



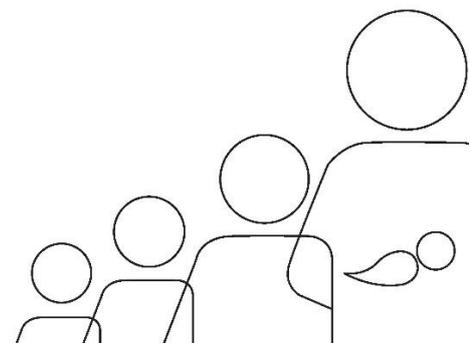
New Zealand Child and Youth
Epidemiology Service

Health and wellbeing of under-five year olds in the South Island 2017

Factors that influence inequity of oral
health in New Zealand and what we can
we do about them

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X. FACTORS THAT INFLUENCE INEQUITY OF ORAL HEALTH IN NEW ZEALAND AND WHAT WE CAN WE DO ABOUT THEM

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Oral health, quality of life, and social determinants of health

Dental caries and quality of life

Dental caries has been identified by the New Zealand (NZ) Ministry of Health (MoH) as the country's most prevalent chronic disease.¹ Dental diseases of the oral cavity include, but are not limited to, dental caries, developmental defects of enamel and/or dentine, dental erosion and periodontal disease.² Dental caries and periodontal disease are largely preventable and are currently considered significant global health burdens.^{2,3}

Dental caries involves the pathological destruction of tooth tissue by acids produced by cariogenic bacteria, and the progression of this disease can lead to pain and difficulty with eating, sleeping, and concentrating.² Dental caries is multifactorial, with contributing factors including not only the presence and number of cariogenic pathogens or dental anomalies, but also modifiable factors such as diet, poor oral hygiene, and drug and alcohol abuse. Periodontal diseases affect the gingival tissues (gums) and surrounding tooth-supporting structures, and are a major cause of tooth loss. Periodontal pathogens are primarily responsible for the presence of this disease, with a number of modifiable factors shown to contribute to its severity and progression.^{2,4} Many of the modifiable risk factors for both dental caries and periodontal disease are also implicated in other chronic diseases such as diabetes, heart disease, and obesity, and they are also inextricably linked to socio-economic deprivation.⁵⁻⁷

Children are born without the bacteria that cause tooth decay; these are likely to be acquired from direct transfer via the saliva of their primary caregiver. If a primary caregiver has high amounts of untreated dental caries, then there is a much greater risk of cariogenic bacteria being passed to their child's oral cavity, therefore placing them at greater risk of developing dental caries from an earlier age.^{8,9} Horizontal transmission of cariogenic bacteria between kindergarten children has also been demonstrated, and although the transmission rates are low, measures to disrupt this chain of infection from child to child are needed.¹⁰

Poor oral health impacts directly on many aspects of life, including nutrition, education, mental and physical well-being, and it has been directly linked to poor general health.^{2,3,11,12} Untreated dental caries can result in pain, acute and chronic infection. The appearance of untreated dental caries or lost teeth due to caries can be unsightly, resulting in stigmatisation, embarrassment, and low self-esteem. Both dental caries and periodontal disease cause halitosis (bad breath), impacting negatively on social and personal interactions, and potentially hindering employment opportunities.²

In 2016, the FDI World Dental Federation re-defined oral health as...

“... multi-faceted and includes the ability to speak, smile, smell, taste, touch, chew, swallow and convey a range of emotions through facial expressions with confidence and without pain, discomfort and disease of the craniofacial complex. Further attributes include that it is a fundamental component of health and physical and mental wellbeing. It exists along a continuum influenced by the values and attitudes of individuals and communities; [it] reflects the physiologic, social, and psychological attributes that are essential to quality of life; [it] is influenced by the individual's changing experiences, perceptions, expectations and ability to adapt to circumstances”.⁷

This new definition was designed to reflect a move away from the traditional bio-medical model of oral health towards embracing a broader bio-psychosocial model that considers both the impact of oral health on quality of life, and wider social determinants of health.⁷

Social determinants of health

Social determinants of health are the conditions that individuals have been born into, and are known to impact on their health and wellbeing. They include social class, income, educational opportunities, and the political environment.¹³⁻¹⁶ Socio-economic gradients in oral health are evident from a young age, and these gradients have been shown to widen in adulthood.^{14,17,18} To improve oral health inequities, it is necessary to address these social determinants of health in order to create a society where every child has an equal opportunity for good health, quality of life, success and wellbeing, regardless of what background they were born into.⁷

Deprivation and oral health

In New Zealand, government-funded dental care for adults (i.e. beyond the age of 18 years) is limited to emergency care only.¹⁹⁻²¹ For low- to middle-income adults, the costs of accessing necessary treatment is the most-reported barrier for not seeking dental care, with many reporting a sense of inevitability towards poor oral health.¹ The reality for many low socio-economic families is that dental treatment will no longer be free when their children turn 18 years of age, hence attending a dental clinic is likely to be unaffordable. There are often low oral health expectations within families, with generations having lost their teeth at a young age. Many such families accept this as 'the norm', with the possibility of retaining their teeth often considered an unattainable goal.²²

Dental caries in early childhood has been found to be a predictor of poor long-term oral health.^{23,24} The need for ongoing dental treatment as a child can lead to anxiety, fear, and avoidance of dental care as an adult.⁶ Many young children with high restorative needs may require treatment under general anaesthesia, and long waiting lists can result in an increase in hospital presentations for emergency interim care.²⁵

Ethnicity and oral health

In many countries, indigenous groups have experienced colonisation, discrimination, and marginalisation, resulting in poorer health outcomes, including mental and oral health.¹⁷

Discrimination towards ethnic minority groups is associated with poor mental health, including anxiety, depression, substance abuse, psychological distress and a poorer perception of their own health.^{17,26} There can also be a lack of confidence in an individual's ability to maintain general health, as well as good oral health, with a subsequent avoidance of many health care services.²⁶

A recent study by Jamieson et.al (2016) found that indigenous people across Australia, New Zealand and Canada were more likely to have untreated dental caries or extractions, and less likely to have had restorative treatment. This study highlighted that not only do indigenous populations have a disproportionately greater burden of oral disease, but also were less likely to have received appropriate treatment.¹⁷

In New Zealand, a disproportionate number of Māori experience poor oral and general health; however, this has not always been the case.^{13,26,27} In 1924, the Department of Health reported that European children had, on average, twice as many filled teeth as Māori children; but by the mid 1930s, this gap had closed, and the oral health status of Māori was declining.¹³ It is thought that one contributing factor of this change in oral health status, was that European colonisation resulted in the gradual change from a traditional to a more westernised diet.¹³

Health services in New Zealand were originally developed by non-Māori, and implemented a bio-medical model of health service delivery, with a primary focus on treatment of disease rather than maintaining the overall wellbeing of the person or their extended family.²⁶ Many traditions and practices that were valued by Māori were not considered under this system. Māori have a strong sense of whānau (family group), and the support of family members is considered as important as the treatment of the patient. This lack of consultation or consideration of the customs of Māori has led to a general distrust of health care services.¹⁷ As a result, many Māori avoided accessing services where they felt they may not be treated with the proper respect.¹⁷ The avoidance of health and oral health services resulted in a view that Māori did not care for their children or were irresponsible, and thus were often treated as such.¹³

For many Māori, poor oral health, pain, and subsequent tooth loss is considered inevitable.²⁶ While there is currently free dental care for children in New Zealand, many feel that once children attain the age of 18, treatment will be unaffordable; therefore, a belief exists that treatment only delays the inevitable. Having teeth removed if required can sometimes be considered kinder than going through treatment, and prevents the need for treatment later in life. There is also a perception by many that baby teeth are not important because they are going to fall out anyway.^{26,28}

Mental health and oral health

Anxiety, depression and addictions are all mental health disorders that can result from stressful experiences.²⁹ The symptoms of these conditions include reduced capacity to function, loss of motivation and low self-worth.^{13,15} People who are socially-disadvantaged, and from ethnic minority backgrounds, are more likely to suffer from poor mental health due to a greater exposure to unfavourable circumstances, and having less support mechanisms in place.^{29,30} Low security employment, and employment with low rewards have been shown to significantly affect a person's sense of worth and subsequent mental health.²⁹ The mental health of parents has been found to be a predictor of health outcomes for children, resulting in an inter-generational transfer of inequities. The risk, however, can be reduced by having good social and emotional support available to families who are struggling.²⁹ The Global Burden of Disease project has found that major depression is a leading cause of years lived with disability world-wide, with anxiety ranked 6th for women, and 11th for men.²⁹

Addiction and substance abuse can deprive families of their ability to function normally and provide the basic necessities of life, such as food, healthcare and a supportive family environment.³⁰ Good mental health is essential for health and wellbeing, and this includes oral health.²⁹

The 2016, the NZ Drug Harm Index reported approximately 388,000 illicit drug users in NZ, with 29,900 being recorded as dependent on these drugs.³⁰ Harm to the community included an increase in crime to fund drug habits, increase in unpredictable and sometimes violent behaviour, and increased suffering of friends and family of someone with a drug addiction. In 2014, the total cost to the community of illicit drug use in NZ was estimated at \$892.7 million, with \$437 million being attributed to harm to family and friends.³⁰

When children are born into homes with a member suffering mental health issues including anxiety, depression and addictions, there are multiple issues the family need to manage. Oral health can be a low priority as they struggle with the daily routine of functioning in society.²⁹

New Zealand oral health inequalities

The World Health Organization (WHO) defines health inequities as:

“...avoidable inequalities in health between groups of people within countries and between countries. These inequities arise from inequalities within and between societies. Social and economic conditions and their effects on people's lives determine their risk of illness and the actions taken to prevent them becoming ill or treat illness when it occurs”.³

Inequalities in oral health status within NZ are well-documented, with children and adults in areas of high deprivation and within ethnic minority groups are known to carry a significantly greater burden of disease.^{1,19,21}

The 2015/2016 New Zealand Health Survey identified that, after adjusting for age, sex and ethnic differences, adults living in the most socioeconomically-deprived areas were nearly twice as likely to only visit a dental clinic if they were experiencing dental problems when compared to adults in the least-deprived areas. Māori and Pasifika adults and adults living in the most-deprived neighbourhoods had poorer access to oral health services, and this was represented by poorer oral health outcomes, with 8% having had teeth removed in the past 12 months, compared with 6% of Māori and Pasifika adults in the least-deprived areas.³¹ This outcome was similar for children living in the most-deprived areas.³¹

Child and adolescent oral health in New Zealand

Data collection

NZ caries statistics are collected by Community Oral Health Service (COHS) dental therapists, after each child's first completed course of treatment at 5 years-of-age, and at the end of their last completed treatment in Year 8 (approximately 12-13 years of age). In NZ, it is usual for children to start school at the age of five, therefore this was an age where the majority of children could be accounted for. Year 8 is the last year that children are funded under the School Dental Service (SDS)/COHS agreement, as they are transferred to the Adolescent Oral Health Service scheme in year 9.

Year 8 data document the number of permanent teeth affected by dental decay in the mouth prior to children commencing secondary school. This is the age where many children can expect their deciduous teeth to exfoliate and permanent teeth to erupt; so, with the exception of the first permanent molars which erupt at six years of age, the permanent dentition is often newly erupted or not yet present.³² The caries-specific information collected is the number of 'decayed, missing or filled primary teeth (dmft) or permanent teeth (DMFT).³³

Oral health data

In 2013, the Ministry of Health (MoH) reported the mean dmft for 5-year-old children in NZ was 1.9. The District Health Board (DHB) with the highest mean dmft was Northland at 3.6, with only 34.2% of children having caries-free primary dentition. The lowest mean dmft was seen in the Southern DHB at 1.3; this area encompasses Otago and Southland, with 63% of children exhibiting caries-free primary dentition. For Year 8 data, the average DMFT for NZ was 1.1. The DHB reporting the highest mean DMFT was again Northland at 1.8, with only 45% of 12-13-year-old children being caries-free in the permanent dentition. Capital and Coast DHB had the lowest mean DMFT at 0.7, with 65.7% of children showing caries-free permanent dentition. Boys have been reported as having worse oral health outcomes than girls in both the primary and permanent dentition.^{1,34,35}

According to the 2009 New Zealand Oral Health Survey (NZOHS), approximately 50% of children aged between 2 and 17 years had experienced dental caries, and yet one in five had not visited a dental professional in the previous 12 months.¹ These statistics were similar to the key findings of the subsequent 2012/2013 NZ health survey, which also reported that one in four children (21%) in the 1-14 year age group had not seen a dental health professional in the previous 12 months.³⁴ Seven percent of children and adolescents had experienced toothache in the previous 12 months.¹, and, according to the NZ health survey, 30,000 New Zealand children (4%) had teeth removed due to dental caries, oral infection or gum disease in the previous 12 months.³⁴

In 2010, MoH dmft/DMFT data showed the percentage of Year 8 children who were caries-free was 53.3%, with a mean DMFT of 1.23. However, Māori children had worse oral health overall with only 40.9% having a caries-free mouth, and a mean DMFT of 1.89. These figures were similar for Pacific children with 42.9 % being caries-free and a mean DMFT of 1.67. By 2015, whilst the percentage of caries-free children had increased for all groups, the ethnic and socio-economic disparities remained.

Māori and Pacific children and adolescents have been identified as less likely to have visited a dental professional in the last 12 months than non-Māori and non-Pacific children and adolescents. Māori and Pacific children also had a significantly lower mean number of sound primary teeth than non-Māori, and were over twice as likely to have untreated dental caries in both their primary and permanent dentitions.¹ Children living in the most-deprived areas were almost six times as likely have had one or more primary tooth extractions due to caries than those children living in more privileged neighbourhoods.¹ Pacific children and adolescents were the least likely to have a caries-free dentition in their permanent teeth , and this was statistically significant.¹ Pacific children were also over twice as likely to have experienced pain in their teeth in the previous 12 months than non-Pacific children, and have higher rates of hospital admissions for dental issues compared with other ethnic groups.^{1,36} .

Social disadvantage

Adolescents who live in areas of high deprivation are less likely to be able to access dental care, more likely to live crowded homes, less likely to have breakfast , and more likely to be concerned about not having enough money for food.³⁵ According to the 2012 Youth '12 survey investigating the health and wellbeing of NZ secondary school children, over one third of Pacific youth reported someone sleeping in a garage or a living room.³⁷ In the year prior to completing the survey, 15% could not access dental care when required.³⁷

Māori are more likely to be socially and economically disadvantaged than non-Māori, with one in four reporting income levels in the lowest quintile, and living in areas of high socioeconomic deprivation.²⁸ Children born into low income families are more likely to leave school without formal qualifications, and subsequently are more likely to have low-income jobs, or be unemployed. Since 2009, Māori unemployment has risen to 14% compared to the total population which has only risen to 6.6 %.²⁸ In June 2010, Māori adolescents aged between 15 and 24 years of age had unemployment rates of 30%.²⁸ This is particularly significant, as free dental care is no longer be available after the age of 18.

Many Pacific peoples are generally more socially-disadvantaged with regard to education, income and housing, and this results in poorer general health and oral health outcomes.^{38,39} When looking at severe hardship, 27% of Pacific People living in NZ meet the criteria compared to 8% of the total population, with Pacific unemployment rates nearly twice the national unemployment rate.³⁹ Pacific people are more likely to live in overcrowded homes, and reside in neighbourhoods of high deprivation.^{37,39} Positive improvements and progress have been made in recent years, however, with an increased desire to achieve in education, and positive changes in sexual behaviours, substance abuse, and driving habits.³⁷ Pacific youth have reported improved life satisfaction, and while they felt they were less likely to get enough time with parents compared to their European counterparts, their families were more likely to have more quality time together.³⁷

Diet and nutrition

According to the New Zealand Health Survey 2015/2016, after adjusting for age and sex differences, Māori and Pacific children were less likely to eat breakfast at home each day than non-Māori and non-Pacific children.³¹ Seventy percent of children living in the most socioeconomically-deprived areas were less likely to eat breakfast compared to 90% of the children living in the least deprived areas. Seventeen percent of all children had consumed at least three fizzy (soft) drinks in the past week compared to 23% of Māori children and 31% of Pacific children. Children living in the most socioeconomically-deprived areas were 3.5 times more likely to have consumed at least three fizzy drinks in the past week than children living in the least deprived areas. Overall, 8% of children had eaten fast food at least three times in the last week, compared to 14% of children living in the most deprived areas, 17% Pacific children and 12% for Māori children.³¹ Pacific youth stated their parents worry about not having enough food, and their nutrition was recorded as unhealthy with high rates of obesity.³⁷

Tooth-brushing

It is recommended that children and adults brush their teeth twice a day with a toothpaste fluoridated at 1,000 ppm.⁴⁰ According to the 2009 National Oral Health Survey, 63.5% of NZ children and adolescents brush their teeth at least twice a day; however, only 43% used a fluoride toothpaste of 1,000 ppm or greater.¹ This may be due to the availability of 500-ppm toothpastes, and these being marketed as suitable for pre-school children, or due to a personal preference for toothpaste without fluoride. Boys were less likely than girls to brush their teeth twice a day, and Māori were less likely to brush at least twice a day compared to non-Māori. Children and adolescents living in the most deprived neighbourhoods were only about two-thirds as likely as those living in the least deprived neighbourhoods to brush their teeth at least twice a day.¹

Fluoride

Historically, children who live in fluoridated areas have been shown to have better oral health outcomes than those who do not, although inequalities still existed for Pacific and Māori children. According to the latest MoH 2016 data, dmft and caries-free status for all children residing in fluoridated areas compared to non-fluoridated areas were similar at age five, with a mean dmft of 1.8 for both groups, and the percentage of caries-free children at 59.8 and 59.6 respectively.⁴¹ When adjusting for ethnicity, however, a difference is apparent. Māori children residing in fluoridated areas had a lower mean dmft than those in non-fluoridated areas at 2.53 (44.1% caries-free) and 3.68 (38.6% caries-free) respectively. A similar difference was observed for Pacific children residing in fluoridated compared with non-fluoridated areas, with a mean dmft of 3.41 (34.6% caries-free) and 3.68 (32.6% caries-free).⁴¹

Year 8 MOH 2016 data showed that NZ children living in a fluoridated area had a mean DMFT of 0.8 (64.3% caries-free), compared with children residing in non-fluoridated areas who had an overall mean DMFT of 0.97 (60.6% caries-free). Māori children residing in a fluoridated areas had mean DMFT of 1.11 (55.5% caries-free). In non-fluoridated areas, 48.7% of Māori children were caries-free with a mean DMFT of 1.6. For Pacific children/adolescents living in fluoridated areas, 50.9% were caries-free with a mean DMFT of 1.25 ; in non-fluoridated 45.3% were caries-free with a mean DMFT 1.6 (same as for the Māori children) Again there was a greater negative impact on Pacific and Māori children.⁴¹ For Pacific and Māori children living in non-fluoridated areas, the percentage who were caries-free was less for than for the total number of children; however, only 601 Pacific children lived in non-fluoridated areas and this may have skewed the result.

Self-rated oral health

Just over 60% of NZ adolescents rated their oral health as excellent or very good, and over 70% of children aged 2 between 14 years felt their wellbeing was not affected by their oral health status.³⁵ Māori children were 1.4 times as likely to have reported fair or poor oral health for their self-rated oral health compared to non-Māori.³⁵

Emergency care and general anaesthesia

Many children in NZ are routinely treated successfully for dental caries by dental therapists in the COHS with or without the use of local anaesthesia (LA). There are, however, children who are unable to cope with dental treatment. This may be due to the child being very young, having high treatment requirements or severe oral infection, or suffering from dental anxiety. These children are often referred to hospital dental departments which are able to provide restorative treatment under general anaesthesia (GA).²⁵

In 2008, Lingard and colleagues prepared a report for the NZ Society of Hospital and Community Dentistry (NZSHCD) on the provision of dental care for children under GA.²⁵ This report disclosed that, once referrals were received, waiting lists for assessment were up to 8 months depending on the region in which the child resided, with the wait for treatment taking up to 12 months. This delay in receiving much-needed dental treatment contributed to an advanced progression of disease with ongoing intermittent pain and suffering for the child, and the requirement for more complex treatment or extractions. It was further reported that in NZ,

approximately 5,000 children were treated under GA for dental caries annually. Treatment under GA is not without its health risks and comes at a significant cost to the public healthcare system.²⁵

In 2014, Whyman et al. reported that in the 20-year period between 1990-2009, the national rate of preventable dental hospital admissions in NZ had increased nearly four-fold from 0.76 per 1,000 to 3 per 1,000.⁴² The rate of admission was highest in children aged 3-4 years, those living in areas of high deprivation, and Māori and Pacific people. The majority of those presenting with dental disease had complications arising from dental caries.⁴²

In 2016 nine in every 100 New Zealand 5–14-year-olds were hospitalised for dental conditions. Hospitalisation was usually only required when a child needed dental treatment under general anaesthesia, commonly but not always for tooth extraction.⁴³ Early childhood tooth decay is known as one of the most sensitive markers of economic stress on households.⁴³

Emotional wellbeing of adolescents

Overall, 92% of students reported feeling okay, satisfied or very happy with their life (94% of males and 90% of females).³⁵ This contradicts the finding deliberate self-harm was fairly common, with 29% of female and 18% of male students reporting deliberately self-harming themselves in the last 12 months. Six percent of the females and 2% male students had made a suicide attempt in last 12 months with 29% females and 10% males having serious thought about suicide.³⁵

Fifty-seven percent of students reported trying alcohol, and of these, 8% reported drinking alcohol weekly or more, and 23% had engaged in binge-drinking in the last four weeks. Current student drinkers described experiencing negative consequences such as unsafe sex, unwanted sex and injuries, and 11% had been advised by friends and family to reduce their drinking. Eleven percent of students questioned were smoking and, of these, 5 percent reported smoking weekly or more.³⁵

New Zealand oral health services for children and adolescents

New Zealand children and adolescents are able to access government funded free dental care until the age of 18, with the exception of orthodontic treatment which is not subsidised.

Community Oral Health Service (COHS)

Until recently, preschool, primary and intermediate-aged children in New Zealand accessed free dental care through the School Dental Service (SDS). This was a school-based service, with dental clinics in many public schools throughout NZ.⁴⁴ Dental therapists who worked in these school-based clinics provided dental education, prevention and treatment for a range of oral health conditions.

In 2006, the New Zealand Ministry of Health released its strategic vision for oral health in NZ 'Good Oral Health for All for Life'.⁴⁵ It had become apparent that the outdated buildings and equipment used within the SDS were no longer meeting the requirements of modern dentistry. Increased caseloads, the changing expectations of parents, and more complex treatment options had resulted in growing arrears and increased pressure on dental therapists employed within the service. Arrears is the term used by the SDS/COHS to determine the number of children who have not had a dental examination within 12 months, or had treatment completed within 14 months of their last dental visit. Nationally, the decline in caries prevalence appeared to have come to an end, with growing inequalities for Māori and Pacific children and those living in areas of high deprivation.^{18,24,45} A nationwide change in service delivery and an upgrade of facilities was subsequently undertaken, with school-based clinics being progressively decommissioned and replaced with a new community-based hub-and-spoke system that was renamed the Community Oral Health Service (COHS).⁴⁵ While publicly-funded services have played an important role in improving dental health for children in NZ, the indirect costs and psychological barriers associated with accessing care for many families still exist.^{12,45,46} With the COHS, high demand for publicly-funded services in some areas of New Zealand often results in recall delays for many high-risk children. This is apparent in areas of greatest deprivation, where multiple treatment needs place a heavy burden on services.²⁵

Combined Dental Agreement (CDA)

Adolescents from Year 9 (13-14 years of age) until their 18th birthday can enrol with a contracted private dentist and receive free dental care under the Adolescent Oral Health Service (AOHS) Combined Dental Agreement. Whilst the Community Oral Health Service provides enrolment information at the end of Year 8, adolescents can enrol directly with a contracted dentist.

Continuity of care for adolescents is problematic, as once children leave the COHS system, many do not seek enrolment with a contracting dentist. An investigation into the barriers of uptake of free adolescent dental care was undertaken by Nelson Marlborough District Health Board (NMDHB) in 2007/2008. Although no single factor was found to explain an adolescent's non-use of the dental service, a number of factors impacted to varying degrees, including the level of parent/caregiver education, gender, living situation (partnership or single) and ethnicity.

Accident Compensation Corporation (ACC)

Dental treatment needed due to injury or accident is funded for all people in New Zealand and managed through the ACC. Dental practitioners may part charge for dental services provided under this contract.

Privately-funded dental care

Parents of children and adolescents can elect to have private dental treatment from a registered dental profession or dental specialist.

'Health promotion' and assumptions?

Historically, oral health professionals have had a bio-medical focus on disease prevention, with health education often focusing on personal responsibility for health, and the need to maintain a healthy lifestyle that promotes good health and wellbeing. These oral health messages included information such as 'brush twice a day with a fluoridated toothpaste, avoid foods with sugar, have healthy snacks, floss, attend regular dental check-ups, and, if treatment is required, turn up to appointments'. These messages come from scientifically-sound sources, and those individuals who are able to embrace and make the necessary lifestyle changes often see positive results, with a measurable increase in good health and wellbeing. However, when patients continue to ignore professional advice, and present with increasingly worse oral health burden, many oral health professionals become increasingly frustrated. This can lead to patients being labelled as unintelligent, irresponsible or even negligent.¹³ This perspective however, overlooks the underlying complexities of a person's life, the reasons why they cannot make the changes that seem on the surface (to those of privilege) to be the easy, sensible and responsible choices.^{15,18}

Eat less sugar!

Currently in NZ, there is more awareness of the need for a healthy diet and to reduce sugar intake. This is because sugar has been found to be a key cause of dental caries, obesity, and obesity-related illnesses.^{47,48} For those living in areas of high deprivation however, this is not always possible. Healthy foods, such as dairy products, fruit, vegetables, and meat, are increasingly unaffordable to many low-income NZ families.^{37,48} Whilst dairy products have been shown to be beneficial for oral health, for many children, cheese and yoghurt remain a luxury, and not a staple part of their diets. Conversely, foods that have a lower nutritional value, such as carbonated drinks, sweets, crisps, and fish and chips appear affordable and are easily accessible. As a result, many individuals, including children from low income families are becoming obese, with diet-related illnesses and consequently poor oral health.^{47,48}

In 2005, a study by Wilson et al. investigated the marketing of fat and sugar to children on NZ television. They found that the majority of foods advertised on mainstream television channels were high in fat and/or sugar, with 70% of food-related advertisements being classified as "counter to improved nutrition".⁴⁷

For many families, being able to treat their children with nice things is a way to show love. For those in a more secure financial situation, this can be through buying branded clothing, dining at expensive restaurants, or going away on family holidays. Those with less money, however, are often not in a position to be able to reward, or show love to their children in this way. Lollies and sweet drinks are cheap, enjoyed by most children, and often a convenient way to reward their children.

Many schools offer canteens, with cheap foods low in nutrition and high in sugar or fat available on hand for children to purchase. Common food for sale includes pies, biscuits, sweets and soft drinks, which are popular choices for children who have become accustomed to, and enjoy, these food options.⁴⁹ For many families, it is an easier and cheaper alternative to going to the supermarket and purchasing healthy foods that are often expensive, and which may be wasted if not eaten. Unhealthy food choices are often considered 'nicer' by many children and there is peer pressure to be seen consuming these foods. This can result in the acquisition of unhealthy foods and drinks being seen as a status symbol by peer groups, with water and sandwiches being seen as not socially acceptable.^{49,50}

The availability of cheap, low-nutrition foods and drinks high in sugar and/or fat has been associated with a significant increase in the consumption of these foods. Children who use such canteens are less likely to consume the recommended servings of fruit and vegetables per day, and more likely to make unhealthy choices where healthy foods are available.^{49,51} In 2012, the Youth '12 survey of the health and wellbeing of NZ secondary school children identified that only 54% of NZ students in the study reported regularly having breakfast, and 39% of students usually purchased their lunch from shops or cafeterias.³⁵

Unfortunately, for schools in the most deprived areas, if families are struggling to afford foods high in nutrition, or if they do not have the skills or resources to prepare healthy lunches, then some children have no lunch at all if they do not receive support from school. Recently, a news item on the difference in school lunches between a Decile 1 vs a Decile 10 school in Auckland reported that in an unidentified Decile 10 school, all 19 children had eaten breakfast that morning, all had a nutritious lunch, and only four did not have fruit. Conversely, in an unidentified Decile 1 school, over half of the 26 children in the class had no lunch at all, and of those that did, many had only a biscuit or packet of chips. Only four out of 26 had a nutritious lunch, and only two had fruit.⁵²

Brush twice a day!

An assumption is often made that basic oral health messages, such as 'brush twice a day', 'use a fluoridated toothpaste' and 'use dental floss', are simple and that there is no excuse why this cannot be done. The availability of homecare preventive products is determined by income, and for those on a low income, paying the bills and/or feeding the family may be regarded as a higher priority than ensuring everyone in the household has a toothbrush or other homecare preventive products.¹⁴ There are many children in NZ who do not have a toothbrush, or toothpaste, and it has been reported that many children are sharing toothbrushes.⁴³

It's quite simple... just turn up to appointments!

The School Dental Service (SDS) was re-orientated in 2009 and evolved to become the Community Oral Health Service.⁴⁵ The introduction of modern, upgraded community-based clinics and mobile dental units replaced the older school-based clinics. This has resulted in both positive and negative outcomes for children.⁵³ Under the SDS, many children could access their dental treatment from their school-based clinical services. Parents were not required to attend their child's appointment unless they wished to. On the other hand, parents are now required to attend their child's dental appointments at COHS hubs or mobile clinics. This enables them to be more involved in their children's oral health care, allowing for treatment plans to be fully explained and oral health education to be provided.^{45,53} However, for many parents, it may be difficult to take time off work for to attend such appointments, and because it is often those on lower incomes who have a greater burden of disease, the number of appointments they need to attend with their children is often greater than those children from middle- to high-income families.^{19,21}

Transport has also been identified as a barrier. Many families may not have a personal vehicle, therefore to attend a clinic, they may need to walk or use public transport to get to appointments, and when there are multiple appointments, this can be time-consuming and inconvenient.¹³ If children are not complaining of pain, it may be seen as a burden to attend multiple appointments. In addition, if children are not coping with treatment, attending appointments can be distressing for both parent and child, and many may choose to avoid appointments.

Many of those who are most deprived, thus bearing the greatest burden of disease, are often transient, making it difficult for health workers to contact them to ensure that they are receiving the care that they need.²¹

Dental decay has modifiable risk factors, and parents may feel they are being blamed for their children's oral health.¹³ This can result in avoidance of the clinic, particularly if they have been reprimanded by the oral health professional in the past. Being advised that they give their children too many lollies, that they should not give them sweet drinks, or need to turn up to appointments, are common messages given to parents, and often lead to a feeling of shame and subsequent avoidance of the clinic. If parents themselves had high treatment needs as children, they may be fearful of the dental environment, and would choose not to put their children through the same ordeal.

When dental treatment has been avoided, by the time the child is in pain (and thereby parents have no option but to seek help), the child may already have extensive dental treatment needs that are more complicated. If the children are unable to cope with treatment in the clinic, a referral can be made for treatment under general anaesthesia. The waiting list for this care ranges from 6 months to 2 years depending on where they reside in NZ.²⁵

Prevention

Water fluoridation

Fluoride works both systemically and topically to prevent and repair early carious lesions. The MoH promotes the addition of fluoride to drinking water and recommends that the fluoride content should be maintained in the range of 0.7 to 1.0mg/L for oral health reasons. The Code of Practice for Fluoridation of Drinking-water Supplies in New Zealand (2014) specifies the optimum fluoride levels, design standards and fluoridation monitoring requirements.⁵⁴

The Health (Fluoridation of Drinking Water) Amendment Bill has progressed to its second reading. A change recommended by this bill is to give DHBs the power to direct which water supplies should be fluoridated. DHB's mandated to "improve, promote and protect the health of people and communities and to reduce health outcome disparities between various population groups".⁵⁵ The rationale to remove the decision to fluoridate or not fluoridate water supplies from local authorities, was because although responsible for providing local infrastructure and water supplies, they are not experts in health.⁵⁵

Health promotion initiatives

The WHO Ottawa Charter for health promotion has developed five action areas that are necessary for reducing inequalities.⁵⁶ These action areas include implementing healthy public policy, creating supportive environments, strengthening community action, developing personal skills and reorienting health services towards prevention of illness and promotion of health. There have been many interventions initiated by government agencies, private businesses, and charitable groups within New Zealand, aimed at improving health and reducing inequities.

Nutrition labels on foods

Nutrition labels on foods have enabled consumers to assess the nutritional value of the food that they are purchasing. While this has helped many to make educated decisions regarding food choices, a study by Signal et al. (2008) found that Māori, Pacific and low-income New Zealanders rarely used these nutrition labels to assist them with their choices. One reason cited was the difficulty in interpreting the information on the labels, and the time needed to try and understand the information, and another was the number of low-cost foods that did not have nutrition labels. This has led the authors to conclude that the current labels are not meeting the needs of those at risk in our society.⁵⁷

Heart Foundation Tick

In 1991, the New Zealand Heart Foundation produced national recommendations for the consumption of sugar and fat, to promote good health.⁵⁸ A Heart Foundation 'Tick' was placed on many food and drink items that contained less than 10 grams of fat and/or sugar. To be included in this scheme, companies were required to pay a fee to have their products assessed for suitability.⁵⁸ This led to some concerns that companies were able to 'buy' their 'Tick' status, potentially creating a conflict of interest when considering foods to recommend. Despite this, the system was easy for all to understand, and the programme has been credited with encouraging food production companies to lower their fat, salt and sugar content, and make consumers more aware of what they are purchasing. The Heart Foundation has advised that they are no longer accepting new foods into this programme, and that the programme will be discontinued in December 2018.⁵⁹

Adolescent oral health service enrolment

Utilisation of adolescent oral health services data is available from the MoH website, although attendance, caries-free status and DMFT data is not. In 2011, the average utilisation of adolescent oral health services across DHBs was 71.6%, with figures ranging from 59.4% in Northland to 91.4% in South Canterbury.⁶⁰ In 2007-2008, the Nelson Marlborough DHB conducted a study to identify parental barriers to uptake of free adolescent dental care for Year 11 students in the Nelson/Tasman region. Parental education, gender and ethnicity was found to be a determinant of adolescent dental attendance.⁶¹ The Nelson Marlborough DHB established an enrolment initiative aimed at improving the enrolment and attendance of young people at free adolescent oral health services, and developing environments that are supportive of good oral health. This programme involved liaison with enrolled adolescent dental providers, and distribution of enrolment packs to all Year 8 students through various means, such as secondary schools, youth agencies and Work and Income NZ (WINZ), following up with all parents who did not complete and return enrolment forms. A Freephone telephone number was promoted, and health promotions were developed collaboratively with secondary school health co-ordinators.⁶¹ Similar programmes have been developed in other DHBs and are adapted to suit the services available in their areas.⁶¹ Recent data to determine the success of these interventions are not currently available

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on the MoH website, although according to 2011 data, DHBs were reporting an increase in adolescent oral health service utilisation.⁶⁰

Health-promoting schools

The purpose of Health-Promoting Schools (HPS) is to “...improve equity, whānau wellbeing, and educational outcomes through evidence-informed practice”.⁶² This approach is different to health promotion (HP) in schools, as HPS is a community led development, while HP in schools is driven by a health provider.⁶³ In the 1980s, the World Health Organization recognised the capacity of schools to provide a healthy environment for children, and subsequently developed the health promoting schools initiative. This initiative adopted the principles of the Ottawa charter for health promotion and considered the greater determinants of health, including physical, mental, emotional, social and spiritual wellbeing.⁶⁴ In 1997, this approach was trialled in Auckland and Northland schools, and subsequently expanded nationwide. By 2009, 67% of New Zealand schools had chosen to be included in this programme, which is linked to ‘Healthy Families’, and supported by contractors of the Ministry of Health, such as DHBs and public health units. A 2015 Cochrane collaboration systematic review and meta-analysis on HPSs found positive average intervention effects when looking at body mass index (BMI), physical activity, physical fitness, fruit and vegetable intake, tobacco use, and being bullied.⁶⁵

HPS cover many areas of health, including food and nutrition, physical activity, whānau engagement and agency, student achievement, student engagement and agency, mental health, body care and physical safety, physical health, student attendance, student wellbeing, positive behaviours for learning, puberty and community engagement.⁶³ A 2016 evaluation of HPS identified that 61% of school community respondents felt there had been an increase in knowledge and awareness, 36% reported new practices that had an impact, and 33% felt there had been a shift in attitudes. Investigators now recommend focusing on long term shifts in behaviour and practice.⁶³ In 2015, there were fifty ‘Equity’ workshops nationwide for school communities. These workshops were found to be very effective, with 73% of attendees identifying an action area to address inequities within their school community. However, these workshops needed to be promoted more effectively to increase awareness, as only 4 out of 10 schools were aware of them.⁶³ Seventy-one percent of respondents reported recommending HPS to others, and having an active HPS facilitator that works closely with the school was identified as an important key to continued motivation and commitment to implementing and improving the health and wellbeing of their school.⁶³

Tooth-brushing and topical fluoride interventions

Many DHBs have been implementing tooth-brushing, behaviour intervention, and topical fluoride programmes in schools to try and prevent and/or remineralise carious lesions. Due to a previous lack of evaluation in New Zealand HP projects, it is unclear how effective these preventive programmes have been.

A 2003 Cochrane collaboration systematic review on the effect of primary school-based behaviour interventions identified 1518 possible studies worldwide; however, only four were sufficiently relevant and of significant quality to be included in the review. One study reported a reduction in dental caries for children who received a behaviour intervention, and three studies reported improved dental plaque control. The authors of the review concluded that more high-quality research was needed to confirm these findings.⁶⁶

In 2016, another Cochrane collaboration systematic review investigated the use of fluoride mouth rinses for preventing dental caries in children and adolescents.⁶⁷ Thirty-seven trials were included, and all had provided a supervised fluoride-containing mouth rinse intervention in a school setting. This review found a significant reduction in dental caries increment for the permanent dentition.⁶⁷

A review on maternal fluoride supplementation during pregnancy showed no evidence that fluoride supplements were effective in preventing dental caries in their children.⁶⁸

The “Fruit in Schools” programme

The “Fruit in Schools” programme is funded by the NZ Ministry of Health, and managed by the fresh produce company ‘United Fresh’. The initiative was in response to the 2002 Child Nutrition Survey, where it was reported that only 43% of NZ school children consumed the recommended two pieces of fruit per day.⁶⁹ Decile 1 and Decile 2 primary and intermediate schools in NZ are eligible for this programme, which provides a piece of fresh produce every day for each child in the school. As of 2008, approximately 470 schools across NZ were involved.⁷⁰ An evaluation of this programme in 2015 found that, for many of these low-decile schools, principals had reported that children coming to school hungry or with little (if any lunch) had been a significant issue for them. As a result of the ‘Fruit in Schools’ initiative, 85% of principals felt their school had fewer hungry children, and 80% reported that children were more willing to ask for food if they were hungry.⁷¹

Increased concentration by children during classes was reported by 74% of principals and that this was contributing to improved learning, reduced behavioural problems, and improved attendance.⁷¹ All principals who had participated in the programme felt that the 'Fruit in Schools' programme had increased awareness among staff and students of the importance of healthy eating, resulting in a positive attitude towards eating fruit and vegetables for pupils.⁷¹

Milk in schools

'Milk in schools' is an initiative aimed at increasing nutrition and dairy products for children. From 1937 until 1967, milk was supplied to the majority of NZ primary school children. However, due to the lack of adequate refrigeration, this initiative was received with mixed acceptance by school children, especially those who did not like drinking warm milk.⁷² This scheme was revived by Fonterra in 2013 following a successful trial in Northland in 2012. Currently, 70% of NZ primary schools are participating in this programme, with approximately 10,500 farmers contributing to the Fonterra milk for schools annually.⁷³ Calcium and phosphate has been identified as beneficial for both bone and tooth health, and a study by Massey University recently reported significantly improved bone health when comparing children who attended a school who participated in the milk in schools programme, compared to those who did not.⁷⁴ While milk naturally contains lactose, a sugar that is moderately cariogenic, milk also contains factors which are anti-cariogenic, such as calcium and phosphate; therefore, milk without added sugars is effectively non-cariogenic.⁷⁵ The calcium and phosphate content of dairy products is protective, and dental preventive products have been developed that contain casein phosphor peptide-amorphous calcium phosphate (CPP-ACP), e.g. 'Tooth Mousse'.^{76,77}

KickStart Breakfast Club

In 2009, Fonterra partnered with Sanitarium to provide Weet-bix™ and milk to all NZ schools regardless of decile rating. The aim of this intervention was to ensure every NZ school child had access to a nutritious breakfast. The programme initially provided breakfast for two days per week; however, in 2013 the NZ government provided funding to the programme which enabled breakfast to be provided to the school children every day. There are currently over 900 schools that offer the KickStart Breakfast Club, with participating schools reporting that children have more energy, are consuming less junk food at morning teatime, and are better able to concentrate during lessons.⁷⁸

Kids Can

Kids Can is a charitable trust that was set up in 2005 to help reduce inequities in learning for disadvantaged NZ children, ensuring equal opportunity for health and education, with the aim of breaking the cycle of poverty.⁷⁹ The Trust identified that many children did not have suitable wet weather clothing or shoes, resulting in problems with attendance, and many were going to school hungry. Two programmes were introduced in 2006, 'Raincoats for Kids', and 'Food for Kids'. A third programme, 'Shoes for Kids', was implemented in 2007.⁷⁹ The Kids Can Trust currently supports children from 700 low-decile schools across NZ, and are careful to ensure that products are distributed in a way that does not cause stigmatisation for the recipients. An independent review by Massey University in 2010 found that schools varied in how the food was made available to children, with some providing children with complete meals, and others only topping up school lunches.⁷⁹ Most schools indicated that they were following up with families of children who frequently required food, and making referrals to support services where appropriate.⁷⁹

Recommendations

Water Fluoridation

Regulate fluoride levels in NZ water supplies according to MoH recommendations of between 0.7 and 1.00mg/L.

Learn from other successful interventions

One health behaviour that has been successfully modified through adopting the recommendations of the Ottawa Charter is smoking. The Smokefree Environment Act of 1990 was devised to regulate smoke-free areas, marketing and advertising of tobacco products.⁸⁰ According to the 2012/2013 Tobacco Use Health Survey, in 1996/1997, 25% of the adult population reported being current smokers, and by 2012/2013 this rate had dropped to 18%, equating to a reduction of around 600,000 people.⁸¹ Much can be learned from anti-smoking initiatives, with particular acknowledgment of the need for change at a policy level.^{80,82} There has also been an increase in taxation on tobacco-based products, and a commitment by the NZ Government to have a smoke free NZ by 2025.

Create healthy public policy and supportive environments

To encourage the creation of supportive environments, an upstream approach that looks at building a healthy public policy is imperative. Legislation that makes the healthy choice the easy, affordable and natural choice is needed to reduce inequities not only in oral health, but also many other health conditions with modifiable risk factors, such as heart disease, obesity and mental health.⁸³

There is a need for a nationwide change in public policy that aims to make healthy foods affordable for all New Zealanders, regardless of socio-economic status. Instigating a tax on unhealthy foods, and using the revenue to subsidise healthy foods would help make the healthy choice the affordable choice. The World Health Organization has recommended taxation on sugar sweetened beverages to reduce consumption and reduce dental caries.⁸⁴

Many DHBs are now leading by example, and creating healthy policies that limit the sale of soft drinks in hospitals, with Nelson Marlborough being the first DHB to also extend this to include artificially-sweetened beverages, smoothies and juices.⁸⁵

Many facilities that provide care for children, such as schools, child-care centres and holiday programmes, are also introducing general healthy food policies that promote a healthy environment for the children in their care. Policies that restrict what can be sold in school canteens can encourage healthy choices by having healthy alternatives that are appealing and affordable.⁴⁹

Many schools have healthy food policies that restrict what is allowed in school lunches, and promote that drink bottles should contain only water. The aim being to establish an environment whereby eating healthy foods become the norm, where no one is allowed to eat junk food at school, and therefore the healthy choice becomes the only choice.⁴⁹ At present, however, the creation of, and adherence to, such policies by these facilities is voluntary. For those facilities who do not promote and create healthy food policies in schools, it usually takes public pressure from within the communities or a ‘champion of the cause’ to effect change.⁸⁶ An upstream approach from the NZ Government would ensure consistency in practice, ensuring that regardless of what school or care facility a child attends, they will have equal access to an environment that promotes health and wellbeing.

Empower through positive health education and promotion

Reassess the delivery of one-on-one health education in a clinical setting, to encourage positive reinforcement, and create a welcoming and non-judgemental environment. Focus on finding areas that families are doing well, and deliver information in a way that educates, but does not blame or dictate. Provide additional training to staff on positive communication and effective delivery of health information.

Aim to provide education to groups, as messages can be received by large numbers of people at once, and are less likely to be taken personally. Participate in local and national events such as ‘World Oral Health Day’, and the ‘International Science Festival’.

Create innovative approaches to delivering information. Include fun activities, encourage participation, and create a new and exciting profile for oral health. The University of Otago, Faculty of Dentistry currently has two interactive and fun programmes for children; the “Dental Detectives” programme, and the ‘Otago Participatory Science Platform’ initiative “Sugar in your diet Kino Te Pai”.⁸⁷ Both programmes provide interactive activities for children, including (but not limited to) pH testing, placing fissure sealants on plastic tooth models, taking impressions and making animal tooth models, working with mirrors, and tooth identification. The science preparatory platform initiative is currently being evaluated with results due in 2018.⁸⁷

The modifiable risk factors and social determinants of health that affect oral health, are often the same or similar for many other areas of health. Consider ‘joining forces’ with other health professionals when formulating health promotion activities, sharing resources and staff time. Work with HPS to ensure that oral health is seen and considered as part of overall health.

There is a need to increase the profile of oral health and create positive health messages that highlight the benefits of good oral health in relation to general health and quality of life. Increase fun and informative advertising on healthy choices that benefit the public in a wide range of health conditions that include oral health. Television advertising could be considered as a joint initiative that includes various health professions, thereby limiting costs to an individual discipline.

Treat the whole family

It is important to address the oral health of the whole family rather than just individual members. However, this is not routinely funded in NZ. It is well-known that poor oral health status of the mother, and poor self-rated oral health, is associated with the subsequent oral health status of the child.¹⁸ While the COHS has helped minimise equity disparities, these inequalities are seen to widen again once dental care is no longer free.⁸⁸ Therefore, there is a need to not only look after the child, but also the whole family.

Māori recommend embracing a 'Whānau Ora' approach, which advocates an oral health service that provides and cares for all members of the family, regardless of age. The reorientation of the SDS to the COHS in 2009 was seen by Māori as a missed opportunity to incorporate such a system.⁵³

Māori identified the need for a health system that has a high focus on disease prevention across many integrated health professions and sectors, caring for all family members, not just those who are under 18.⁸⁹ The health and wellbeing of extended whānau is considered vital to ensure the health and well-being of the child. Many areas of NZ now have Māori Oral Health services that are interlinked with mainstream health services. These services are designed to meet the needs of Māori and embrace a Whānau Ora approach, with Māori beliefs and values being the primary focus.^{13,26,89} The system focuses on services being accessible to all, including those living in rural areas.⁸⁹ These services receive additional funding to provide oral health care to parents and caregivers.⁸⁹ Whilst much of the literature on Māori oral health research focuses predominantly on the negative effects of poor oral health, and how this affects Māori, there is also a need for research that examines the positive effects of improved oral health, for example, investigating and publishing the benefits of the Whānau Ora approach (Taskforce on Whānau-centred Initiatives 2010).

Identify healthy food choices

There is a window of opportunity for a new Ministry of Health-led system that enables all people to easily identify healthy food choices to be formulated and initiated prior to the end of the 'Heart Foundation Tick' programme. Ultimately, a collaborative multi-disciplinary working party that can create nationwide guidelines that consider many modifiable diseases impacted by poor diet would be helpful, and result in an overarching trustworthy guideline for the public. An easily-recognisable image, analogous to the Heart Foundation's 'Tick', would be an easy way for the whole population to identify which foods are healthier. This could also be a way of identifying which foods should be subsidised, and which ones are not conducive to health (i.e. those possibly targeted for taxation). This same multi-disciplinary working party could also look at other initiatives, such as warning labels for foods that contain more than the recommended amount of sugar and fat, and pictures that depict poor health, such as the ones used on packaging of tobacco products.

Work collaboratively

Since 2013, DHBs have been required to detail and record their health promotion interactions with schools. The purpose of this is to (i) enable these interactions to be documented, (ii) assess how well the HPS service is being delivered, and (iii) identify areas for improvement.⁶³ However, oral health has not been included in this requirement, and this omission will lead to the segregation and isolation of oral health from general health. Oral health reflects general health - it is the window for body health.

Children who experience the greatest oral health burdens are often represented disproportionately in other areas of health as well. It is important to identify these families, as they will often be known to different support services. At a DHB level, multi-disciplinary teams, including oral health workers, school principals, public health nurses, social workers, Pasifika and Māori community leaders could help to identify and work with those most in need. Plans can then be put in place to support those who are not coping, and identify how to best ensure that these children and their families receive the support that they need.

DHB's could consider conducting verifiable Continued Professional Development (CPD) sessions involving Inter-professional Education (IPE), with professionals from various areas of health all sharing information on the health and wellbeing of children.⁹⁰ Increased knowledge can result in increased confidence to then provide health information that is not directly in a health professional's field of expertise. In Otago and Southland, some general practice nurses are already offering oral health advice to families, and many indicated that, if appropriate training and resources were available, they would be happy to provide this.⁹¹

Support community initiatives

There is a need to support communities who wish to build a sense of community and promote health and wellbeing. These include many projects such as community gardens, events, and focused community groups. Many initiatives need to be community-led for them to be effective. Finding a champion within the community

that is passionate about the cause is a way that change can come from within. Work with communities, to help them to achieve their goals and feel empowered to make their own changes. Provide information as required, but allow communities to formulate initiatives that they feel will work best for their people.

Evaluate existing public health initiatives

Data is collected for many existing health promotion programmes, however there is a need for this data to be analysed and results subsequently published, to enable effective evaluation of various interventions in NZ. Publishing results can provide quality evidence to inform the direction for future health promotion programmes.

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