas for information collection:

- intersectoral, holistic information
- information on ethnicity in employment, housing, justice, education, recreation, kura kaupapa, mortality, health and disability
- accurate, relevantly packaged information to meet local and iwi needs
- information about relationships in the whānau
- information about whether whānau know where to get help
- information about whether whānau access health services
- information about whether whānau are having to choose between necessities
- information about whānau accessing care and moving along the pathway of care continuum
- quantitative and qualitiative information
- general practitioner data, access rates and immunisation rates
- active marae, iwi hapū and cultural participation and whakapapa.

What do Māori communities think should be monitored?

Te Kete Hauora undertook extensive consultation with Māori communities for the development of the Strategic Research Agenda for He Korowai Oranga (Ministry of Health 2005b). The written and oral submissions identified that the research agenda should involve capacity building, be locally relevant, based on kaupapa Māori, be connected to other strategies, based on collectives and individuals, and that 'evidence-based' should not rely solely on western definitions. A broad range of information about whānau was seen as relevant for monitoring whānau ora (see Box 6.1). Many of the areas are congruent with the issues identified in the community-based research done for this project (see chapters on Mai Ngā Hapori and Mai Ngā Ratonga Hauora).

When members of Te Ao Marama, the New Zealand Māori Dental Association were surveyed for this project, they were

asked what data they thought should be routinely collected. Most wanted the current data collections maintained but expanded to include measures of adult oral health status, enrolment and utilisation, treatments or procedures received, people not attending appointments or not receiving treatment and the reasons why, trends in costs, and fluoridated areas for comparison. Comments also included the need to put the data to good use:

> the basics as supplied now – eg. total populations by category; totals of those enrolled; totals of those examined/treated; reasons why not enrolled/examined/treated; DMFT scores; caries free scores; treatments stats (fillings/x-rays/topicals etc) – these need a base, then be trended, so we can determine what level of services are needed, provided and whether the preventive focus is leading to any sort of improvement (or not) with the approaches employed; If over say a five year window we see little or no improvement, we should question the approaches being employed and probably revise them.

Scan of oral health data sources

This section reviews current oral health data sources in New Zealand, with respect to the populations of specific interest: low-income Māori adults, older Māori (koroua and kuia), and Māori with disabilities, special needs, or who are medically compromised. The data sources include health surveys, longitudinal studies, routinely collected data, and other data relevant to oral health determinants and health care provision (eg. fluoridated water supplies, health workforce). Although not exhaustive it covers the more readily available data sources and surveys identified from government documents, listings of social surveys, and from searching the internet. Public good market research (studies of social interest by market research firms) have not been included.

Because this project is focused on three specific groups, for each survey or longitudinal study, information is presented on the number of Māori in the study (to give some idea of study power), the way Māori are identified (ethnicity, descent, cultural identity), socioeconomic measures collected by the study, any measures of disability, special needs, or medical conditions, and which measures relate to oral health, oral health care, or the determinants of oral health, and the age range of participants.

For routinely collected data, the focus is on ethnicity data, socioeconomic data, and the ability to identify people with disabilities or special needs.

FINDINGS

Table 6.1 presents cross-sectional health surveys that include at least one measure related to oral health. Most are part of a series of surveys which should allow some level of monitoring to be done. The majority include good ethnicity data and have

Table 6.1 New Zealand health surveys

Data source	Oral health data	Population and number in study	Frequency	Ethnicity question	Disability, special needs, medically compromised data	Income, socioeconomic position measures	Number of Māori*	Organisation
NZ Oral Health Survey	Oral health status, oral health beliefs, attitudes, knowledge and practices, service utilisation, orofacial trauma. Dental examination done on more than half the respondents.	Repondents included 1431 children and adolescents aged 2–17 years and 3475 adults aged 18 years and over selected from the 2006/07 NZ Health Survey re-contact database	2009 then every 10 years	2001 Census question	No data on disability status, but collected info on receipt of invalid benefit, disability allowance, sickness benefit	Income, household income, income support, education, employment	1267 adults aged 18 years and over and 694 aged 2–17 years	Ministry of Health www.moh.govt.nz
NZ Health Surveys	Oral health section added to 2006/07 survey. No. of teeth removed for decay; utilisation of oral health care workers; regularity of oral health care. Unmet need for care and reasons (also in 96/97 and 02/03 surveys)	2006/07–12488 adults and 4921 children	1996/97, 2002/03, 2006/07 Moving toward a single, integrated, continuous survey of approximately 1000 adults and 400 children each month with a core module and rotating modules on specific topics	2001 Census question and Māori descent questions	Prevalence of chronic conditions (unspecified); in children – asthma, eczema, rhinitis. High blood pressure; heart disease; stroke; diabetes; asthma; arthritis; spinal disorders; osteoporosis; COPD; cancer, mental illness; chronic pain; epilepsy. in children – asthma, eczema, rhinitis.	ELSI- SF (living standards short form); NZiDep (individual deprivation score) in 2006/07; Sickness beneficiaries; Invalid beneficiaries; receipt of disability or child disability allowance; employment status; personal and household income; tenure/ownership of dwelling; no. of bedrooms	2002/03 4369 adults (sample design issues); 2006/07 survey 3160 adults and 1983 children.	Ministry of Health
NZ Child Nutrition Survey	Oral health status; pain; unmet need tooth brushing; regularity of care; diet	4000 children aged 5–14 years	2002, then every 10 years (next 2012)	Census ethnicity & Māori descent	Long term (more than 6 months) medical condition or disability	Food security, NZDep quintile, housing tenure and crowding, household income	1224	Ministry of Health
NZ Adult Nutrition Survey 1996/97	Diet, smoking	4636 adults aged 15 years and over	Every 10 years, 1997 and 2008/09	Census ethnicity	Unknown	Food security and NZDep, labour force status	~700	Ministry of Health
Youth 2000 and Youth '07	Oral health status, access to dental care, unmet need for care; fizzy/soft drink consumption	Secondary school students (mainstream and wharekura) around 13–17 years	2000 and 2007	Range of ethnicity questions	Disability status collected, but oral health not reported by disability status	Area deprivation, some indicators of home socioeconomic stress	2,059 Māori students in Youth '07	Auckland University www.youth2000.ac.nz

Table 6.1 continued

Prisoner Health Survey 2005	Oral health status, dental symptoms, receipt of dental care, smoking	Sample of 423 prisoners (317 males and 106 females) aged 16 years and over	2005	2001 Census question	Chronic conditions epilepsy, stomach ulcers, migraine, irritable bowel syndrome, ME , bipolar disorder, schizophrenia, multiple sclerosis and motor neurone disease, depression, other chronic conditions, but oral health not reported by disability status	Education, employment and income source prior to prison	141 Māori males, 58 Māori females	Ministry of Health
Tobacco Use Surveys	Tobacco use, advice, visited oral health worker, quit support from dentist	5000 adults aged 15–64 years	2006, 2008 and 2009	2006 Census. Māori descent	No disability measures, but data collected on invalid benefit, sickness benefit, disability allowance	Education, housing tenure, no. of bedrooms, income, employment status, occupation,	1000 Māori	Ministry of Health
Disability Survey	Unmet need for health care (dental not specified)	Post-census sample of people with disability	2001, 2006 Next survey 2011	Census ethnicity	Various measures of disability status. 2011 will use ICF to classify disability	Education, income, employment status, occupation	unknown	Statistic NZ www.stats.govt.nz

* Note that the number of Māori in the sample does not always indicate the number of effective responses, if there are suboptimal design effects.

Table 6.2 Longitudinal surveys

Longitudinal survey	Data related to oral health	Population/ sample frame	Frequency	Ethnicity question	Disability, special needs, medical conditions	Income, socioeconomic position measures	Number of Māori*	Organisation
Dunedin Multidisciplinary Health and Development Study	Data on oral health status collected in childhood and in adulthood.	Cohort of 1000 babies born in 1972 and 1973	Data collected every few years	Varies according to the standards of the time of data collection	May be more in the future as cohort ages (currently aged 38)	Occupational class indices – parents when cohort was young, a range of adult socioeconomic measures.	~100	University of Otago
Growing up in New Zealand	To date, studies parental diet, smoking, alcohol. Potential for oral health followup.	7,000 children from Auckland, Counties-Manukau, and Waikato DHB regions	Launched in 2008. Follows children from before their birth into adulthood.	Census ethnicity question and additional question asking for 'main' ethnic group.	Chronic condition lasting 6 months or more. Reports a range of conditions of parents.	Range of measures including parental employments status, education, household income, housing tenure, area deprivation, benefits	1246 mothers, 612 partners, 1487 Māori children	Auckland University and partners www.growingup.co.nz
SOFIE health and SOFIE Primary care (Survey of Family, Income and Employment)	Financial barriers to dental visits, tobacco use	20,000 adults recruited in 2002	Health component in waves 3 (2004–05), 5 (2006–07) and 7 (2008–09)	Census ethnicity question	Health limited activities, chronic illness (physical and mental)	iDep, early life ses, education, income (individual and household), area deprivation, employment status	1485 (at wave 2)	Statistics NZ
Te Hoe Nuku Roa		Māori households	Started 1993. Followed for 25 years	Māori ancestry, ethnicity, cultural identity	Unknown		600 households, 1600 people	Massey University
Health Work and Retirement Study (linked to Te Hoe Nuku Roa)	Smoking, alcohol use, health care utilisation (dental care not included to date)	6,500 adults aged 55–70 years sampled from electoral roll	Started in 2006, second wave 2008, will follow to 2016 (expect 5 waves in 10 years)	Māori ancestry, Prioritised ethnicity, cultural identity	Unknown	Employments status, occupation, income, education, economic living standards	3117 Māori adults	Massey University http://hwr.massey.ac.nz/surveys.htm

* Note that the number of Māori in the sample does not always indicate the number of effective responses, if there are suboptimal design effects.

Table 6.3 National collections of health and disability data

Routinely collected data	Description	Disability, special needs	Ethnicity data quality	Socioeconomic status and Other	Organisation
School Dental Service	% caries-free; number of children examined; mean number of decayed, missing or filled teeth by ethnicity, year, fluoridated and non-fluoridated water supply for 5 year olds and Year 8 school children.	No data collected	Reported for Māori (quality of ethnicity data unknown)	None reported currently.	Reported by DHBs to Ministry of Health
Public Hospital Discharges	Inpatient admissions with a principal diagnosis of teeth and gum disease (including sub-categories) or for broken teeth. Causes of injury, admissions with a secondary diagnosis of tooth and gum disease. Dental procedures.	No data collected	Self-reported ethnicity but accuracy not consistent. Māori still undercounted.	No individual data. Could use domicile code to determine area deprivation.	Ministry of Health
Cancer Registrations	The NZ Cancer Registry collects data on all invasive cancers including oral cancers. In combination with the death registrations, survival data can be calculated. Stage at diagnosis (or extent of disease spread) is recorded on the registration but a significant proportion is unknown.	No data collected	Māori cancer registrations still undercounted. Ethnicity data collected from NHI and since early 2009 processed to improve estimates.	No individual data on income or socioeconomic status. Domicile code can be used to determine area deprivation status	Ministry of Health
Dental Benefit data	The number and mean value of advances and grants for dental care by ethnicity. This data is not routinely reported currently.	Beneficiary status only	Reported for Māori, quality of data unknown	Grants and loans only available to low-income families.	Ministry of Social Development.
Dental injury claims	Dental injury claims are collected by ethnicity but not routinely reported	No data collected	"What is your ethnic background?" with similar tick boxes to census. Quality unknown	Claim form includes employment status and occupation	ACC

some measures of socioeconoic position but the numbers of older Māori in the surveys are likely to be small. There is some level of data on disability collected in the health surveys (mostly on chronic conditions, or receipt of benefits). The Disability Survey collects good data on disability or functioning but not on oral health status or care. The oral health survey will provide the most detailed information on oral health of low-income Māori adults, but does not appear to collect data on disability.

Table 6.2 presents longitudinal studies. Each study collects ethnicity data and socioeconomic data. Some studies (eg. Growing up in New Zealand) are just starting to recruit birth cohorts and have the potential to collect information on oral health in the future. The Health Work and Retirement Study focuses on older adults and has a reasonable sample size for Māori adults. Although oral health data is not included, there is some information on the determinants of oral health, and there may be potential for other data to be included in future waves. The Dunedin birth cohort study has collected oral health data since the cohort was young (in the 1970s) and provides good data on socioeconomic position and oral health. The SOFIE studies include data changes in socioeconomic status and access to health care and smoking. Te Hoe Nuku Roa has the potential to examine the determinants of oral health in Māori households.

Table 6.3 presents the national collections of routinely collected data, mostly from administrative datasets. Ethnicity data is collected in each data set (although the quality may vary). Socioeconomic data is available in most data collections, although for public hospitalisations and cancer registrations the data relates to the deprivation level of the neighbourhood of residence, rather than individual or household data. School Dental Service data is not reported by socioeconomic status, although there may be potential to report by school decile. Disability status is the main gap in these data sets with no data recorded.

Table 6.4 focuses on other sources of data relevant to Māori oral health, including the dental workforce, fluoridated water supplies, and other data which may give contextual information (such as average dental fees by region), or which has the potential to provide relevant information in the future. The Dental Council's annual dental workforce reports give some depth of analysis on dentists, dental therapists, dental hygienists and dental technicians but report only numbers of Māori in each category. There is potential for the Māori data in these reports to be analysed in more depth, particularly as the workforce grows.

Discussion

This scan of oral health data revealed that a significant amount of survey data related to oral health has been collected in cross-sectional surveys, much of which may be possible to use to explore further findings for Māori at marginal cost. The 2009 New Zealand Oral Health Survey (released December 2010)

Table 6.4 Other data

Data source	Relevant content	Organisation
Annual Health Workforce Survey	Regulated health workforce surveyed with invoice for annual practising certificate. Dentists by age, sex, ethnicity, worktype, work setting	Ministry of Health
5 yearly NZ Population Census	Can extract oral health workforce information by ethnicity	Statistics NZ
Dental Council of New Zealand's annual dental workforce analysis by	Annual workforce analysis. Includes number of Māori dentists, dental therapists, dental hygienists, dental technicians but no other analysis of the Māori workforce www.dcnz.org.nz/dcResourcesWkfSurveys	Dental Council of New Zealand
Drinking water for New Zealand	A map and list of community drinking water supplies that are fluoridated www.drinkingwater.co.nz/supplies/fluoridation.asp	Ministry of Health and ESR
Injury Information Portal	This portal provides links to various government agencies that collect data on injury. No oral injury data available to date. www.stats.govt.nz/injury	Statistics NZ
PHIOnline	2006/07 NZ Health Survey oral health data by DHB and territorial authority. Maps, charts, and source data provided. Māori data not available for oral health. www.phionline.moh.govt.nz/index.asp	Ministry of Health
NZ Dental Association	Access to Cochrane Collaboration reviews on oral health Annual survey of average dentist's fees by region www.healthysmiles.org.nz	NZ Dental Association

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The NZ Social Science Data Service provides access to data from New Zealand surveys in the social sciences. www.nzssds.org.nz/ The website holds an extensive list of surveys and provides online access to data sets and extensive metadata from New Zealand surveys.

NZ Health Monitor – a programme of health surveys www.moh.govt.nz

NZ Social Research Data Archives, Massey University (no longer active)

Injury information portal. Statistics NZ www.stats.co.nz/Publications/SocialConditions/injury-stats.aspx

Morton, SMB, Atatoa Carr, PE, Bandara, DK, Grant, CC, Ivory, VC, Kingi, TR, Liang, R, Perese, LM, Peterson, E, Pryor, JE, Reese, E, Robinson, EM, Schmidt, JM and Waldie, KE. 2010. Growing Up in New Zealand: A longitudinal study of New Zealand children and their families. Report 1: Before we are born. Auckland: Growing Up in New Zealand.

provides important detailed data on adult oral health. The other health surveys that are part of the Ministry's Health Monitor also give opportunities to explore oral health research questions. These surveys collect standardised data on ethnicity, multiple measures of socioeconomic position, and in some cases data on long-term health conditions. The surveys generally include a reasonable sample of the Māori population overall but may not have the power to answer questions for older Māori, Māori with low incomes, and Māori with disabilities or special needs.

Longitudinal studies can help to answer questions on causation and developments over the lifecourse. The Dunedin Longitudinal Survey is providing useful information on oral health throughout the life course. The new birth cohort studies such as Growing up in New Zealand (Morton et al 2010) could also provide opportunities to research new questions on oral health and its determinants for Māori, particularly as there are greater numbers of Māori in the cohorts. The SOFIE study could potentially be used to focus on low-income Māori adults, providing opportunities to examine the impact of social policies and changes in socioeconomic status on utilisation of dental care, and smoking. It is encouraging that the Health Work and Retirement longitudinal study has a sample of older Māori large enough for some depth of analysis.

Routinely collected data focuses mainly on children, inpatients, and cancers. Data on the use of dental services by adults is an important absence. Surveys are currently the only sources of data on adult dental care in the community. Although most DHBs give some level of dental care for outpatients, this data is not standardised across DHBs nor reported to the Ministry of Health. As more dental services are provided in primary health care settings it may eventually be possible to start collecting data on dental service utilisation and performance at the PHO level. The lack of data on disability status in routinely collected data is the other notable absence.

DISABILITY

The New Zealand Disability Strategy recognises the principles of the Treaty of Waitangi. The Strategy is a framework of fifteen objectives with detailed actions intended to achieve a fully inclusive society that highly values disabled people and promotes their full participation in community life. While almost all objectives have relevance for Māori, objective 11 specifically promotes the participation of disabled Māori (Ministry of Health 2001). However, there has been criticism of the Strategy's lack of a concrete accountability structure. With no consequences for failure to achieve the objective, there is little incentive for ministries and services to attend to its implementation (Wiley 2009).

Monitoring progress towards the objectives of New Zealand Disability Strategy and the Oral Health Vision depends on data being collected, analysed, and reported in multiple dimensions – including ethnicity, socioeconomic status

and disability status. Without data on disability status in monitoring or routinely collected data, disparities in oral health status between disabled Māori and non-disabled Māori, or between disabled Māori and disabled non-Māori remain invisible and unaddressed. We are also unable to assess the responsiveness of oral health services to disabled Māori nor evaluate the effectiveness of public health programmes relevant to oral health determinants. Monitoring data provides an important point of leverage for achieving change – and it is difficult to advocate for change or to work out where progress is being made without such data.

Alongside efforts to improve the accuracy and consistency of ethnicity data, it is time to consider developing methods of collecting disability data in health service data collections and monitoring. Maurice Priestley, Programme Coordinator, Inclusion and Disability at Capital and Coast DHB, notes that "you get two people who might look the same, have the same impairment but their degree of disability is completely different, or how it impacts on them is completely different", but that information can be collected in ways that can accommodate such variation:

> My simplistic view of it is that you could ask a series of questions: do you have disability? Yes. It goes down to the next level. How do you categorise your disability – is it a physical disability, sensory disability, learning disability whatever – you can tick as many as you want. From that you can draw down to another level to get more specific about what the so called physical manifestation is, or how it impacts you, and how does this affect your life … And that will show us what the impact of it is. So if it was coded accurately enough you could probably get some sort of reasonable stats. (Maurice Priestley, Capital and Coast Health)

Collecting information on disability is important not only for monitoring, planning, and evaluating service developments; it can also be a crucial factor in patient safety:

> We have examples of people coming into hospital and the hospital not realising the extent of the supports that they need to keep this person alive. Simple things like this person cannot move therefore they need to feed; this person cannot be moved therefore they need to be assisted with their toileting; this person is deaf; you need to know specific requirements about how to communicate with them; whether somebody has got a learning disability, you just have to take a little bit of extra care and time. (Maurice Priestley)

The World Health Organisation's International Classification of Functioning, Disability and Health (ICF) provides a standardised method of collecting data on disability and health intended for use in health and health-related sectors (WHO 2002). The ICF may hold promise for creating an efficient method to collect meaningful disability data in the health sector. The use of the framework in the 2011 Disability Survey will give an opportunity for the New Zealand health sector to better understand its potential for use in service provision, monitoring, evaluation, planning and policy (Statistics New Zealand 2009). It may be possible

to develop questions based on the ICF that could be included in the health monitor surveys and routinely collected data, and support our obligation to monitor the right to health of people with disabilities.

SUMMARY

Monitoring data can raise new research questions, help evaluate the impact of policy, programmes, and support policy directions or point to the need for change. It is important to ensure there is enough power to answer important questions for those with the highest risks. Studies should be designed to ensure the groups with the highest needs are well represented, both numerically and analytically.

New data collection is costly and it is important to ensure that the potential of existing data to answer research, evaluation, and monitoring questions for Māori is fully realised. This includes making sure the results are analysed and interpreted safely for Māori and made available and accessible to Māori communities, and to those organisations responsible for policy, purchasing, and the design and delivery of oral health care programmes, including intersectoral action.

This review has identified a considerable amount of data on oral health determinants, oral health status and dental care. However, there are significant gaps in our ability to monitor the right to oral health for our three priority groups. The absence of data on Māori with special needs and disabilities presents the most significant challenge and requires urgent attention. To accelerate movement to equity and good oral health for all, for life, it is essential to have data disaggregated for all groups, and especially those with greater oral health risks and greater barriers to health care.

7 Tātaritanga a rangahau hāngai *Literature review summary*

Oral health improvement for Māori is a priority. There are high levels of unmet need for oral health care, and low-income Māori are particularly affected. Older Māori, and Māori with special needs will also have specific needs and aspirations. Effective oral health research is required that will contribute to the achievement of whānau ora for each of these groups. This literature review was developed for a research project funded by the Health Research Council of New Zealand and the Ministry of Health to identify oral health research priorities for three specific groups: low-income Māori adults; older Māori adults; and Māori with special needs, disabilities, or who are medically compromised. A comprehensive review of local and international literature has been conducted to identify past and current research, research gaps, and potential future directions for Māori oral health research or for research that might impact Māori oral health (Stuart et al 2011). Specifically the review included:

- Research literature on Māori oral health and the oral health of other indigenous groups (focusing particularly on the Australian indigenous peoples, the First Nations peoples of Canada, and the indigenous peoples of the United States)
- Literature on oral health and: elders, people who have disabilities or are "medically compromised", and low-income adults, which may be relevant to research on Māori oral health needs. Oral health issues related to pregnant women and prisoners are also reviewed briefly.
- Literature on themes arising from the consultation workshops for this project, including public health interventions, oral health values, beliefs and practices, and workforce development and cultural competence.

This chapter presents a summary of the key themes identified in the literature review that suggest potential research priorities for Māori health. The full literature review by Stuart et al (2011) is available at www.otago.ac.nz/uow

Summary of themes

Key themes have emerged across the diverse topics reviewed. The studies we reviewed found that indigenous oral health services share common problems,

including significant gaps between resources and need (Jordan 2008; Martin 2000; Niendorff & Jones 2000; Reifel 2005; Ziebarth 2003). A lack of trained professionals (Martin 2000; Phipps et al 2002; Reifel 2005) and disconnections between preventive care, primary care and secondary care due to the complex system of responsibilities and funding (Ziebarth 2003) were also cross-cutting themes. In Canada and the US, researchers found low awareness among communities (including tribal structures) of the connection between oral health and general health (Phipps et al 2002; US Surgeon-General 2000). On the positive side, there are initiatives focused on improving indigenous oral health. Most of these published initiatives were small-scale/local programmes, driven at least in part by highly motivated researchers or academics, which generally came into existence in partnership with indigenous communities or with their support. Most of these programmes were pilots, and did not become part of the mainstream oral health funding system.

The National Center for Cultural Competence (n.d) conducted an Internet-based search of 'juried literature' on indigenous, natural and alternative practices in oral health care. Little information was found on the beliefs and practices of diverse cultural groups and the Center concluded that an expanded research agenda was required to address oral health disparities.

FRAMEWORKS FOR RESEARCH NEEDS

In searching for literature, we were particularly interested in locating oral health research strategies, or frameworks which might help identify research priorities. Few oral health research strategies or plans were found that addressed the needs of indigenous peoples, or the other population groups discussed in this review. Those which did included Canada's national oral health research strategy (Canadian Institutes of Health Research 2002), the US Indian Health Service (Phipps et al 2002) and the University of Hawaii medical school strategy (Easa et al 2005; Shomaker et al 2005). Broughton (2006) also identifies a number of research questions along with the need for Māori (evaluation and research) frameworks to evaluate the success of Māori oral health provision.

The report on oral health produced by the US Surgeon-General (2000) sets out an agenda for research. The principal components of the plan include building the science and evidence base; understanding the "complex diseases caused by the interaction of multiple genes with environmental and behavioural factors"; and "translate research findings into health care practice and healthy lifestyles" (2000:12.).

The Canadian Dental Hygienists Association (2003) has also developed a research agenda focusing on preventive oral care. The agenda linked to the priority framework of the Canadian Institute of Health Research. The agenda's guiding principles included cultural and linguistic sensitivity; participatory and

empowering research; and considering vulnerable populations as a "cross-cutting theme" (2003:17).

Petersen (2005) and Petersen and Kwan (2004) identify global oral health priorities for research. The World Health Organisation (WHO) reports emphasise that oral cancers and trauma broadly effect oral health and well-being (Petersen 2005). According to the WHO, "the solutions to control oral disease are to be found through shared approaches with integrated disease prevention" addressing risk factors related to diet, smoking and alcohol use (Petersen 2005:71). The WHO's priorities for research include:

- modifiable common risk factors to oral health and chronic disease, particularly the role of diet, nutrition and tobacco
- oral health–general health–interrelationships
- psychosocial implication of oral health/illness and quality of life
- inequity in oral health and disease and the impact of socio-behavioural risk factors
- the burden of oro-dental trauma ... and related risk factors
- translation of knowledge into clinical and public health practice and operational research on effectiveness of alternative community oral health programmes
- health systems research on reorientation of oral health services towards prevention and health promotion. (Petersen 2005:73).

The WHO also emphasises the need to develop appropriate research capacity (Petersen 2005).

Sgan-Cohen and Mann (2007) have suggested a research agenda on oral health and poverty, including:

- Are there specific and effective interventions that could mitigate some of the dental health and dental health care disparities?
- Are simple and affordable clinical procedures–such as atraumatic restorative treatment – optimally effective, appropriate and potentially accessible for poorer communities?
- Which preventive modalities are most effective for poorer communities (sealants, fluoridated dentifrice, fluoridated water)?
- What are the significant cultural, political, economic, environmental, social and behavioral variables related to oral health status among the poor?
- Can preventive dentistry be effective in narrowing oral health disparities according to socioeconomic status?
- What is the motivation of poorer communities, as far as oral health promotion and self-care are concerned?
- What is the amplitude of oral health effect on quality of life among the poor?

- What are the economic, political and professional obstacles that potentially hinder closing the oral health social gap?
- How might oral health advocates promote the need for more oral health care legislation for all, or at least poorer, communities? (Sgan-Cohen & Mann 2007:1441).

CROSS-CUTTING RESEARCH THEMES

Improving data on Māori oral health

The World Health Organization Oral Health Programme says that continuing, regular surveillance is important to help governments formulate policy, and to measure "progress, impact and efficacy of preventive efforts" (Petersen 2005:72). Data is essential to setting and monitoring targets (such as the WHO Millennium development goals targets to improve health outcomes, including oral health, of the poor) (Petersen 2005). Chua (2009) refers to the need for New Zealand's Ministry of Health to hold policy and funding decisions till the current national oral health survey is completed.

However, national surveys do not always produce the level of detail needed to understand Māori health, or recognise variations within the Māori population. Te Puni Kōkiri's report from the 1995 Oranga Niho hui identified the need for "Māori-specific research" (Te Puni Kōkiri 1996). Oral health variations can be influenced by age, cultural background, gender and other factors (Mason et al 2006).

A key way to identify differential generational/cohort effects (eg relating to diet; beliefs about oral health and dental care) is life course studies such as that by Jamieson and Sayers (2008) on the oral health of Aboriginal teenagers and young adults. The study collected information on metabolic, cardiovascular and other health indicators, as well as indicators of social and emotional well-being. Jamieson and Thomson (2006) also argue strongly for the value of focusing on community-level deprivation, not just an individual focus. There may be scope for the newly established longitudinal studies such as the 'Growing up in New Zealand' study (Morton et al 2010), which have larger samples of Māori than earlier studies, to collect useful data relevant to oral health and a range of interrelated issues.

Reviewing the effectiveness of initiatives in improving Māori oral health

Broughton (2006) has described several initiatives, mainly local community projects. More recent initiatives are described in other sections of the present research report. However, few of these initiatives have been evaluated, either individually or comparing types of services and their relative effectiveness in improving Māori oral health. The research done has been mostly small-scale, and rarely carried out by independent evaluators, although a report on an independent evaluation of six Māori oral health service providers is due for

release in early 2011. Evaluation and synthesis of local oral health initiatives could be one priority; this is mentioned in the Ministry of Health's 'Promoting oral health toolkit' (Ministry of Health 2008b), but as yet there is no national programme of framework for evaluation.

Establishing how values and health beliefs affect Māori oral health behaviours

Strauss (1996:88) concluded that "positive reinforcement related to patients' salient health beliefs is the most effective mechanism to influence dental health behaviours." A significant body of literature argues that to provide effective oral health care services, understanding is needed on the meanings and values attached to teeth, and to the health of the mouth. Most of the research found focused on contemporary oral health practice within a medical model. However, there is some research on Indigenous perspectives on the meanings of oral health, and the value of traditional diet, oral care practice and treatment (such as rongoā) (for example Brondani et al 2007; Broughton 2006; Jamieson, Parker & Richards 2008). Research might establish Māori value/belief frameworks about oral health (for instance, compared to Corrigan et al.'s [2001] models); what determines Māori beliefs; whether there is a single 'Māori' model, and which values, beliefs and practices may affect oral health practices, uptake and use of services (such as dental fear, or beliefs about efficacy of treatment).

Improving access to oral health care

People from diverse underserved populations are confronted with many barriers to oral health care. Those barriers include (but are not limited to) geographic locations; times and logistics of services; inadequately skilled oral health providers; knowledge of effective oral care practice; language access; limited financial resources; and lack of adequate health care coverage (e.g. insurance). Health and disability problems add another layer of difficulties. Geographic location was not one of the objectives set out for this research project, but emerged strongly from the literature (both explicitly and implicitly) as a major determinant of oral health (Brothwell & Ghiabi 2009; Sekiguchi et al 2005; Simmons 2003). Ziebarth (2003:2) quotes Jose Kusagak, president of the Inuit Tapiriit Kanatami as saying that:

> I believe that ... the success of our health care system as a whole will be judged not by the quality of service available in the best of urban facilities, but by the equality of service Canada can provide to its remote and northern communities.

An international review of health status of indigenous peoples supports the development of 'intercultural health systems' as a way to improve access to effective health care for indigenous peoples – "where Western and indigenous health systems are practiced with equal human, technological and financial resources, with spaces for exchange of knowledge, methodologies and practices that ensure the ongoing development of both systems" (Cunningham 2009:177).

RESEARCH ON POPULATION GROUPS

Kaumātua

Kaumātua oral health appears to be a priority area, not only in the present but even more in the future. The relatively large amount of international research on oral health of the elderly throws into high profile the small amount of information and research on oral health of kaumātua Māori. The size of this age group is rapidly increasing, elders are more likely to live into extreme old age, and are more likely to be dentate than previous generations. Kaumātua oral health is the sum of social and family context (e.g. economic living conditions, diet), and previous health care and oral health behaviours, such as smoking (Jette et al 1993). Mason et al (2006) present a conceptual framework of how fetal, infant, childhood and adult influences contribute to oral health related quality of life in middle age, which could be extended into old age. From an Aotearoa New Zealand perspective, it would be useful to have population projection data based on the oral health status of pakeke, and information on kaumātua diet, smoking and other risk or supporting factors. Overseas research, and the work of Sussex at al (2009) in Aotearoa New Zealand, also supports the value of understanding kaumātua values and beliefs around oral health, and the cultural competence skills oral health workers need to provide oral health support for kaumātua.

Petersen and Ueda (2006), reporting on WHO's meeting on 'Oral health in ageing societies: integration of oral health and general health', identify research needs for the ageing population as a whole. They refer to a 2004 'Elder's Oral Health Summit' which identified the priorities as:

- overcoming barriers to providing care for underserved people
- developing an evidence base to identify appropriate dental services for frail and functionally dependent older adults
- increasing knowledge about disparities in oral health and access to dental care among the poor and racial and ethnic minorities. (Petersen & Ueda 2006:22)

Petersen and Yamamoto (2005) say that research on oral health of elders needs to include socio-behavioural data (e.g. wellbeing, quality of life) as well as clinical data. Research should identify and focus on 'high risk' groups, and there is an urgent need for information on health promotion with older people, especially those living in the community (Jamieson, Parker & Richards 2008). Petersen and Yamamoto (2005:89) say that "apart from a few intervention studies conducted in some industrialized countries, research on community-based oral health promotion activities among older adults is totally lacking".

The Indian Health Service recommended research on elders to:

- identify characteristics of American Indian elders that contribute to the maintenance of good oral health
- test and evaluate interventions to facilitate good oral health of elders

- identify characteristics of AI/AN elders that contribute to the absence of root caries in susceptible individuals (Phipps et al 2002:83).

People with disabilities, or high health needs

Workforce skills and knowledge emerged as a theme across the literature reviewed for this section. Special needs or special care dentistry is a specialist area of the profession (Dougall & Fiske 2008a). Research may be needed on the capacity of special needs/special care oral health professionals to work with Māori patients, and the extent to which Māori who could benefit from special care dentistry (and their whānau) are aware of what can be provided, and can access it. The disability support workforce also has a critical role, and there is some evidence that training them can improve oral health outcomes for their clients (Glassman & Miller 2009).

As well as establishing a base of information on the numbers of Māori with special oral health needs, other research foci might include:

- what models of publicly funded dentistry will reach Māori with highest needs?
- what services might be needed for Māori with disabilities (given the diverse nature of 'disability')?
- what's being provided for people with disabilities now – especially in the community?
- how appropriate are oral health services for Māori with mental illness?
- does the current oral health workforce have the training needed to provide appropriate support?
- are Māori with health conditions receiving the knowledge and care they need, and what interventions/support are being provided (if any, how effective)?

OTHER THEMES IN THE LITERATURE

Two final themes that emerged across a range of different literature were the need to refocus oral health from clinical intervention to preventive care, especially away from repeated emergency treatment; and a related theme, the value of integrating oral health and general health care.

The "public health and preventive interventions" theme was most strongly expressed by Watt (2005; 2007) and Watt and Sheiham (1999), writing in the UK; but articles by Mouradian and Corbin (2003) and Mouradian, Huebner and DePaola (2004) show that similar ideas are becoming part of the discussion among US oral health professionals. Reports by the Canadian Dental Hygienists Association (2004; 2007) summarise many of the arguments for moving the focus to prevention. The WHO's oral health programme (Petersen & Yamamoto 2005:81) states that 'public health research [on oral health] needs to be strengthened.' This

would be supported by the small amount of literature found on public health or preventive interventions (eg diet, fluoridation, smoking cessation), except at the local, mainly community level. However, the research on health promotion with indigenous populations such as Jamieson, Parker and Richards (2008) indicates that it needs to be based in the oral health models of the target group. Emerging from such research, relevant questions for Aotearoa New Zealand might include studying how Māori get their information about oral health; the most effective ways to provide oral health education to Māori – for instance, at individual compared to whānau level, including the role of kaumātua; and how best to extend health promotion to vulnerable groups such as Māori with diabetes.

A repeated theme in research on services for people on low incomes is the ineffectiveness and inefficiency of only providing emergency oral care treatment (Chua 2009; Davis et al 2010; Simmons 2003). One extreme example of the costs of funding "emergency" interventions rather than preventive treatment is discussed by the developers of Queensland's Crocodile Smiles 2 project for indigenous families. They note that "indigenous children are frequent recipients of general anaesthetics for the purpose of extensive dental treatment .... The financial burden which the health system must bear to provide this form of treatment is considerable" (Crocodile Smiles Part 2 2007:6). This suggests that intervention research could include economic analysis (Davis et al 2010).

Jatrana et al (2009) argue for the need to integrate oral health and other primary care services. In Aotearoa New Zealand the approach they recommend is consistent with the WHO's oral health strategy, New Zealand's oral health strategy (Ministry of Health 2006a), and is similar to the approach discussed by Formicola et al (2004) and Fisher-Owens et al (2008). Existing examples are the New Mexico health commons model described by Beetstra et al (2008) and, in Aotearoa New Zealand, the approach of Hauora Hokianga and some community health services (Jatrana et al 2009). Such integration would need to be based on research, including how to ensure the whole workforce takes a comprehensive approach (e.g. dietary counselling, tobacco cessation advice) (Phipps et al 2002).

APPENDIX 1
Research partners

Tipu Ora Charitable Trust

Tipu Ora Charitable Trust is a Rotorua-based Māori organisation delivering health, education and social services based on Kāupapa Māori principles and in a Whānau Ora approach. All services target Māori, low-income and hard to reach clients, with the aim of making all services accessible and acceptable to Māori in a way that ensures a cohesive and safe model of care. There are currently 50 staff employed by the Trust to carry out the operational tasks of the service contracts.

Tipu Ora was established in 1991 to address the needs of Māori mothers and their children, and has grown over the years to deliver a range of related services, supported by a range of funders. These currently include: Well Child Tamariki Ora Services, Oral Health Services, Aukati Kaipaipa Smoking Cessation, Health Promotion, Family Start Programme, Teenage Parents and their Children Service Coordination, Parents as First Teachers, NZQA accredited Hauora Māori programmes.

Tipu Ora provides services in the Rotorua Territorial Local Authority in the Lakes health district, with outreach to rural areas on the boundary with Whakatane Territorial Local Authority and Bay of Plenty health district, including Kaingaroa Forest Village, Rerewhakaaitu, Minginui, Ruatahuna, and Murupara. Māori make up 34% of the population in this area.

Tipu Ora Oranga Niho dental services, Ohinemutu, Rotorua.

Tipu Ora Oranga Niho

Tipu Ora has been providing a range of oral health services since 1997 when the preschool dental service commenced. In 2006, Tipu Ora were successful in attracting funding to set up the Community Dental Service – Tipu Ora Oranga Niho. The Tipu Ora Community Dental Service consists of a fixed dental clinic (since 1996), a hospital-based dental clinic in Rotorua Hospital (since 2006), and a two-chair mobile dental facility (since 2008). In 2010 the service re-located to the community in Ohinemutu, Rotorua.

> For further information on Tipu Ora Charitable Trust visit **www.tipuora.org.nz**

Tipu Ora Oranga Niho currently employs 5.6 FTES and provides oral health services to low-income adults, adolescents and preschool children through base contracts with Lakes DHB, and fee for service contracts with Ministry of Health, ACC, and Work and Income New Zealand.

The oral health service links closely with other services provided by Tipu Ora, including well child services, Family Start, and Parents as First Teachers.

For this research project, clients of the Tipu Ora Charitable Trust participated in a postal survey and staff of the Trust participated in an online survey. Both surveys were in mid-2009. Some staff members also contributed to the oral health research priorities workshops in Wellington.

Te Ao Marama

Te Ao Marama, (the New Zealand Māori Dental Association) was established at the first national Māori hui (gathering) for oranga niho (dental health) which was held at Ohinemutu, Rotorua in February 1995.

The kaupapa of the new organisation was "Hei oranga niho mo te iwi Māori (Oral health for Māori)". The foundation president was Mrs Inez Kingi (a former school dental nurse); the kaumātua (elder) was Mr Pihopa Kingi; and the kaiwhakahaere (secretary) was Mr John Broughton. The name Te Ao Marama was given to the new organisation by Mr Pihopa Kingi from the name of the whare (building) in which the first hui was held.

> For further information on Te Ao Marama visit **www.teaomarama.org.nz**

At the second national hui a year later, the objectives and constitution of the new organisation were ratified by the membership, including the following objectives:

- uphold Māori oral health as guaranteed under Te Tiriti o Waitangi;
- pursue the delivery of oral health services to Māori at the optimum level;
- safeguard and promote the oral health of te iwi Māori; and
- promote the opportunity for te iwi Māori to access quality oral health services.

Te Ao Marama has led to greater awareness of Māori oral health in government agencies, Māori health providers and Māori communities. It serves to foster and promote oranga niho among Māori and non-Māori. The dissemination of information and fostering of professional support and whanaungatanga among its membership are key roles of Te Ao Marama. This national organisation is a recognised leader for Māori oral health.

The membership of Te Ao Marama includes a range of people involved in Māori oral health, including dental therapists, oral health promoters, dentists, researchers, policy analysts, managers, and others. The membership meets annually at the Hui-a-tau, which includes conference presentations and workshops.

For this research project, attendees of the February 2009 Hui-a-Tau in Ngaruawahia participated in a workshop on oral health research priorities. Members participated in an online survey in mid-2009, and several members contributed to the oral health research priorities workshop in Wellington.

Kōkiri Marae Seaview

Kōkiri Marae is a Ngā Hau e Wha urban based marae in Seaview, Lower Hutt. It offers a wide range of health and social health services. The Tū Kotahi Māori Asthma Trust and Nāku Ēnei Tamariki are two of the programmes that sit under the umbrella of Kōkiri Marae. Other programmes include anger management, aukati kai paipa, foster care, immunisation, injury prevention, kaitoko, kaumātua support, ngā tāne healthy lifestyles, nutrition and physical activity, Piki Te Ora health promotion, sexual and reproductive health, whānau ora, whānau support, and youth support.

> Further information on Kōkiri Marae can be found at **www.kokiri.org.nz**

Tū Kotahi Māori Asthma Trust was formed in 1995 as a result of feedback from whānau and Māori providers in the Wellington rohe and became the first Māori Asthma Society in New Zealand. The membership consisted of the Māori asthma providers and marae in the Wellington region. Set up specifically to meet the needs of Māori, the Trust provides education, support, advocacy and resources in asthma. Over the past five years Tū Kotahi has provided Kaupapa Māori Asthma Training to whānau in the Lower North Island. However some training has reached as far as the Chatham Islands.

Tū Kotahi Māori Asthma Trust facilitates a weekly support programme for whānau with chronic respiratory illnesses – Te Hā Oranga. The group generally caters for around 16 whānau with chronic obstructive pulmonary disease (COPD). Whanaungatanga is a strong feature of Te Hā Oranga, whose members weekly at Kōkiri Marae to share issues that impact their daily lives, take part in education sessions, exercise regimes, and to share healthy nutritious kai.

Nāku Ēnei Tamariki offers a range of programmes and services focused on supporting young Māori families and their tamariki. One programme is the

Parents as First Teachers (PAFT) Support Group which meets weekly to support young Māori mothers to strengthen their parenting skills. The PAFT support group is attended by approximately 10 young mothers and their babies.

For this research project, whānau from Te Hā Oranga and Nāku Ēnei Tamariki participated in focus groups and staff participated in an on-line survey.

Ngāti Pāhauwera Incorporated Society Hauora

Ngāti Pāhauwera Incorporated Society Hauora (the 'Hauora') is a rural Māori provider in northern Hawkes Bay, established in 1996. The region covered by the Hauora includes Raupunga, Mohaka, KoteMāori and surrounding areas, with the service being run out of a clinic in Raupunga. The Hauora is a central part of the Ngāti Pāhauwera vision of "Te Oranganui o Ngāti Pāhauwera – A Strong, Healthy, Vibrant and Prosperous Ngāti Pāhauwera". The Hauora's vision is "A sustainable, high quality, culturally appropriate, responsive health service for Ngāti Pāhauwera, now and into the future."

> For further information on Ngāti Pāhauwera Incorporated Society visit **www.ngatipahauwera.co.nz**

The Hauora provides a range of health education, health promotion, advocacy, liaison and co-ordination activities. Through whanaungatanga with neighbouring Māori Providers around Wairoa and Heretaunga the Hauora ensures that whānau have access to limited clinical services and Rongoā and Mirimiri services. The current plan, 'Maure mahi, mauri ora' aims to extend the service to include primary health and oral health care. The focus of the plan is on individuals and collectives being enabled to take responsibility for their health and wellness, with a particular focus on holistic care for people over their lifetime. The Hauora also recognises the important role it has in mediating health inequalities for Ngāti Pāhauwera and others living in the rohe.

The Hauora has five staff: a service manager, quality manager, kaimahi ora/administrator, rangatahi coordinator and a community worker.

For this project, community members participated in six focus groups, including one with kaumātua. Members of the society also contributed to research priority workshops in Wellington.

Wairoa Parents Support Group

The Wairoa Parents Support Group was formed five years ago as a result of a few parents who were committed to ensuring that the needs of Tamariki Hauā in this community were met. This volunteer group meets once a month and is supported by the Kahungunu Executive who provide the venue and staff to facilitate. This group has built positive relationships with disability support services both locally and nationally. These services are often invited to attend meetings where issues pertaining to their children's needs can be addressed with positive outcomes. The group is sometimes small – six to ten people – but does not let size determine outcomes.

For this project, members of the group participated in a focus group on oral health.

Rata Te Āwhina Trust

Rata Te Āwhina is the only Māori provider in the West Coast, and delivers health and social services, Kaupapa Māori. The whakapapa of the organisation derives from the Rata Branch, Māori Women's Welfare League, and their proactivity on health, social, housing, and employment issues over the last 20 years. Rata Te Āwhina Trust Board was formed in 2000 to enable the League to respond to service expansion and the requirements of increased government contracts. The Trust has a vision of "Growing future for whānau" "by providing holistic outreach services within Te Tai Poutini."

Rata Te Āwhina Trust provides a home-based, free service, including disease state management nursing, whānau ora, mobile primary health care, tamariki ora, mother and pepi, diabetes self management, smoking cessation, child carseat restraint, lifestyle education, and waka ama. Te Waka Hauora is a mobile screening/educative service which travels the length and breadth of the Coast. The Trust has a staff of 22, predominantly Māori, and has extensive networks in the whānau/hapū and the wider community of Te Tai Poutini.

For this project, 50 community members from throughout Te Tai Poutini participated in brief interviews on oral health.

> For further information on Rata Te Āwhina Trust visit **www.hop.org.nz**

Ora Toa Health Unit, Takapuwāhia.

Te Rūnanga o Toa Rangatira and Ora Toa Health Services

Established in 1989, Te Rūnanga o Toa Rangatira Incorporated is the iwi authority for Ngāti Toa Rangatira and administers iwi estates and assets. Health and social services are delivered by separate entities under the Rūnanga, and constitute the Ora Toa PHO which covers Porirua and Wellington. The PHO comprises Ora Toa Health Unit delivering community nursing and heath education services; Rangataua Mauriora providing primary mental health and addiction services and Tuakana, a CYFS contracted programme; Ora Toa Residential Disability Service; Ora Toa Oral Health Service and Ora Toa Medical Care Centres which operate in Cannons Creek, Mungavin, Takapuwāhia, and Wellington.

> For further information on Ora Toa Health Services visit **www.oratoa.co.nz**

The collective employs 102 staff. Its health and social services include GP services, practice nursing, podiatry (diabetic and general), health promotion and education, sexual health, specialist nursing (asthma, diabetes, respiratory diseases, cardio-vascular diseases, ante-natal, post-natal, maternity), Tamariki Ora/Well Child, whānau ora nursing, injury prevention, cervical and breast screening, immunisation, tobacco reduction, exercise and nutrition, youth and adult alcohol drugs service, problem gambling counselling, health promotion, general counselling, primary mental health, intellectual disability residential service, oral health, Tuakana (rangatahi mentoring), WaiTech (rangatahi development), and after school/holiday programmes.

The dental service was established in 2008 and has two dental chairs based in the Cannons Creek Medical and Dental Service.

For this project, members of the Ora Toa Diabetes Support Group participated in a focus group, staff participated in an online survey, provided key informant interviews, and contributed to the oral health research priorities workshops.

Alzheimers New Zealand

Alzheimers New Zealand is a support and advocacy organisation for people with dementia, their carers, family, whānau and community. Dementia is a neurological disease which affects memory, cognitive function, personality, emotion and quality of life. Support is provided through 23 local Alzheimers Societies. These organisations provide support, advice, information and access to local support services. They also give people a chance to meet others going through similar situations. Some local organisations offer day-care programmes, support and friendship groups for people affected by the disease, and memory management courses.

At a national level, Alzheimers New Zealand lobbies the government for better dementia-related support services and advocates for the best possible treatment of people with dementia in the community, in residential care and in the health system. Their vision is "for society to recognise, value and support people with dementia" while their mission is "to make life better for all people affected by dementia." This means working toward person-centred care and calling on people with dementia to influence the way care and support is developed in New Zealand's health and community care sector. At the same time, they aim to make life better for *all* people affected by the disease, which means supporting and educating people both people with dementia and their carers and families to make the right decisions through informed and supported choices.

> For more information, visit **www.alzheimers.org.nz** or call **0800 004 001**

For this project, whānau members from two Alzheimers Society local organisations participated in interviews about their oral health experiences, and staff from member organisations participated in a mail-out survey, and contributed to the oral health research priorities workshop in Wellington.

APPENDIX 2

This information sheet was developed for participants in this research project. It was then further developed for Alzheimers Society staff and their clients.

Alzheimers *New Zealand*

Information Sheet 3

DENTAL HEALTH
FOR PEOPLE WITH DEMENTIA

Many people with dementia cannot tell us about their discomfort or pain. It is up to whānau and carers to understand changes that may mean there are problems. These could be not eating, pulling at the face, refusing tooth brushing and/or other mouth care, refusing to wear dentures or other behaviours. It is important to remember that the mouth is a very personal space and kindness and good communication is needed to provide oral care. Every person with dementia needs a plan for the care of their mouth and teeth.

Common dental problems

- Saliva is important to keep the mouth healthy and to prevent tooth decay.
- Some medicines lead to a dry mouth.
- Some medicines are sugar based and can lead to tooth decay.
- Eating patterns can change – frequent small sugary snacks, sucking boiled lollies or drinking sugared tea can lead to tooth decay.
- Over time, it can get harder to brush teeth or look after false teeth.
- People can forget to carry out routine oral care.

Key tips for dental care

- Use fluoride toothpaste on natural teeth every day and preferably twice daily.
- Help with tooth brushing, flossing and looking after false teeth.
- Have a consistent routine for oral health care.
- Eat less sugar between meals.
- Visit a dentist regularly if possible.

Dry mouth

- People with dementia often suffer from a dry mouth.
- Help the person to drink plenty of water, or spray water gently into the mouth using a spray bottle. Artificial saliva products are also available.
- Some medications and products are available that may help. Talk to the doctor and dentist about these.

Visits to the dentist

- Regular check-ups are advised when and where possible.
- A thorough dental check should be done in the early stages of dementia where possible, and a long term flexible and simple preventive dental treatment plan developed.
- Before a dental visit, talk to the dentist or staff about the things that might make the visit easier. This could be reducing noise or the number of people around, sorting out transport issues, sedation or pre-medication needs and the timing of the visit.
- A whānau member or carer should be with the person during the visit to help.
- If eligible for public-funded care, contact the hospital closest to you to see if they have staff who specialise in the treatment of people with dementia.
- Tell dental professionals that they can contact their local Alzheimers organisation if they wish to discuss any issues or problems, as can whānau members and carers.

CARE OF NATURAL TEETH

Using fluoride and antimicrobials

- Use fluoride toothpaste every day, preferably twice a day for two minutes each time.
- Use a high-fluoride toothpaste if the local water supply is non-fluoridated and if the person has a high risk of dental decay - a dentist will be able to carry out a caries risk assessment.
- Use fluoride and antimicrobial mouth rinses or gels.
- Use these once a week - you can get these from the chemist or the local supermarket.
- Put fluoride and antimicrobial mouth rinses into a small spray bottle to gently spray onto teeth.
- Don't use fluorides and antimicrobials together – use one in the morning and the other at night.
- Talk to your dental professional about using these mouth rinses or gels.

Brushing teeth

- Use a small headed soft toothbrush.
- Store in a rack or uncovered container and rinse after use.
- Electric toothbrushes can be helpful - use the softest head available.
- Some people find it easier to copy another person who is cleaning their teeth.
- If brushing another person's teeth, first explain what you are about to do. It is important to clean the back teeth, front teeth and the tongue also.
- When tooth brushing, removing false teeth or, if able to floss another person's teeth, it may be easier to seat the person and stand in front or beside or behind – experiment to find what suits you and the person with dementia.

Sugar

- If sugar needs to be cut down artificial sweeteners may be appropriate - check this with their doctor.
- Use sugar-free snacks and drink water or drinks with reduced or no sugar.

DENTURE CARE (looking after false teeth)

- Rinse dentures after every meal and brush them using a toothbrush or denture brush.
- Place a clean soft cloth or a clean paper towel in the sink and fill it with a small amount of water when cleaning the dentures so that they will not crack if dropped.
- Dentures should be removed overnight and soaked in water. Cleaning tablets can be used but are not necessary. Physical cleaning is the key. They can also be cleaned professionally from time to time.
- A clinical dental technician or a dentist are able to assess dentures and replace them as necessary, they are also able to label dentures.
- Partial denture clasps can damage the mouth and tongue if caught and can be more difficult to remove than full dentures.
- In later stages of dementia, it may not be possible to wear dentures. Swab the mouth gently with water as well as you are able.

This information sheet has been developed as a resource for participants in the research project "Māori Oral Health Research Priorities" by the Eru Pōmare Māori Health Research Centre/Te Rōpū Rangahau Hauora a Eru Pōmare, University of Otago, Wellington.

The research was funded by the Ministry of Health and the Health Research Council of New Zealand.

Alzheimers New Zealand offers support, information, and education. For further information visit www.alzheimers.org.nz or contact your local Alzheimers New Zealand organisation. This information sheet is based on information provided by Alzheimer's Australia Dental Care Information sheet available at http://www.alzheimers.org.au/content.cfm?infopageid=4416, Vivien Quinn, previously a Dental Therapist and Dr Pauline Koopu, Public Health Dental Specialist.

TE HAUORA A-NIHO
TE HUNGA MATE PŌREWAREWA

Kāore e taea e te maha o ngā tāngata mate pōrewarewa te whakaatu i tō rātau auhi, mamae rānei. Ko te tikanga me mārama te whānau me ngā kaitiaki ki ngā āhuatanga e tohu ai kei te raruraru. Arā, ko te kore kai, te kukume i te kanohi, te whakakāhore i te parāhe niho me ētahi atu mea horoi waha, te whakakāhore i te mau niho kēhua, ētahi atu whanonga rānei. Me mātua maumahara he wāhanga tino whaiaro te waha, ā, e hiahiatia ana te ngākau atawhai me te āta kōrerorero hei āta tiaki i te waha. E hiahia ana ia tangata mate pōrewarewa i tētahi mahere hei tiaki i tōna waha me ōna niho.

Ngā raruraru hauora-ā-niho e kitea ana

- He mea nui te ware kia hauora ai te waha me te ārai i te pirau o te niho.
- Ka maroke te waha i ētahi rongoā.
- Ka rerekē te āhua o ngā kai – ka pirau ngā niho i te kai i ngā paramanawa whai huka auau, te ngote i ngā rare kōhua, te inu tī me te huka rānei.
- Ka roa te wā, ka uaua ake te parāhe niho, te tiaki rānei i ngā niho kēhua.
- Ka wareware anō i ētahi te tiaki auau i ō rātau niho.

Ngā kupu ako mō te tiaki niho

- Me whakamahi te pēniho pūkōwhai ki ō niho ia rā, ā, ko te mea pai kia rua ngā wā i te rā.
- Me āwhina ki te parāhe niho, te tuaina me te tiaki i ngā niho kēhua.
- Kia ōrite te mahi tiaki niho.
- Kia iti ake te kai huka i waenga kai.
- Me auau te kite i tētahi tākuta niho mēnā ka taea.

Waha maroke

- Ka maroke te waha o te tangata mate pōrewarewa.
- Me āwhina i a ia ki te inu wai, te āta tōrehu wai ki roto i te waha mā tētahi pātara tōrehu. E wātea anō ngā hua ware waihanga.
- E wātea anō ētahi rongoā me ngā hua hei āwhina. Me kōrero ki te tākuta, te tākuta niho rānei mō ēnei.

Ngā toro ki te tākuta niho

- E tūtohuhia ngā tirohanga auau ina taea ana.
- Me haere kia āta titirohia ngā niho i te pānga mai o te mate pōrewarewa ina taea ana, ā, me te waihanga i tētahi mahere tiaki niho taupā ngawari me te wā roa.
- I mua i tētahi toronga tākuta niho, me kōrero ki te tākuta niho, kaimahi rānei mō ngā mea hei whakamāmā i te toronga. Tērā pea ko te whakaiti i te hoihoi, te maha o ngā tāngata rānei, te whakarite i te waka, te whakarokiroki, ngā hiahia rongoā-tōmua rānei, me te wā o te toronga.
- Me whai wāhi tētahi o te whānau, tētahi kaitiaki rānei ki te taha o taua tangata i te wā o te toronga.
- Mēnā e whai wāhi ki ngā maimoatanga whaiutu-tūmatanui, me whakapā atu ki te hōhipera tūtata ki a koe ki te kite mēnā e whai kaimahi e matatau ana ki te whāwhā i te hunga pōrewarewa.
- Me kōrero atu ki ngā ngaio ā-niho mēnā ka taea e rātau te whakapā atu ki te Alzheimers Organisation tūtata mēnā e hiahia rātau ki te kōrero mō ētahi take, raruraru rānei, ā, ka taea anō te whānau, ngā kaitiaki hoki te whakapā atu anō.

TE TIAKI I NGĀ NIHO TŪTURU

Te whakamahi pūkōwhai me ngā antimicrobials

- Me whakamahi ngā pēniho pūkōwhai ia rā, kia rua ngā wā i te rā mō te rua mineti te mea pai.
- Me whakamahi ko te pēniho pūkōwhai-nui mēnā kāore he pūkōwhai i roto i te wai, ā, ka mutu mēnā e nui te mōrearea o te tangata ki te pirau niho – ka taea e te tākuta niho te whakahaere i tētahi aromatawai mōrearea.
- Me whakamahi ngā wai horoi waha, pia antimicrobial rānei.
- Ka whakamahi kia kotahi te wā i te wiki – ka taea ēnei te tiki i te toa rongoā, te hokomaha rānei.
- Raua atu ki tētahi pātara tōrehu iti hei tōrehu ki ngā niho.
- Kaua e whakamahi tahi i ngā pūkōwhai me ngā antimicrobial – whakamahia tētahi i te ata me tētahi atu i te pō.
- Me kōrero ki tō ngaio niho mō te whakamahi i ngā wai horoi waha, pia rānei.

Te parāhe niho

- Whakamahia tētahi parāhe niho paku te māhunga, ngohengohe hoki.
- Waiho ki tētahi whatanga, ki tētahi oko taupoki kore me te horoi i muri i te whakamahitanga.
- He pai ngā parāhe niho hiko – whakamahia te mahunga ngohengohe rawa.
- Ka māmā ki ētahi te whai i tētahi tangata kei te horoi i ōna niho.
- Mēnā kei te parāhe i ngā niho o tētahi, me whakamārama atu kei te aha koe. He mea nui tonu ki te horoi i ngā niho o muri, o mua me te arero hoki.
- Ina parāhe niho ana, te tango niho kēhua, te tuaina i ngā niho o tētahi rānei, he māmā ake pea te whakanoho i te tangata me te tū ki mua, ki te taha, ki muri rānei – me whakamātau kia tika ai ki tā kōrua ko te tangata pōrewarewa.

Huka

- Mēnā e hiahiatia ana kia whakaitia te kai huka, tērā pea he pai ngā āwenewene – me pātai ki te tākuta.
- Whakamahia ngā paramanawa kore huka, me ngā inu wai, ngā inu rānei he iti te huka, kāore rānei he huka.

HAUORA-Ā-NIHO (te tiaki niho kēhua)

- Me opeope ngā niho kēhua i muri i ia kai me te parāhe mā te parāhe niho, parāhe niho kēhua rānei.
- Raua he papanga ngohengohe ngāwari mā, he taora pepa mā rānei ki roto i te pūoto ka whakakī ki te wai iti ina horoi koe i ō niho kēhua kia kore ai e whati ki te taka i a koe.
- Ko te tikanga me tango ngā niho kēhua i te pō ka rūmakina ki te wai. He pai ngā pire whakamā engari ehara i te mea me tino āhei. Ko te āta horoi ā-ringa te mea nui. Ka taea anō te heri mā ngā ngaio anō e horoi i ētahi wā.
- Ka taea e tētahi kaitoi niho, tākuta niho rānei te arotake i ō niho kēhua me te whakakapi mēnā e tika ana, ka taea anō e rātau te whakapiri ingoa ki ngā niho kēhua.
- Ka taea e ngā wāhanga niho kēhua te tūkino i te waha me te arero mēnā ka mau ana, ā, ka uaua ake anō te tango tēnā i ngā niho kēhua tūturu.
- Ka roa ana te mate pōrewarewa, kāore pea e āhei te mau niho kēhua. Me āta ūkui te waha ki te wai ina taea e koe.

He mea waihanga tēnei pepa pārongo hei rauemi mō ngā tāngata o te kaupapa rangahau "Māori Oral Health Research Priorities", nā Te Rōpū Rangahau a Eru Pōmare, Te Whare Wānanga o Otāgo ki Te Whanga-Nui-a-Tara. Nā te Manatū Hauora me Te Kaunihera Rangahau Hauora o Aotearoa te pūtea.

E whakarato tautoko, pārongo me te mātauranga a Alzheimers New Zealand. Mō ētahi atu pārongo tirohia a www.alzheimers.org.nz, whakapā atu rānei ki tō Alzheimers New Zealand tūtata. Ko te pūtake o tēnei Pepa Àwhina nā ngā pārongo a te pepa pārongo a Alzheimer's Australia Dental Care e wātea ana i http://www.alzheimers.org.au/ content.cfm?infopageid=4416, Vivien Quinn, Haumanu Niho i ngā wā o mua, rāua ko Dr Pauline Koopu, Tākuta Niho Hauora Tūmatanui.

This information sheet provides a general summary only of the subject matter covered and is not a substitute for informed professional advice. Any person with dementia or a carer for a person with dementia should seek professional advice about any individual case. Alzheimers New Zealand Incorporated and/or its officers or employees shall not be liable for any error or omission in this publication, as a result of negligence or otherwise.

Alzheimers New Zealand has a range of information sheets and booklets available for people with dementia, their carers and families. Contact your local organisation for information and support on freephone 0800 004 001 and for more resources go to www.alzheimers.org.nz/resources

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APPENDIX 3
ICD codes for public hospitalisations

This appendix lists the ICD-9-CM (International Classification of Diseases) codes used for the analysis of public hospitalisations for oral diseases and injury in Chapters 4–6.

Cancer 140–146, 149, 160.2, 170.0, 170.1, 172.0, 173.0, 176.2, 171.0

Diseases of oral cavity, salivary glands, and jaws 520–529
- Teeth and gums 520–525
- Disorders of tooth development and eruption, embedded and impacted teeth 520
- Dental caries 521.0
- Periodontal diseases 523 (and not 523.6)
- Diseases of pulp and periapical tissues 522
- Diseases of the jaws 526
- Diseases of the salivary glands 527
- Diseases of the oral soft tissues, excluding lesions specific for gingiva and tongue 528
- Diseases of the tongue 529

Injury 802.2–802.5, 830, 848.1, 873.43, 873.53, 873.44, 873.54, 873.6, 873.7, 873.63, 873.73, 935.0, 941 (and 5th digit 3), 947.0
- Fracture jaw 802.2–802.5
- Dislocation of jaw 830
- Jaw sprains and strains 848.1
- Wound of lip 873.43, 873.53
- Wound of jaw 873.44, 873.54
- Wound of internal structures of mouth 873.6, 873.7
- Tooth (broken) 873.63, 873.73
- Foreign body in mouth 935.0
- Burn of lip 941 (and 5th digit 3)
- Burn of mouth and pharynx 947.0

Rārangi whakamārama
Glossary

Dental terms*

Calculus (or tartar): a rough, porous substance that forms when plaque is not disturbed by brushing and flossing. It can be supragingival (above the gumline) or subgingival (below the gum line). Calculus (particularly subgingival) is associated with periodontal disease. Its main detrimental effect is probably that it acts as a retention site for plaque and bacterial toxins (Mitchell & Mitchell 1991).

Caries: Caries is a process that can occur on any tooth surface where plaque is allowed to develop over time. Plaque is a community of bacteria attached to a surface that interact together and is metabolically active (a biofilm). When sugars are present, some bacteria can produce acid. If this occurs often enough, demineralisation of the tooth surface can occur. The acid is neutralized by saliva and mineral can be regained (remineralisation). Over time, the net result may be a loss of mineral and a carious lesion can form (Kidd 2005).

Some carious lesions can be arrested and become inactive. But some lesions progress through the enamel and into the dentine. This can result in bacterial invasion and death of the pulp, and spread infection into the periapical tissues (tissue at or around the tip of the root of the tooth) causing pain. Some bacteria (eg. mutans streptococci) are particularly associated with the initiation of the carious process (Kidd 2005).

The main ways of interrupting the caries process include limiting sugar intake and disturbing the plaque communities by toothbrushing and flossing. Fluoride helps stop the caries progressing. In some cases, chlorhexidine is used as an added measure (Kidd 2005).

Coronal: related to the crown of the tooth.

Crown: the portion of tooth covered by white enamel that is usually visible in the mouth.

Dental pulp: the centre part of the tooth that consists of blood vessels and nerves that enters the tooth from a hole at the bottom of the root.

* Definitions sourced and adapted from the New Zealand Dental Association website www.nzda.org.nz; Ministry of Health 2010a; and Kidd 2005.

Dentate: having one or more natural teeth.

Dentition: the set of natural teeth. The adult dentition comprises 32 teeth, while the primary dentition comprises 20 teeth.

Denture: a removable dental prosthesis that substitutes for missing natural teeth and **adjacent** tissues (false teeth).

DMFT: an index of dental caries experience measured by counting the number of decayed (D), missing (M) and filled (F) permanent teeth (T).

Edentulous: (*edentulism*, *edentate*) a state of complete loss of all natural teeth.

Enamel: the outer calcified tissue layer covering the crown of the tooth. It is one of the hardest substances in the body.

Erupted tooth: a tooth that has emerged through the gums into the mouth.

Fluoride: a naturally occurring trace mineral that helps repair the early stages of decay by replacing minerals lost on the surface of the teeth.

Functional dentition: the minimum number of teeth required to allow attributes such as eating comfortably and socialising without embarrassment. It is sometimes defined as having 21 or more natural teeth, although some people can function comfortably with fewer teeth.

Gingiva (gum): a the soft tissue covering the necks of the teeth. Gingivitis is an early stage of periodontal disease where the gums may become red, swollen and bleed easily.

Hyposalivation : reduced saliva flow.

Loss of attachment: the distance in millimetres measured from the edge of the enamel of a tooth to the gum tissue that is attached to its root. It is used as a measure of periodontal disease.

Orofacial pain: pain located in the face, jaw, temple, in front of the ear or in the ear.

Periapical tissue: the tissue at the root end of a tooth (at or around the apex of a root of a tooth).

Periodontitis: a disease of the gums caused by bacterial infection resulting from a build-up of dental plaque on the teeth. It is characterised by swelling and bleeding of the gums and loss of tissue that attaches the tooth to the jaw. As the bone and tissues surrounding the teeth deteriorate due to this disease, a gum pocket forms around the tooth. This pocket becomes infected, which destroys more bone and tissue. If left unchecked, the tooth eventually becomes loose and

falls out or needs to be extracted. If not removed carefully each day by brushing and flossing, plaque hardens into a rough, porous substance called calculus.

Periodontal pocket: a space below the gum line that exists between the root of a tooth and the gum surrounding that tooth.

Plaque: a film composed of bacteria and food debris that adheres to the tooth surface.

Root canal: a fine space inside the tooth that contains the dental pulp which consists of nerves and blood vessels.

Saliva and dry mouth: Saliva normally contains a high degree of calcium and phosphate ions and can remineralise the early stages of lesion formation, especially when fluoride is present. When there is reduced salivary flow (from certain medications for instance), food retention is increased and the absence of the buffering capacity of saliva means the acid environment lasts longer. This in turn encourages aciduric bacteria which continue to metabolise sugar and predisposes a site for caries. Extra care is required to protect the teeth and mucosa when there is reduced salivary flow (Kidd 2005).

People suffering from dry mouth are more susceptible to tooth decay, gum disease, bad breath and soft tissue irritation for denture wearers. Problems associated with dry mouth are difficulty in swallowing, sore throat, problems with speaking, problems tolerating dentures, ulceration, and increased risk of candidal infections (Kidd 2005; NZDA no date).

The most important causes of dry mouth and/or reduced saliva include radiotherapy in the region of the salivary glands, medications, and certain diseases or conditions. Medications that reduce salivary flow include anticholinergics, antidepressants, antiemetics, antihistamines, antihypertensives, antinauseants, antiparkinsonian drugs, antipsychotics, appetite suppressants, diuretics, expectorants, hypnotics, muscle relaxants, tranquilisers (Kidd 2005).

Other systemic causes include psychological factors, Sjögren's syndrome, hormonal changes (pregnancy, post-menopause), diabetes mellitus, dehydration, neurological diseases, pancreatic disturbance, liver disturbances, nutritional deficiencies, systemic lupus erythematosus, AIDS, duct calculi, smoking (Kidd 2005).

Ageing is not strongly associated with reduced salivary flow per se, although some experience a feeling of dryness even when salivary flow is normal (Kidd 2005).

Xerostomia: dry mouth caused by diminished or arrested saliva secretion.

Disability-related terms

Disability:

> Disability is not something individuals have. What individuals have are impairments. They may be physical, sensory, neurological, psychiatric, intellectual or other impairments. Disability is the process which happens when one group of people create barriers by designing a world only for their way of living, taking no account of the impairments other people have. (Ministry of Health 2001:7)

Disabling society:

> Barriers are created when we build a society that takes no account of the impairments other people have. Our society is built in a way that assumes we can all see signs, read directions, hear announcements, reach buttons, have the strength to open heavy doors and have stable moods and perceptions. (Ministry of Health 2001:7)

Eligibility for disability support:*

> A person with a disability is someone who has been assessed as having a physical, psychiatric, intellectual, sensory, or age related disability (or a combination of these) which is likely to continue for a minimum of six months and result in a reduction of independent function to the extent that ongoing support is required.

Functioning and disability:

> The term *functioning* refers to all body functions, activities and participation while *disability* is similarly an umbrella term for impairments, activity limitations and participation restrictions. (WHO 2002)

MODELS OF DISABILITY

The medical model of disability:

> The *medical model* views disability as a feature of the person, directly caused by disease, trauma or other health condition, which requires medical care provided in the form of individual treatment by professionals. Disability, on this model, calls for medical or other treatment or intervention, to 'correct' the problem with the individual. (WHO 2002:8)

The social model of disability:

> The *social model* of disability, on the other hand, sees disability as a socially created problem and not at all an attribute of an individual. On the social model, disability demands a political response, since the problem is created

* www.moh.govt.nz/moh.nsf/indexmh/disability-fundedservices-nasc-faq#five Accessed 4 March 2010

> by an unaccommodating physical environment brought about by attitudes and other features of the social environment. (WHO 2002:9)

The biopsychosocial model of disability:

> Disability is a complex phenomena that is both a problem at the level of a person's body, and a complex and primarily social phenomena. Disability is always an interaction between features of the person and features of the overall context in which the person lives, but some aspects of disability are almost entirely internal to the person, while another aspect is almost entirely external. This model is an integration of the medical and social models that brings together the biological, individual and social. (WHO 2002:9)

Special care dentistry: The British Society of Disability and Oral Health (BSDOH) describes 'special care dentistry' as having a focus on adults requiring special care to meet their needs, and concerned with:

> The improvement of oral health of individuals and groups in society, who have a physical, sensory, intellectual, mental, medical, emotional or social impairment or disability or, more often, a combination of a number of these factors. (BSDOH 2006:7)

Special needs:

> "Special needs" refers to people with intellectual or physical disability, or medical or psychiatric conditions, that increase their risk of oral health problems or increase the complexity of oral health care. (National Advisory Committee on Oral Health 2010:30)

Further examples of people with special needs are provided by the National Advisory Committee on Oral Health (2010:31), including people with substance use problems, psycho-social issues, people who are terminally ill, those with a blood-borne disease, or where oral health influences the outcome of other treatment such as heart surgery.

Pūtea Kōrero
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Oranga Waha

Oral health research priorities for Māori

Good oral health is not equally available to all citizens of Aotearoa. Dental services for adults remain largely outside the system of public subsidy for health care. Preventive, restorative, and rehabilitative dental care is available for the affluent but often unattainable for the less well-off.

A partnership — of academics, oral health professionals, community groups and Māori health service providers — have used a variety of approaches to develop a research agenda toward the right to good oral health for *all* Māori. The needs and aspirations of Māori adults with low incomes, kaumātua, and Māori with disabilities, special needs or chronic health conditions are prioritised in this report.

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Te Rōpū Rangahau Hauora a Eru Pōmare, the Eru Pōmare Māori Health Research Centre, is based at the University of Otago, Wellington. The kaupapa of the centre is to develop health research by Māori, for Māori, and to provide an environment where Māori can be trained in a variety of research techniques.

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