PROTECTION OF AUTHOR’S COPYRIGHT

This copy has been supplied by the Library of the University of Otago on the understanding that the following conditions will be observed:

1. To comply with s56 of the Copyright Act 1994 [NZ], this thesis copy must only be used for the purposes of research or private study.

2. The author's permission must be obtained before any material in the thesis is reproduced, unless such reproduction falls within the fair dealing guidelines of the Copyright Act 1994. Due acknowledgement must be made to the author in any citation.

3. No further copies may be made without the permission of the Librarian of the University of Otago.
Oral Health Care Protocols and Practices in New Zealand Rest Homes and Long Term Care Facilities.

Andrea Eileen Kelsen


August 2010
ACKNOWLEDGEMENTS

I would like to acknowledge Taranaki District Health Board and in particular my HOD Mr Peter Liston for the generous support and encouragement I have received over the period of my Clinical Doctorate.

Professors Murray Thomson and Robert Love for their guidance and valuable input as supervisors for this research project, along with Mrs Eithne MacFadyen for her extensive insight and background knowledge of this topic.

I would like to thank Assistant Professor Barbara Smith from the Michigan School of Dentistry for providing me with their original survey questionnaire. This allowed adaptation of an already tested document to the New Zealand system, without having to develop a format from scratch, and was invaluable.

The Taranaki District Health Board Trust, New Zealand Dental Association Ministry of Health Research Fund, the Otago Research Committee Fuller Scholarship and Mr Alan Melody at New Plymouth Pac ‘n Save for their generous assistance and financial support.

Finally I would like to thank, Nat, Steve, Penny, Tanya for their input, my husband Paul for his support and assistance and my sister Clare for her assistance and time over the past 3 years.
# TABLE OF CONTENTS

**ACKNOWLEDGEMENTS** ....................................................................................... 4

**TABLE OF CONTENTS** ........................................................................................ 5

**LIST OF TABLES** ...................................................................................................... 7

**LIST OF FIGURES** .................................................................................................... 8

**ABBREVIATIONS** ..................................................................................................... 9

**ABSTRACT** ............................................................................................................. 10

1. **INTRODUCTION** ............................................................................................. 12  
   1.1 BACKGROUND ................................................................................................... 12  
   1.2 LIFE EXPECTANCY ............................................................................................. 12  
   1.3 DISABILITIES ..................................................................................................... 13  
   1.4 EFFECTS OF POOR ORAL HEALTH ON QUALITY OF LIFE ........................ 15  
   1.5 RETENTION OF TEETH ....................................................................................... 19  
   1.6 BARRIERS TO THE PROVISION OF CARE .............................................................. 20  
   1.7 POLICIES VERSUS PROTOCOLS ........................................................................... 21

2. **LITERATURE REVIEW** .................................................................................... 25  
   2.1 GREATER RETENTION OF TEETH IN A CARIES-ACTIVE AGE GROUP .......... 25  
   2.1.1 Xerostomia and its affect on the dentition ................................................ 26  
   2.2 BARRIERS TO PROVISION OF ORAL HEALTH CARE FOR THE OLDER PERSON 28  
      2.2.1 Transportation of the resident to the dental surgery .................................. 29  
      2.2.2 Care home workers limited knowledge of oral health care ................. 30  
      2.2.2.1 Low levels of Facility protocols ........................................................ 31  
      2.2.2.2 Care home workers limited knowledge of oral health care ............... 32  
      2.2.2.3 Lack of training in provision of oral health care ............................... 34  
      2.2.2.4 Caregivers preconceived beliefs towards dentistry affecting the care they provide ............................................................. 37  
      2.2.3 Workforce barriers .................................................................................... 40  
      2.2.3.1 Workforce does not reflect population demand .................................. 40  
      2.2.3.2 Need for specialists in geriatric dentistry ......................................... 41  
      2.2.3.3 Low numbers of specialist dentists .................................................... 43  
      2.2.3.4 Dentists' attitudes as a barrier to care provision .............................. 44  
      2.2.4 Financial barriers ...................................................................................... 45  
      2.2.5 Low use of oral care protocols, policies and guidelines ....................... 47  
      2.2.6 Baseline examinations on admission to long term care ..................... 49  
   2.3 SYSTEMIC HEALTH AND ITS RELATIONSHIP TO ORAL HEALTH ........ 52

3. **RESEARCH AIMS AND OBJECTIVES** ......................................................... 55

4. **METHODS** ....................................................................................................... 56

5. **RESULTS** ......................................................................................................... 58  
   5.1 RESPONSE RATE ............................................................................................ 58  
   5.2 CHARACTERISTICS OF THE FACILITIES .................................................... 58  
      5.2.1 Size ........................................................................................................... 58  
      5.2.2 Location .................................................................................................... 58  
      5.2.3 Workforce characteristics ........................................................................ 58
5.2.4 Residents’ characteristics ................................................................. 59
5.3 DENTAL CARE PRACTICES ................................................................. 60
  5.3.1 Care plan ......................................................................................... 60
  5.3.2 Baseline oral examination ............................................................... 62
  5.3.3 Monitoring practices ....................................................................... 64
  5.3.4 Management of oral hygiene and dental emergencies ................. 67
  5.3.5 Access to dental advice ................................................................. 69
5.4 BARRIERS TO CARE ........................................................................... 72
5.5 RESPONDENTS COMMENTS AND SUGGESTIONS ON HOW TO IMPROVE ORAL
  HYGIENE .............................................................................................. 75
5.6 CAREGivers’ ORAL HEALTH, ORAL HEALTH AWARENESS AND SELF-CARE
  PRACTICES .......................................................................................... 78
  5.6.1 Characteristics of Respondents ....................................................... 78
  5.6.2 Dentate status ................................................................................ 79
  5.6.3 Use of services ................................................................................ 80
  5.6.4 Self-care practices ......................................................................... 82
  5.6.5 Importance of oral health .............................................................. 83
  5.6.6 Advising residents ........................................................................ 85
5.7 GENERAL DENTAL KNOWLEDGE ...................................................... 86
  5.7.1 How often should we brush and for how long? .............................. 86
  5.7.2 Why do you think it is necessary to brush our teeth? ....................... 87
  5.7.3 How often do you think a person should attend the dentist? ........ 88
  5.7.4 Do you think that people with dentures need to attend the dentist on a
       regular basis? ................................................................................... 88
  5.7.5 What diseases/disorders do you know of which occur in the mouth? .. 89
  5.7.6 Do you think that oral health and general health are linked in any way? 89
6. DISCUSSION ......................................................................................... 91
  6.1 SUMMARY OF FINDINGS .................................................................. 91
  6.2 COMPARISON WITH OTHER STUDIES ............................................ 95
  6.3 STRENGTHS AND WEAKNESSES OF THE CURRENT STUDY ........... 95
    6.3.1 An absence of protocols .............................................................. 100
    6.3.2 Low professional input into drafting protocols ......................... 102
    6.3.3 Staff adhering to the protocols .................................................. 103
  6.4 BARRIERS TO CARE: DEMENTIA, FINANCES, FACILITY SIZE, TRANSPORT ... 105
  6.5 FUTURE PLANNING FOR FACILITIES AND STAFF ......................... 109
  6.6 ADEQUACY OF UNDERSTANDING OF ORAL/DENTAL DISORDERS .... 110
  6.7 MISCELLANEOUS ISSUES RAISED BY RESPONDENTS .................... 110
7. CONCLUSIONS ..................................................................................... 112
REFERENCES ......................................................................................... 116
APPENDIX A .......................................................................................... 130
  Questionnaire; Parts 1A, 1B and 2 ....................................................... 130
APPENDIX B .......................................................................................... 142
  Information Sheet and Consent Form .................................................. 142
APPENDIX C .......................................................................................... 146
  Ngai Tahu Research Consultation Committee ...................................... 146
LIST OF TABLES

Table 1. Barriers to care reported in the literature ........................................................... 17
Table 2. Use of oral care protocols and dental demonstrators, by facility characteristics (brackets contain row percentages unless otherwise stated) .......... 61
Table 3. Rate of baseline examinations performed at admission and facilities with portable or in house dental equipment available .................................................. 62
Table 4. Baseline examinations performed and availability of portable/on-site dental equipment by, whether facility has written oral care plan (brackets contain row percentages unless otherwise stated) .................................................. 63
Table 5. Monitoring of oral health, by facility location, size and dementia status characteristics (brackets contain row percentages unless otherwise stated) .......... 65
Table 6. Ability of resident to perform independent oral hygiene procedures, by facility location, size, dementia status and care plan characteristics (mean values with SD in brackets) ............................................................................. 66
Table 7. Staff satisfaction with oral hygiene and dealing with dental emergencies, by facility location, size and dementia status characteristics (brackets contain row percentages unless otherwise stated) .............. 68
Table 8. Facilities’ ability to access a dental professional for regular/emergency care and advice by, facility location, size and dementia status characteristics (brackets contain row percentages unless otherwise stated) .......... 69
Table 9. Mean responses of respondents perceived ‘barriers to good oral health’ .......... 72
Table 10. Mean potential barriers to good oral health for residents (in order of greatest barrier to lowest barrier), by facility characteristics (standard deviation in brackets) ................................................................................. 74
Table 11. Nurses and Managers preferences on how they feel the oral care of their residents could be improved (in order of preference) .............................................. 76
Table 12. Smoking versus employment type and education level (brackets contain row percentages unless otherwise stated) ................................................................................. 78
Table 13. Dentate status and denture use, by respondent characteristics (brackets contain row percentages unless otherwise stated) ............................................. 79
Table 14. Characteristics of respondents versus dental attendance patterns (brackets contain row percentages unless otherwise stated) .................................................. 81
Table 15. Respondent oral hygiene practices by respondent characteristics (brackets contain row percentages unless otherwise stated) ............................................. 82
Table 16. Self-reported importance given to oral health by, respondent characteristics (brackets contain row percentages unless otherwise stated) ............................................. 83
Table 17. Self-reported importance given to oral health by, respondent attendance patterns (brackets contain row percentages unless otherwise stated) .............................. 84
Table 18. Whether staff gives oral care advice to residents by, respondent characteristics (brackets contain row percentages unless otherwise stated) .......... 85
LIST OF FIGURES

Figure 1. Schematic representation of Ajzen’s theory of planned behaviour .......... 38
Figure 2. How soon a dental problem would be addressed/acknowledged .......... 70
Figure 3. How soon could the resident get an appointment at a dental surgery for treatment? ................................................................. 71
Figure 4. Primary reason for not attending dentist in last 12 months ............ 80
Figure 5. Reasons why respondents think it is necessary to brush their teeth .... 87
Figure 6. How often should a person attend the dentist? .............................. 88
Figure 7. Diseases/disorders which caregivers identified as occurring in the mouth, and frequency they were reported ........................................... 89
ABBREVIATIONS

ACAT  Aged Care Assessment Team
ADL  Activities of Daily Living
ALTCF  Alternative Long Term Care Facilities
ARRC  Age Related Residential Care Services Agreement
CNA  Certified Nursing Assistants
DHB  District Health Board
DON  Director of Nursing
FTE  Full Time Equivalent
GOHAI  Geriatric Oral Health Assessment Index
HCFA  Federal Health Care Financing Administration
HPCAA  Health Practitioners Competence Assurance Act
HON  Honourable
LTC  Long Term Care
MDS  Minimum Data Set
MoH  Ministry of Health
MP  Member of Parliament
NH  Nursing Home
NZ  New Zealand
OBRA '87  Omnibus Budget Reconciliation Act 1987
OHC  Oral Health Care
OHIP  Oral Health Impact Profile
OHRQoL  Oral Health Related Quality of Life
RAI  Resident Assessment Index
RAP  Resident Assessment Protocol
RH  Rest Home
sd/SD  Standard Deviation
SES  Socio-Economic Status
UK  United Kingdom (Great Britain)
US/USA  United States (of America)
ABSTRACT

Introduction: New Zealand’s population is aging. Research in New Zealand (NZ) has reported that older people are retaining their natural teeth for longer than before.

Approximately 7% of New Zealand’s older adults reside within Rest Homes (RH) and Long Term Care (LTC) facilities. They depend on nurses and care-aides for assistance with multiple activities of daily living (ADL); this includes oral care.

If older adults are retaining their teeth for longer it is imperative that they have access to adequate daily oral care, as poor oral health can lead to dental neglect resulting in crippling pain and loss of quality of life.

Aim: The purpose of this study was to identify whether RH/LTC facilities within NZ have written oral health care (OHC) plans and policies for the maintenance of the oral health of their residents and to document the level of OHC understanding of the LTC staff.

Methods: A two-part survey was designed and sent to 425 randomly selected LTC facilities in NZ. Part one recorded the number of residents, staff and location of the facilities. It then examined whether or not the facility had written OHC policies, if they were drafted with the assistance of a dental professional and whether or not the staff had problems with adhering to the policies. Part two investigated the core level of oral health knowledge of staff, and their personal dental habits and oral hygiene practises.

Results: Written policies for oral care were in place in 35.9% of (n=139) facilities. Of those with policies, 15.4% had a dental professional assist in drafting it (5.5% overall). Only 14.0% of facilities had ever had a dental professional in to give a demonstration in oral care, and 90.2% of facilities felt that a demonstration in oral care would be beneficial.
Most facility management teams were satisfied with the way in which they dealt with basic oral care for their residents, and the way in which they manage dental emergencies (85.1% and 82.2% respectively). Baseline oral examinations were a low priority for facilities; only one in nine reported to provide them for residents on entry.

The staff’s level of oral health knowledge appeared to be adequate. With regards to daily oral hygiene habits: 88.6% reported brushing twice daily or greater, 59.2% flossed on a regular basis and 34.6% used mouthwash regularly. Where dental visiting was concerned, 63.7% reported a regular dental attendance pattern.

**Conclusion:**
Ultimately the findings expressed a low level of policy in place to protect the oral health of older people residing in LTC facilities. There is lack of initiative by facilities to provide baseline oral examinations to document poor levels of oral health in residents on admission. Staff personal practices appeared to be positive and conform to evidence based recommendations. Many facilities identified that there was a need for improvement but due to lack of financial incentive and time constraints, were generally satisfied with the level of care they were able to provide for their residents.
1. INTRODUCTION

1.1 Background
Protocols and guidelines for the way in which care is provided to the older institutionalised person are important. The development of them is reliant on having an integrated knowledge of the older population and the way they interact with society. In older people the prevalence of oral diseases, patterns of medical service use, disabilities and their functional limitations all determine how care is currently provided and give insight into how it will be utilised in the future. These are important themes that have relevance to understanding the background of this study. They will be developed accordingly within the introduction as a basis for the literature review that follows.

1.2 Life expectancy
Life expectancy is increasing; the current average life expectancy for a male is 78.2 years and for a female is 82.2 years\(^1\). Since the 1970s life expectancy at birth has increased by approximately 10 years for both males and females. This can generally be attributed to improvements in diet, lifestyle, healthcare and better understanding of medicine and disease\(^1\).

In New Zealand, the proportion of people aged 65 and over was approximately 12% in 2001. By the year 2051, they will make up over 26% of the population (Frizelle 2005). In 2006, seven in every ten older people lived in their own dwelling with a spouse or partner, one-tenth lived with their children, and approximately 7% lived in hospitals or residential care homes. These proportions are likely to change, as it is projected that, by the year 2051, 22% of NZs population will be over the age of 85 years (Frizelle 2005). This is the age group that is expected to grow by the largest proportion in the future.

The significance of an ageing population is the increased burden it will place on the health system, which will be expected to support these individuals well into retirement. It has been stated that ‘as the number of older adults in the population

\(^1\) www.stats.govt.nz (Statistics New Zealand, 2009)
increases, the number living in nursing facilities can be expected to increase as well’ (Smith et al. 2008). Without appropriate planning, this could lead to a shortage in nursing home (NH) beds and a workforce that is ill-equipped to deal with the extra demand.

Life expectancy has traditionally been used as a measure of the health of a population. Comparison of the life expectancies of different populations does not necessarily enable comparison of the quality of the health of those who are living longer. Although our older generation are living longer, their number of healthy years is not increasing to the same degree, as ageing often brings a decline in health in the years before death. This is a view that is reflected in the statement of Chung et al. (2000) that ‘approximately 5% of elderly reside in NHs. However, this figure does not depict a true picture of the use of NHs among the elderly, because it is estimated that about 40% will use a NH sometime before they die.’ It may not be an easy decision to place a loved one into care. These facilities may provide temporary respite for a spouse or family during times of stress, especially if the loved one has dementia, psychiatric problems or mobility problems. The stay may be for one day per week or for the final months or years of the person’s life. It may seem the obvious option for many families to place their loved one in the hands of those who advertise themselves as being skilled in this area of care.

1.3 Disabilities
The 2006 Census found that New Zealanders over the age of 65 years were three times more likely to have a disability as those aged 15 to 64 years. Those aged 65 years or older were more likely to have multiple disabilities and their disability was also likely to be more severe. Older people in residential care nearly all reported having some form of disability. Previous research on people in residential care showed that 97% reported some form of physical disability and half had a sensory or ‘other’ form of disability. Such disabilities make access and provision of dental care very difficult, as patients may have limited ability to communicate problems. Patients are often unable to move from a wheelchair to the dental chair unassisted and may require specialised mobility taxis to get to and from appointments.

2 www.stats.govt.nz (Statistics New Zealand Census 2006)
In a literature review of the role of behavioural, environmental and social factors in oral health disparities in frail and functionally dependent NH elders, it was found that nine out of ten NH residents were over the age of 65 years (Jablonski et al. 2005). Those 85 years of age or greater comprised 40% of residents, and three-quarters of residents required assistance with three or more activities of daily living (ADL). The most commonly identified ADL were showering/bathing (including oral care), dressing and eating. The term “activities of daily living” (or ADL) refers to the Katz index of independence in activities of daily living (Katz et al. 1970). It is an instrument that ranks the adequacy of an individual’s performance in the six functions of bathing (this includes oral hygiene and tooth-brushing), dressing, toileting, transferring, continence, and feeding. A score of 6 indicates full function, 4 indicates moderate impairment, and 2 or less indicates severe functional impairment.

There have been few studies investigating the oral health of NH residents, and fewer still have used a longitudinal design. In this respect, the Adelaide dental study of NHs is an important study because it was a cohort study. It reported on the high levels of disability seen within a cohort of randomly selected Adelaide NH residents (Chalmers et al. 2005). This longitudinal study investigated the oral disease experience and caries increments and incidence of NH residents over a 12-month period in 1998-99. The study comprised both detailed questionnaires and dental examinations at baseline and again at 12-months. With respect to disabilities and the general health of the residents, Chalmers et al. (2005) found that nine-tenths of residents were over the age of 75 years; nearly two-thirds of the residents had been diagnosed with dementia; 39.0% had a history of stroke; 43.9% had arthritis; and over 90.0% of the residents were taking more than 5 medications each day. When it came to their ability to independently care for themselves, one in seven were moderately impaired and required a significant degree of assistance (14.6% score 4 or less on their ADL). The Adelaide findings reflect substantial levels of health impairment and dependence for adequate routine daily care. The placement of an older individual into an institution such as a RH/LTC facility may become the only realistic option that a family or physician may have. It is commonly assumed that these types of residences are designed to meet the needs of the dependent older people residing in them.
As people age, they are likely to become less mobile and have more disabilities. Medical advances, which have contributed to increased life expectancy, have increased the quantity of life but not necessarily improved the quality of life. It follows then, that living longer may mean a longer time living with a disability and ill-health, with dependence on others for routine daily care activities, such as eating, bathing and OHC maintenance.

1.4 Effects of poor oral health on quality of life
Poor oral health among adults residing in institutions has been widely reported (Berkey et al. 1991; Thomson et al. 1991; Thomson et al. 1996; Carter et al. 2004; Dolan et al. 2005; Pyle et al. 2005; Schembri et al. 2005; Coleman et al. 2006; Pronych et al. 2009). Berkey et al. (1991) stated that ‘Poor oral health places a person at higher medical risk, diminishes quality of life and, unless ameliorated, may add significantly to the cost of institutionalisation’. It has also been linked to poor nutrition, pain, weight loss, serious illness and systemic infections, (Coleman et al. 2006). In a six-year prospective cohort study which followed older people living in 29 institutions in Kitakyushu (Japan), Shimazaki et al. (2001) found that a poorer dentition status at baseline led to significantly worse physical and mental impairment, and earlier mortality, thus supporting the assertion that, for optimal systemic health to be achieved in the older institutionalised population oral health needs to be adequate. Moreover, it is imperative that oral hygiene care (as one of the ADL) needs to be undertaken on a daily basis, whether through direct provision or by facilitating and supporting the residents’ own self-care.

The complex oral health problems of nursing home residents have been well documented (Preston et al. 2000; Carter et al. 2004; Chalmers et al. 2005). The provision of daily oral hygiene care to residents within RHs and LTC facilities has widely been reported as poor (Chalmers et al. 1996; Johnson et al. 1999; Frenkel et al. 2002; Schembri et al. 2005; Gaugy 2005). Investigation by Chalmers et al. (1996) into factors which influence nurses' and aides' provision of OHC for nursing facility residents, found that the major deterrents disabling staff from performing oral care to older institutionalised people were: their attitude towards oral care, lack of time and the residents resistant behaviour. These three areas were identified as important by Thole et al. (2010) in their investigation into attitudes towards oral care of staff
within Iowa intermediate care facilities for individuals with developmental and acquired disabilities. Although these patients may reflect a younger age group they have some shared characteristics with older adults with dementia; or stroke induced mental and physical disabilities. It is not uncommon in NZ for younger individuals with high levels of dependence to reside or visit for respite periods within RH/LTC facilities. Both Chalmers et al. (1996) and Thole et al. (2010) highlight the need for further investigation, provision of training courses and further continuing education for the NH staff, this would assist in dealing with difficult residents and aide in improving staff attitudes towards oral care. Implementation of training in key areas of OHC would be beneficial for both staff and residents. This was shown in the randomised control trial performed by Frenkel et al. (2002) which included 369 caregivers from 22 nursing facilities within Avon, United Kingdom (UK). This blinded interventional study sought to assess the effect of an OHC education programme upon NH caregivers. Significant themes that were identified at initial assessment were a lack of training in OHC and lack of clear policy regarding oral health. Results post trial showed that there was a significant increase in awareness of oral health; improved awareness of cross infection; and this had resulted in improved delivery of oral health care. More recently, Schembri et al. (2005) investigated the OHC practices of care staff in Maltese residential homes. They found that a majority of Maltese residential homes do not have a code of care for oral health for their residents. Respondents advised that staff were given information on OHC but the majority choose not to assist residents with daily oral hygiene activities. Staff reported that the predominant barriers to providing care were lack of appropriate information about oral health along with compromised medical and mental status of the residents affecting their ability to provide care. Breaking down some of the myths and mysteries surrounding oral health may provide pathways for staff to begin to accept the importance and necessity of oral health as determinant of a person’s quality of life.

Barriers, which NHs have reported as restricting their ability to provide adequate oral care for residents, have been widely described. Table 1 presents the many investigations that have been undertaken on the oral health of older institutionalised people. Two domains were dominant: the first one was the multiple barriers that prevented older people from obtaining adequate OHC: the second identifies the
important recurring observations within facilities that prevented the staff from delivering OHC to the residents. Many of these also highlight the poor oral health of institutionalised older people and its impact on the oral health-related quality of life (OHRQoL) of these individuals. Although oral disease is rarely life threatening it can have a significant impact on both the social and psychological aspects of a persons life.

Table 1. Barriers to care reported in the literature

<table>
<thead>
<tr>
<th>Domain</th>
<th>Investigators and year</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Barrier</strong></td>
<td></td>
</tr>
<tr>
<td>Family</td>
<td>Kambu et al. (1996); Johnson et al. (1999); Chalmers et al. (2001); Schembri et al. (2005); Smith et al. (2008)</td>
</tr>
<tr>
<td>Finances</td>
<td>Empey et al. (1983); Kiyak et al. (1993); Chalmers et al. (1996); Kambu et al. (1996); Johnson et al. (1999); Chung et al. (2000); Chalmers et al. (2001); Guay (2005); Schembri et al. (2005); Dolan et al. (2005); Smith et al. (2008); Jablonski et al. (2005); Antoun et al. (2008)</td>
</tr>
<tr>
<td>Difficult/Un-cooperative patients</td>
<td>Empey et al. (1983); Kiyak et al. (1993); Chalmers et al. (1996); Kambu et al. (1996); Johnson et al. (1999); Chung et al. (2000); Chalmers et al. (2001); Guay (2005); Schembri et al. (2005); Dolan et al. (2005); Smith et al. (2008); Jablonski et al. (2005); Dharamsi et al. (2009); Thole et al. (2010)</td>
</tr>
<tr>
<td>Transport</td>
<td>Empey et al. (1983); Johnson et al. (1999); Chung et al. (2000); Chalmers et al. (2001); Guay (2005); Jablonski et al. (2005); Schembri et al. (2005); Dolan et al. (2005); Smith et al. (2008); Antoun et al (2008)</td>
</tr>
<tr>
<td><strong>Recurrent Themes</strong></td>
<td></td>
</tr>
<tr>
<td>Oral health low priority</td>
<td>Chalmers et al. (1996); Johnson et al. (1999); Chung et al. (2000); Frenkel et al. (2002); McKelvey et al. (2003); Dolan et al. (2005); Guay (2005); Schembri et al. (2005); Smith et al. (2008); Dharamsi et al. (2009)</td>
</tr>
<tr>
<td>Lack of training in oral health care</td>
<td>Chalmers et al. (1996); Johnson et al. (1999); Chung et al. (2000); Frenkel et al. (2002); McKelvey et al. (2003); Dolan et al. (2005); Guay (2005); Schembri et al. (2005); Smith et al. (2008); Dharamsi et al. (2009)</td>
</tr>
<tr>
<td>Lack of time for staff to perform oral health care</td>
<td>Chalmers et al. (1996); Chung et al. (2000); Chalmers et al. (2001); Coleman et al. (2006); Smith et al. (2008); Thole et al. (2010)</td>
</tr>
<tr>
<td>Dentist prefer not to treat residents at facility</td>
<td>Empey et al. (1983); Chung et al. (2000); Chalmers et al. (2001); Jablonski et al. (2005); Antoun et al. (2008)</td>
</tr>
</tbody>
</table>
It is known that poor oral hygiene can lead to dental caries, periodontal disease and dental pain, which can adversely affect a person's quality of life and eventually be detrimental to their general health (Chen and Hunter 1996). How these variables are linked to quality of life has been clinically measured via the development of assessment tools. Measurement of how these two factors (oral disease and quality of life) are related can be performed by either open-ended interviews of individuals, with transcription and analysis of responses or via use of more structured questionnaires, such as the GOHAI (Geriatric Oral Health Assessment Index, Dolan and Atchinson 1990) or the OHIP-14 (Oral Health Impact Profile, Slade 1997). Use of these in studies of older populations has allowed for the development of consistency and for comparison of outcomes between different studies over time. The GOHAI was developed as a self-report measure designed to assess the oral health of older adults. They found that this tool demonstrated a high level of internal consistency and reliability in various samples. Since then, it has been used in many studies as summarised by MacEntee (2007) and Locker et al. (2008).

The OHIP (Oral Health Impact Profile), was developed by Slade and Spencer (1994), and consists of 49 statements describing the consequences and social impact of oral disorders. The aim of this index was to provide a comprehensive measure of self-reported dysfunction, discomfort and disability arising from oral conditions. The OHIP-14 was later developed based on a subset of 2 questions for each of the 7 dimensions. Recently, Locker et al. (2008) compared the use of the GOHAI and the OHIP-14 as measures of OHRQoL in older people and found that there was a great deal of reliability between the two tools. The measures were found to perform equally well when representing the overall psychological well-being and life satisfaction of older individuals. In one approach, the model of oral health has been described by MacEntee (2007) as having four major themes: comfort, general health, hygiene and diet. These have been found to affect a person's life both socially and personally. The development of assessment tools for OHRQoL (Shearer et al. 2007) enables the researcher to compare outcomes such as, poor oral health, oral comfort and perceived barriers to obtaining OHC with respect to the impact this has on a person's quality of life.
1.5 Retention of teeth

In 2001, people over the age of 65 years made up 12% of the NZ population but used approximately 40% of the health expenditure. By the year 2051 the proportion of older people in the population is predicted to double, yet their share of total health expenditure has been predicted to increase to approximately 63%, Frizelle (2005). Mortality rates in this population group have dropped by up to 35% over the past 18 years\(^3\). This age group is living longer, but it also has more complex co-morbidities. Older people are higher users of General medical practitioners, pharmaceuticals and laboratory services. Owing to the increase in longevity, their surgical and medical hospitalisations are also disproportionately higher (Boston et al. 2006). Not only are older people living longer, more are also retaining their own natural teeth (Thomson et al. 1997). Many older people have heavily restored teeth and require complex ongoing care. They may have dental prostheses, drug-induced xerostomia and salivary flow problems, and, due to their complex medical histories and co-morbidities can be more difficult to care for. Poor vision and manual dexterity can further complicate their daily self-care (McKelvey et al. 2003).

Owing to improvements in OHC, fluoridation, fluoride toothpastes, oral disease prevention programmes aimed at younger people, and changes in social norms, more and more of the older New Zealand population are retaining their own natural teeth into retirement (Thomson and Cautley 1996). However, they are just as likely to suffer from other forms of oral disease, such as neoplasias, mucosal conditions and oral infections (Hoad-Reddick 1992; Scully and Cawson, 5th Ed. 2005). It has been reported in many studies that older adults living in RH and LTC facilities tend to be at greater risk for tooth loss, periodontal disease, attachment loss, poor oral hygiene, caries, soft-tissue lesions and ill-fitting or missing dentures (Brown et al. 1987; Cautley et al. 1992; Treasure et al. 1995; Lawrence et al. 1996; Chalmers et al. 2002; Carter et al. 2004; Thomson 2004; Jablonski et al. 2005; Smith et al. 2007; Dharamsi et al. 2009). Research shows that this group are not immune to the effects of caries. In fact it has been pointed out that older people are a caries-active group, experiencing new disease at a rate which is at least as great as that observed among

\(^3\) [www.stats.govt.nz](http://www.stats.govt.nz) (Statistics New Zealand 2009)
adolescents (Thomson et al. 2004). They require OHC and preventive care at the same level as any other age group.

1.6 Barriers to the provision of care

Older people deserve to have access to pain-free treatment in an appropriate setting, provided by individuals who are competent and confident in the delivery of health care, which is specific to their needs. The lack of qualified dental personnel to treat these patients (who often have very complex medical histories) has been identified as a barrier to consistent care (Antoun et al. 2008; Guay 2005). Antoun et al. (2008) examined NZ dental practitioners beliefs about oral health in the older population via a postal survey of 700 dentists. They found that the profession believed that a major barrier to them providing care was a lack of acceptable dental pathways for delivery of care and inadequate workforce to meet the dental requirements of the older population. The majority of the workforce surveyed were willing to provide care but were discouraged by the inconvenience of having to leave the dental surgery to provide it. Guay (2005) similarly associated lack of appropriate dental workforce and barriers to provision of care. He recognised that for any dental access programme to work it required an adequate dental workforce, a demand for care and an economic environment that was equitable for both provider and patient.

The dental workforce is not the only barrier. Staff working within care facilities report many difficulties to providing oral care for older adults (Chalmers et al. 2001; Schembri et al. 2005). Poor co-operation by patients, a fear of being bitten, a lack of time, a low importance placed on oral health, lack of protocols in place, lack of accountability if care is not provided and low levels of training/education given to RH/LTC staff are the dominant recurring themes (Table 1). Coleman et al. (2005) found, in their investigation into the oral care provided by certified nursing assistants (CNAs) in NHs, that the OHC standards which were never met were; brushing teeth for at least two minutes, flossing, oral assessment, rinsing with mouthwash, and wearing clean gloves during oral care. This confirms an often-repeated view that OHC is considered to be a low priority in such settings. Workers are not held to account and, in many instances, accountability may be hard to determine, because staff turnover rates have been reported to be as high as 50-300% annually (Parsons et al. 2003). Moreover, the majority of NHs are heavily dependent on a low-paid and
untrained group of health workers (Frenkel et al. 2002). It is possible that for these workers that reporting of tasks they were unable to complete on a shift would be a low priority due to the possibility being reprimanded or losing their job.

1.7 Policies versus protocols
The term ‘policy’ can be used in a variety of ways to cover many quite different types of statements, intentions and actions. It may refer to a general statement of intentions and objectives or may pertain to a statement of future intentions. It may be used in reference to a past set of actions of Government in a particular area, or it may be a set of standing rules that are intended as a guide to action (Palmer and Short. 2nd Ed, 1994). As defined by the Oxford Dictionary, the term ‘protocols’ refers to a more formal set of guidelines; it may be used in reference to an official procedure or system of rules governing affairs of state or diplomatic occasions, an accepted code of behaviour in a particular situation, the original draft of a diplomatic document (especially of the terms of a treaty) or, finally, to a formal record of scientific experimental observations. According to Palmer and Short (1994), the term ‘health policy’ generally embraces the courses of action that affect that set of institutions, organisations, services and funding arrangements which comprises the health-care system.

Accordingly, it seems that the protocol is a more formal guideline for which there is a chain of audit and accountability; it has to meet particular quality outcomes. This differs from a policy, which may comprise only a statement of intentions, or a strategic vision, which an institution may work to achieve. The former implies accountability to a higher organisation position, the latter a desirable set of standards, which it wishes to achieve, but may not always meet. In either instance, it appears that New Zealand RH/LTC facilities do not have any definitive OHC protocols or policies. Those protocols that are available do not appear to have been drafted with input or assistance from the dental profession.

New Zealand RHs are required to have an Age Related Residential Care Services Agreement (ARRC 2008)\(^4\) between themselves as providers and their local DHBs,
but they are not required to have an associated dental professional. Facilities within the USA are regulated by Federal and State laws and must have a dental consultant accredited to the facility in order for its licensure to be granted. On admission to a facility, each individual is expected to have a baseline examination under the regulations set in OBRA 87 (Omnibus Budget Reconciliation Act of 1987)\(^5\). Most US facilities utilise the Minimum Data Set (MDS), a multi-organ system check sheet, for thorough documentation of the resident’s health status on admission. The MDS is explained in further detail when use of protocols is discussed in the literature review.

Only one previous NZ study has investigated the opinions and experiences of workers within LTC facilities. McKelvey et al. (2003) performed semi-structured, in-depth qualitative interviews on 15 caregivers, 2 registered nurses and 2 managers working in Dunedin LTC facilities. Their purpose was to investigate the dental knowledge and attitudes of staff caring for older people within these facilities. Findings confirmed that staff had received minimal training and education about OHC. It was also found that it would be beneficial to incorporate OHC into in-service and formal training programmes. The study by McKelvey et al. (2003) provides insight into one component of this proposed research. Construction of functional working protocols that caregivers and OHC professionals can use as guidelines in provision of care for the dependent older patient, may be of assistance over time to improve the poor oral health status that has been reported. To determine the nature and extent of any reduction in disease levels would require further longitudinal research and is not a primary objective of this study. In many cases, reduced mobility and functional dependence mean that older people are unable to completely care for themselves and require the assistance of caregivers for many ADL. It appears that such caregivers need to have their awareness of oral health and oral care raised, and they also should be able to identify poor or abnormal oral health. They need to know when professional consultation should be sought, and to have easy access to a professional opinion when it is required. These are factors that could be improved if RH/LTC facilities implemented care plans/protocols. They could address the facility’s need for contact with dental professionals in case of dental emergency, access to dental care, and ongoing education/training for staff members.

\(^5\) Federal Nursing Home Reform Act from the Omnibus Budget Reconciliation Act of 1987 (OBRA '87).
Protocols need to encompass multiple fields, including; the health status of the patient, the provision of transport to the nearest appropriate facility, and interactions with local oral health professional for advice or domiciliary visits. In previous studies, these have been identified as barriers to the provision of OHC for the institutionalised older patient (Chung et al. 2000; Chalmers et al. 2001; Guay 2005; Schembri et al. 2005). The protocols need to open avenues for consultation and treatment of oral disease before it becomes a major concern. Avenues for older institutionalised individuals in NZ to seek dental care are limited. Poor oral health can lead to dental caries, oral neglect, crippling pain and impaired dental function. This has been found to reduce quality of life and increase the potential for morbidity and earlier mortality in the frail older person (Smith et al. 2008). Many of these individuals have difficulty in accessing help due to immobility, financial constraints, low perceived needs and lack of empathy towards OHC by caregivers, family members and dentists. These are issues identified in the work of Helgeson and Smith (1996) and Chung et al. (2000).

The work by Helgeson and Smith (1996) provides a scaffold for the development of guidelines for mobile and on-site dental care at NHs. It identifies that oral health needs to be provided to prevent disease, preserve comfort, and maintain the individuals ability to eat and speak. They identify in the context of the research the major barriers older people have to adequate oral care include; transportation; staff's attitude towards and knowledge of dentistry; and Medicaid failing to provide adequate financial assistance and funding. They put forward that the goal of their guidelines is to ensure that the residents within NHs are able to receive appropriate and necessary oral health services. They emphasise that the access to care and the standard of care for these individuals needs to be at the same level as the wider community. Chung et al. (2000) also identified similar themes when they investigated the perceptions of managers, nurses and physicians to dental care of the older patients in their care. This was completed via a cross-sectional survey, which was distributed to managers in 65 Geneva NHs. They found that less than two-thirds of respondents were in favour of on-site provision of dental treatment, as this implicated the facility for further financial burden; they found that transportation of residents to a dental surgery was a barrier, as were; lack of time, poor co-operation of residents and insufficient training and education of staff in oral care practices. These
are recurring themes that are impairing the provision of adequate oral care to the institutionalised older person.

The major oral dental concerns and barriers to care are outlined in the literature review under the following headings: (a) Greater retention of teeth in a caries active age group; (b) Xerostomia and its effect on the dentition; (c) Barriers to provision of oral health care for the older person; (d) Transportation of the resident to the dental surgery; (e) Poor oral health care knowledge and training in oral health care; (f) Workforce barriers; (g) Financial barriers; (h) Low use of oral care protocols; (i) Baseline examinations on entry to long-term care; and (j) Systemic health and its relationship to oral health.
2. LITERATURE REVIEW

2.1 Greater retention of teeth in a caries-active age group

New Zealand, along with Australia and many other westernised countries, have reported a significant increase in the proportion of the ageing population. It is reported that in our older population, individuals are retaining their natural teeth for longer than before (Cautley et al. 1992; Harford 2008). This as previously mentioned is due to the combination of improved knowledge of OHC, fluoridation and advances in dental technology over the years. With the prevalence of edentulism decreasing and the numbers of functionally dependent and disabled older adults increasing, the result is a population of older adults whose dental needs are very different from those of previous generations (Chalmers et al. 2002; Jablonski et al. 2005). These patients are retaining their own teeth but, as they age, more are becoming functionally limited and may depend on others for a majority of their daily care.

Research has proven that dental caries and periodontal disease are as prevalent in the older population as they are in other age groups. Caries rates have been found to be as great as those of the general population. Older patients are at risk of not only coronal caries but due to periodontal attachment loss and recession, to root surface caries as well (Brown et al. 1987; Persson et al. 1991; Cautley et al. 1992; Cautley et al. 1997; Feine et al. 1992; Galan et al. 1993; Jones et al. 1993; Treasure and Whyman. 1995; Lawrence et al. 1996; Chalmers et al. 2002; Carter et al. 2004; Thomson 2004; Dharamsi et al. 2009; Pronych et al. 2010). It has been stated that teeth are not lost due to the process of aging but in actual fact due to the consequence of disease (Mattson et al. 1990). With appropriate oral hygiene and thorough preventive measures the rate of tooth loss could be reduced, as it is not an inevitable process of ageing.

Over the last 30 years, there have been a number of factors that have changed the dental treatment needs and patterns of New Zealanders. With the introduction of fluoridation the caries rate has fallen. Socially there has been a change that has resulted in more people choosing to keep their teeth. This pattern has also been reflected overseas. Harford (2009) identified in her review of population ageing and
dental care that both tooth loss and edentulism rates have fallen. This is due in particular to changes in dental practice and the wide spread availability of fluoride. As a result, over the last few decades, the older generation are retaining more teeth. This trend is confirmed in the report by Thomson (1997), when he predicted, via use of a mathematical model, the distribution of treatment needs for caries across three indicator age groups by the year 2031. It showed that the prevalence of edentulism in the 65-74 age group for 1976 was (72.3%) and by 1988 it had dropped to (58.6%) it was projected that the prevalence would be (30.5%) by 2011 and dropping to (13.6%) by 2031. This predicts that there will be a substantial increase in the number of older people with their own natural teeth. Although there has been a perceived reduction in simple treatment needs due to decreased overall dental caries rates, there is a considerable increase in complex requirements, as older people with heavily filled dentitions hold on to their teeth for longer. As described by Treasure and Whyman (1995) those in the older age group are known as the high-amalgam generation. Taking this into consideration along with the reduction in edentulousness, means individuals are likely to require considerable amounts of treatment in the future.

Older people entering into residential care homes with an intact natural dentition need to be assessed for their ability to undertake preventive oral hygiene measures. As people age they are at increased risk of multiple medical conditions that may reduce their ability to care for themselves independently and may require them to be medicated. There are medications and medical conditions that have been implicated in the aetiology of xerostomia and concomitant with reduced ability to apply preventive care the effects can be devastating on the dentition.

2.1.1 Xerostomia and its affect on the dentition
The presence of saliva in the mouth plays a protective role against dental caries. Lack of saliva means there is reduced lubrication, ion-reservoir and buffering capacity in the oral cavity. These factors protect against the detrimental effects of plaque bacteria and the cariogenic acids they produce (Hay and Gear 2002). Xerostomia is the subjective feeling of dry mouth and is in some cases accompanied by salivary gland hypofunction (reduction in unstimulated whole saliva). It is commonly
reported in research of older people's oral health and has been referenced as being present in between 10 and 47 percent of older people, depending on the case definition and mode of measurement used (Cautley et al. 1997; Cassolato and Turnbull 2004; Thomson 2005; Thomson et al. 2006).

Salivary gland hypofunction can arise due to atrophy of the salivary glands, and can be seen in patients with diabetes, head and neck radiotherapy, Sjogrens’ syndrome and is reported as the side effect of many different medications (including some sedatives, anti-depressants, diuretics, anti-inflammatories, decongestants, and anti-arrhythmia medications, to name a few). Hypofunction of the salivary glands can have a devastating effect on the dentition, especially if oral hygiene is not impeccable. Salivary gland hypo-function has been cited as a risk factor in coronal and root caries, periodontal disease, and tooth loss (Galan and Lynch 1993; Jones et al. 1993; Persson et al. 1991; Hay and Gear 2002; Thomson 2005).

Poor oral health and poor provision of OHC in NHs and LTC facilities for the older person are widely reported in the literature (Dharamsi et al. 2009; Pyle et al. 2005; Johnson et al. 1999; Kiyak et al. 1993). The implications of these factors is that, many older people are taking xerostomia inducing medications. Chalmers et al. 2005, reported that over 90% of the residents in the NHs they surveyed were taking more than 5 medications daily. They are retaining more of their own natural teeth when they retire, have dental caries rates that are comparable to the younger population, and live in facilities where the diets consist of high amounts of refined carbohydrates (Dharamsi et al. 2009). This means that if good oral hygiene is not maintained, these individuals are at substantial risk from the effects of dental caries and oral disease. Added to this situation is that older people are more likely to have mobility problems, loss of manual dexterity and need assistance with ADLs (including tooth-brushing). The culmination of this is that older people living in institutional settings have multiple caries risk factors present, but may have impaired ability to prevent progression of disease. This is where care-aides and nursing staff need to assist with the prevention of decay via daily thorough oral hygiene maintenance.
2.2 Barriers to provision of oral health care for the older person

Adequate OHC is integral for optimal general health and should be a routinely provided service within RH/LTC facilities for the older person. As an individual becomes older their level of dependency and assistance requirements may change, therefore their living situation will need to be continually reassessed and addressed. Many articles cite (Table 1) barriers that facilities experience when attempting to attain adequate oral care for their residents. These barriers need to be defined so that facilities and service providers can address them accordingly.

A recent survey by Smith et al. (2007) investigated perceptions towards oral health, oral health adequacy, access to oral health and OHC resources and barriers, in two population groups in Michigan, USA. This survey was extensive and included 402 NHs and 2275 Alternative Long-Term Care Facilities (ALTCF) currently located and functioning in the State of Michigan. Alternative care facilities were also known as group homes, assisted living or adult foster care homes. In both environments (NHs and ALTCF) there was a low level of response and return rates for the questionnaires (32% of NHs and 22% ALTCF). They found that there was limited dental involvement in policy creation, provision and service. The significant barriers to obtaining dental care that were reported in this study were: the lack of willingness of the general dentist to provide treatment for the residents at the care facility; the lack of willingness of the dentist or specialist to provide care for the residents at their private offices; financial concerns of both resident and their family; and transporting residents to dental offices for treatment.

Chalmers' longitudinal study of Adelaide dentists and NH directors of nursing (DON) relates closely to both the proposed study and that which was undertaken by Smith et al. (2007). It surveyed 413 dentists and 97 DON, and found that they had a low level of interest in the provision of NH dentistry. The responding dentists preferred to provide treatment at their dental practices. Very few dental hygienists were working in NHs and dental professionals provided little educational assistance for NH staff. There was a mixture of common and varying perceptions of the problems associated with dental care provision in NHs; with environmental constraints and a lack of portable dental equipment as major factors. Workers within the NHs further identified a group of resident related problems; patient co-operation,
lack of time and transportation issues were some of these. Specific practice related problems were found within the dentists responses, namely; dentists attitudes that NH dentistry was community work, families, caregivers and residents had unreasonable expectations; there were problems instituting preventative care procedures and lack of knowledge among NH staff about preventive oral care.

No similar studies of this kind had previously been conducted with Australian dental professionals and NH staff. There are many links and comparisons to that which was undertaken by Smith et al. (2008) and to that in this study. The first of the barriers to be discussed is that of transportation as the research shows it can impose a considerable inconvenience.

2.2.1 Transportation of the resident to the dental surgery
Transportation of frail older residents can be time consuming, financially costly and difficult. For the older adult living in a RH this may involve the use of a dedicated service provider that has equipment available for patients in wheelchairs, and those that are unable to easily get in and out of vehicles. Individuals that are unable to be transported due to being bed-bound, have multiple barriers to receiving care. They have transport issues but also as found in the investigation by Smith et al. (2008), there was a significant lack of willingness by dental practitioners to treat residents at the RH. Transportation of residents can pose multiple challenges.

One of the most consistent perceived barriers to obtaining oral care was in the area associated with responsibility for transportation and access to appointments. People over the age of 65 years were found to be three times more likely than the rest of the population to have some form of disability. In the 2006 NZ Census, older people living in residential care facilities all reported having some form of disability, and as a result of their disability they were likely to be more dependent on others for transportation.

Only 3% of facilities within the Michigan survey (Smith et al. 2008) had stationary equipment available, therefore most residents who required treatment had to receive it off-site. Treatment was provided on-site in less than one fifth of cases in the Adelaide study (Chalmers et al. 2001) and transport to dental appointments was
either arranged or provided by the facility, or the resident’s family. Chung et al. (2000) in their survey of dental care for older people residing in a sample of 65 Geneva rest homes reported that 85% of the rest homes provided, or had to organise for their residents, transport to and from appointments.

A preference for provision of dental care in the dental office/surgery rather than at the rest homes was found in many studies (Chung et al. 2000; Chalmers et al. 2001; Smith et al. 2007; Antoun et al. 2008). Research done by Chalmers et al. (2001) identifies closely with the current New Zealand situation. Treatment is less likely to be given by dental professionals within RH facilities. Domiciliary care is not an integral part of the dental professional training in New Zealand and fixed on-site/stationary equipment is less likely to be found within their LTC/RH facilities. Little research has been done to quantify the NZ situation with regards to stationary or on-site dental equipment.

Chalmers et al. (2001) found that, general dental practitioners were apathetic towards the provision of RH dentistry. Dentists preferred not to provide treatment at the NH due to difficult working conditions and lack of dental chairs within facilities. If the facilities do not have the necessary dental equipment on-site then the range of treatment offered is substantially less and would really only cover preventive oral hygiene procedures and basic palliative care. It is important that within protocols there are clear guidelines and open pathways for the facilitation of transport for residents to and from external appointments.

2.2.2 Poor oral health care knowledge and training in oral health care

For oral healthcare in the RH/LTC setting to be seen as a priority it needs to be allocated time and given appropriate status. This will not occur if facilities continue to operate without structured written protocols encompassing all aspects of daily oral care delivery, dental appointments for treatment, and for the training of staff in delivery of oral hygiene to residents. Oral hygiene has been rated as low priority, and as a task is not very well completed. This perception of oral health has been expressed multiple times by authors over the last three decades (Empey et al. 1983; Kiyak et al. 1993; McKelvey et al. 2003). Due to low perception of oral health
importance, low resources have traditionally been allocated to improving oral care, access to care, and access to training for staff.

2.2.2.1 Low levels of facility protocols

Federal and State laws regulate RH/LTC facilities within the USA. Their protocols stipulate that there must be a dental consultant accredited to the facility for licensure. NHs in the United States are highly regulated and include guidelines for OHC. Older people when entering facilities are expected to have a baseline examination and then a treatment plan for any oral/dental requirements is formulated. These standards are set out under the regulations stated in OBRA '87 (Dolan et al. 2005). In the Michigan study of NH and ALTCF, Smith et al. (2008) found that of those surveyed, 63% of NH had a written plan of care for oral health and 16% had drafted these with assistance of a dental professional. In the ALTCF, 11% were found to have written OHC plans for their residents, 21% of these having obtained professional dental assistance with drafting. These findings reflect relatively low levels of available written OHC plans for residents and are astounding considering that the US system mandates that residents be provided with a care plan at admission to LTC facilities. The literature expresses that the older people have a high need for dental treatment and are just as likely to have dental and oral disease at levels equal to that of younger age groups (Treasure and Whyman 1995; Thomson et al. 2004; Dharamsi et al. 2009). Therefore the low level of oral care plans reported, cannot be due to low need for dental care.

The level of dental assistance with drafting care plans that was reported was low. This could be due to either a lack of interest in involvement by the dental profession, or because DON within LTC facilities felt they had adequate education and knowledge of dental hygiene and oral health, to draft a policy/guideline independent of dental professional assistance. Previous investigations would query this second statement with respect to the drafting of oral care plans. Research has shown that nurses and caregivers in LTC facilities have a poor level of knowledge with respect to oral hygiene practices, and that even though trained as health professionals they have no additional knowledge and skills in mouth care compared to the general population (Fiske et al. 1994). The research by Jablonski et al. (2005), Dharamsi et al. (2009) and Guay (2005) all support the findings of low levels of training,
knowledge, and skills with respect to delivery of OHC to residents. In the creation of thorough evidence-based workable guidelines it would be reasonable to expect an institution to draft it in communication with specialists in the field. This improves the chances of creating guidelines that are recent and relevant to the situation for which they are required.

2.2.2.2 Care home workers limited knowledge of oral health care

A previous study by Preston et al. (2000) investigated the views and knowledge of nurses on oral care of older people. They found that approximately half of the study population regularly gave advice to their patients about dental care, even though their knowledge of, and reasons for, providing oral care and advice, was often incorrect. The work of Empey et al. (1983), Kiyak et al. (1993), Jablonski et al. (2005) and Dharamsi et al. (2009) all reported that RH staff had a low level of understanding of OHC, and very limited training and education had been given to caregivers on how to provide appropriate OHC. Empey et al. in 1983 surveyed 12 skilled NH facilities of the 172 facilities registered in Washington, USA. They concluded that there were few guidelines for nursing personnel regarding quantity and quality of in-service training and for the daily oral hygiene procedures they should provide. Ten years later, Kiyak et al. (1993) sampled 31 NHs also in the state of Washington, USA and found that views had not changed and that institutionalised older people rely on nurse-aides for their daily care, but these staff were overworked and often uninformed about proper oral hygiene techniques. She concluded that the education of NH staff and the elderly themselves in the importance and methods of oral hygiene were critical and needed to be addressed. These conclusions were not localised to the Washington NHs. Research by Jablonski et al. (2005) which included an extensive literature review into the role of behavioural, environmental and social forces on oral health disparities in frail and functionally dependent NH elders in America was supportive of Kiyak’s findings. They found that NH residents were functionally and mentally unable to provide their own oral care. The CNAs were unsure of how to provide oral care, especially if the residents showed resistance. The nurses supervising the CNAs had limited knowledge with regards to provision of oral hygiene and lacked knowledge specifically related to provision of oral care to older people who showed any resistance. In summary this shows that even those in the superior positions lacked the knowledge to be of any assistance when residents
showed forms of resistance to oral care. If supervisors lack the understanding or skills to provide this service how can it be expected to be adequately completed by less qualified members of staff?

Lack of knowledge with respect to oral hygiene and its provision in functionally dependent and demented individuals is a recurring theme in the literature. Policies and guidelines in oral and dental health care, drafted without the assistance of a dental professional are also frequently reported. Respected professionals in the field of Gerodontontology have sought to improve the above situation by publishing guidelines and resource tools. These are available to both dental professionals and those working within RH/LTC facilities. Fiske et al. (2006) published extensive guidelines for the development of standards of OHC for people with dementia. These outlined both reversible and irreversible dementia and the aetiology and treatment of Alzheimer's disease. They discussed assessment of the oral cavity, and dental treatment planning in these patients. They also provided scaffold documents for use in dental surgeries or RH/LTC facilities, including baseline dental health charting, dental disease risk assessment, and denture marking. Colgate Oral Care in conjunction with the Australian Dental Association and Alzheimer's Australia produced 'Practical Oral Care'; a video aimed at residential care staff (Chalmers et al. 2005). The New Zealand Dental Association in 2002 produced 'Oral Care for the Elderly'6, a video that was distributed to all registered New Zealand RHs and training programmes in Polytechnics. These were based on contemporary oral health promotion and evidence-based practice in geriatric dentistry. These tools highlight that there are available written documents and video resources available that are accessible to staff. However, this requires facilities to purchase the tool, and it needs to be implemented as part of their core training. Chung et al. (2000) in their survey of managers', nurses' and physicians' perceptions of dental care of older people residing within NHs in Geneva found that a majority of the caregivers had never been educated on how to care for the oral hygiene of the residents. One of the main responses made by nurses/care-givers in this study was a request for education and training in oral hygiene practices, provided by a dental professional or hygienist. Many of the caregivers and nurses admitted to having no prior training in these

6 New Zealand Dental Association; Oral Care for the Elderly (2002) nzdainfo@nzda.org.nz
practices. There is little literature confirming the state of affairs in NZ RH/LTC facilities. It would be beneficial to report the extent of the situation, as this would be of assistance in future planning and resource allocation.

2.2.2.3 Lack of training in provision of oral health care

The older population is a high maintenance group who require a well-educated and trained group of staff to meet their health needs. Guay (2008) proposed that in an effort to address the needs of the older population, it is not enough to simply have an understanding of their oral health needs. The dental health profession must also be motivated to make care of the older person an essential part of their practice.

Chalmers et al. (2004) found that as patients became more dependent and showed increasing signs of cognitive impairment, they required significantly more assistance with oral hygiene and gave caregivers more difficulties with provision of this care. This study highlights one of the major challenges that care workers come across in their daily work caring for the older person. The residents in the study of caries incidence and increments in Adelaide NHs (Chalmers et al. 2005), were found to be functionally dependent, medically compromised, cognitively impaired and behaviorally difficult. Dementia was reported as being present in 63.4% of residents. The incidence of coronal and root surface caries was reported as being 64.4% and 48.5% respectively. This was high when compared to the caries rates reported in the longitudinal study of community dwelling older adults in Adelaide (Chalmers et al. 2002). The caries rates in the dementia patients were higher in comparison to those who had not been diagnosed with dementia and higher in those who reported to have between one and three medical conditions. Those taking multiple medications were also found to have higher rates of caries. With respect to the provision of oral care for these residents nearly nine-tenths required assistance with cleaning their teeth which posed a significant barrier for the staff as they reported that nearly 50% of them had three or more difficulties when performing oral hygiene procedures on the residents in their care. The most common difficulties reported were the resident refusing oral hygiene; refusing to open their mouth; and using abusive or offensive language. These findings expose how complicated provision of oral care for the older person can be. The residents are difficult to manage from a behavioral point of view.
and the literature shows that caregivers lack skills and training in how to undertake adequate oral care (Table 1).

It is important that the workers within RH/LTC facilities are trained in the appropriate delivery of safe and effective OHC. This not only allows the staff to understand why they are providing the service, but also means they can do it without harm to either themselves or those they are caring for. Patients within these facilities were found to be more likely to resist opening their mouths, did not understand directions about oral care, refused oral care, could not spit or rinse and were reported to 'kick out' or show other ‘care-resistant behavior’ during procedures (Chalmers et al. 1996; Chung et al. 2000). Nurses and care-aides reported encountering frequent episodes of difficult behavior when attending to daily oral hygiene. In the survey by Chalmers et al. (1996) staff indicated that more than three-quarters of the time they experienced occasional difficulties when providing assistance with oral hygiene and in a quarter of cases the residents frequently showed resistance to care. Care staff have expressed that it would be beneficial for them to have a dedicated provider who is trained specifically in oral care for these patients. This was a view expressed by respondents in the Geneva survey (Chung et al. 2000), who found that although nurses/care-aides accepted that oral hygiene was their responsibility, they would prefer to share the responsibility with a dental professional. They felt that this service could be provided by a dental hygienist, or dentist and wished for increased collaboration between the two services. Improvement in communication between the professions of dentistry and nursing is necessary for development of interdisciplinary initiatives.

The NZ Bachelor of Nursing Degree has over the years evolved. The content of the course now includes more dental and oral health related topics. Their undergraduate training now contains components on: taking a basic history of condition of teeth and a visual assessment of the buccal cavity and teeth. It also looks briefly at the use of prosthetics, tooth-brushing, cleaning and refreshing mouths. It includes factors like gingival hypertrophy and the side effects of certain drugs, such as phenytoin, calcium channel blockers and tetracyclines. A component of the nursing curriculum now requires the trainees to spend a period of time interacting with dental professionals.

7 Fergusson Diana. Head of School of Nursing; Western Institute of Technology Taranaki, (WITT) Pers. Comm. (2008)
and community dental therapists. This has been implemented to increase their understanding of oral health and confidence around delivery of oral hygiene.

Nurses and caregivers have previously reported that, the factors that inhibit their ability to provide oral care were; time constraints, the low priority given to oral care, a lack of appropriate training and lack of understanding of the aetiology of dental diseases (Fiske et al. 1994). They also reported that there is low level of confidence and understanding around this area. In Chalmers et al. (2005) evaluation of ‘The Practical Oral Care video’ purchasers found the video to be practical, useful and the format and content were appropriate. Respondents’ comments highlighted the opinion that their staff had a generalised lack of awareness of the importance of OHC for older people. When staff were questioned prior to watching the video they admitted that, when time pressures were high and workload increased, they spent less time on OHC. Lack of understanding, skills, and motivation were recurrent themes, however there was a generalised favourable response indicating that; training in oral health and provision of oral hygiene were important and were long over-due topics that needed to be addressed.

The developing of confidence in ones technique is a skill that develops over time due to repeated exposure and education. Staff working within RH/LTC have the opportunity for repeated exposure to the activity of daily oral care provision but what they appear to lack is the education and training that would allow them to develop the confidence to deliver the care. Chung et al. (2000) found that only 25% of non-qualified aides and 46% of nurses had received theoretical and practical training in attending to their own personal oral hygiene. Only 8% of non-qualified aides and 11% of nurses had ever received education on how to provide oral hygiene for residents. A contributing factor in this may be that education and training in oral care provision do not appear to be mandatory or compulsory. Care-aides have reported that they are not financially remunerated for attending training (Pronych et al. 2010) and are not given paid time away to attend these courses. This makes these not financially feasible to attend. Staff working in LTC facilities are often on a low wage, work part-time and have few qualifications, if any. Although there is now a course of available study in NZ, the 'Certificate in the Care of the Older Person' is not mandatory to have completed before working in a RH in NZ. A majority of the training is provided on the job and is considered to be common sense.
2.2.2.4 Caregivers preconceived beliefs towards dentistry affecting the care they provide

Preston et al. (2000) investigated the level of knowledge and views of nurses and caregivers working in wards for care of the elderly in the United Kingdom. It involved completing a detailed questionnaire designed to determine the respondents’ attitudes, practices and experience, and knowledge of oro-dental care. They found that caregivers deficiencies in knowledge appeared to be associated with their own anxiety about visiting the dentist and their practices with regard to regular dental attendance did not always correlate with their views on how often one should attend the dentist. They concluded that the care staff knowledge of oral health issues was in some cases incorrect and there was the potential for them to provide inappropriate advice. Moreover, the staff negative attitudes and anxiety towards dentistry could influence the level of assistance they gave to the older people in their care.

Dental anxiety is a contributing factor that may influence a person’s dental attendance patterns (Donaldson et al. 2008). The caregivers’ previous dental experiences and dental attendance pattern can predict their future attendance and the way they portray dentistry to others. Their previous experiences shape the way they are likely to approach the provision of oral/dental care to others. These relationships can be explained by Azjen’s Theory of Planned Behaviour. Godin and Kok (1996) explain the theory in relation to health-related behaviour and found that, most behaviours are located at some point along a continuum that extends from total control, to complete lack of control. The person has control when there are no practical constraints to the adoption of a given behaviour. The opposite extreme is that, if the adoption of a behaviour requires opportunities, resources or skills that are absent, the person has a lack of control. Perceived behavioural control can influence intention, as can the person’s attitude (Figure 1).

The attitude a person has towards a given behaviour is an expression of their positive or negative evaluation of performing that behaviour.
Figure 1. Schematic representation of Ajzen’s theory of planned behaviour

This is influenced by other factors such as the subjective norm, which is the person’s own perception of the social expectations to the adoption of a behaviour, perceived control over it, and their personal belief as to how easy or difficult it will be to perform the given behaviour. It is assumed this reflects external factors such as lack of time, funding or social support. A person’s belief in their efficiency also affects the choices they make and how much effort they invest in the activity. The expected success rate is determined by these factors. It is the estimate a person makes about the likelihood that a certain outcome or goal will be attained.

When this is put into oral hygiene/oral health care terms; the staff negative attitudes towards performing a task such as oral care are affected by their own personal beliefs surrounding oral care, and their previous experiences of it. This is influenced by external factors such as; work pressures, lack of time, lack of support, poor training and lack of confidence in performing the task. Perception of oro-dental care can be influenced by, parental/peer conditioning and previous experiences. If these are negative, then there is evidence to support the idea that these people are more likely
to be dentally anxious and have irregular dental attendance patterns (Bedi et al. 2000; Donaldson et al. 2008; Thomson et al. 2009). A negative attitude towards a behaviour or task makes a person less likely to ever perform or undertake that task. This supports the views previously expressed by Preston et al. (2000) who found that the care staff's own anxiety towards attending the dentist could be influencing the care that they provide for the residents they care for.

Jablonski et al. (2005) in their literature review of the behavioural, environmental and social forces that influence the delivery of care to frail and dependent older patients found multiple articles had cited nursing assistants as often describing the provision of oral care as a ‘repulsive’ activity. Many studies report that care-workers within LTC facilities would prefer not to perform OHC procedures (Frenkel et al. 2002; Coleman et al. (2006). These themes are also expressed in the findings of Johnson et al. (1999), who surveyed 196 DON in Nebraska LTC facilities, where it was reported that, CNAs ranked the provision of oral hygiene to residents as one of the least-liked services to provide, and ranked it at a level similar to giving an enema. Chalmers et al. (1996), found that over a third of the CNAs they studied readily expressed that when they could not complete all their duties on any given shift, that the provision of oral care was the first activity to be left out. In the investigation by Thole et al. (2010), detailing the staffs attitudes towards provision of oral hygiene for residents of Iowa intermediate care facilities, the observation was made that; the wearing of gloves was a sign of the staffs commitment to providing adequate oral care. The study’s significant findings (P<0.001) were that, the caregivers that stated that ‘lack of time’ prevented them from assisting residents with OHC also reported that they disliked assisting residents with OHC. Those that reported no wearing gloves during OHC procedures reported significantly (P<0.05) higher rates of; insufficient time to complete duties; experiencing behavioural problems with residents; and care resistant behaviours. Not only is provision of oral care not very well liked, it is also found to be repulsive. These factors adversely affect the level of care and the skill with which it is provided.

There is literature that describes the negative impact of caregiver attitudes on the provision of OHC. Poor priority of oral health and the way it is delivered is a multifaceted problem. Evidence in the literature is not positive for RH/LTC facilities
either. They are reported as giving oral health low priority, have low levels of policy in place and this has been linked to the neglect of oral health in older people residing within them. The dental workforce has also been proposed as a possible barrier to attaining adequate oral care. The workforce needs to be developed to meet the requirements of this portion of the population and also to assist institutions, and those working within them, by providing access to care for their residents. The workforce as a barrier is an argument that will be further discussed over the following section.

2.2.3 Workforce barriers

Population ageing is not only a national problem; it is a phenomenon that is occurring in nearly all industrialised countries. The current demographic trends are towards increasing longevity and falling birth rates, meaning that older people will comprise a larger proportion of the population. The United Nations Department of Economic and Social Affairs working paper on 'World Population Ageing' (2009) identifies with this, they state that throughout the world the young-old balance is changing. In most developed regions the proportion of older people already exceeds the number of children and by 2050 it will be double. The implications of this are that it will impose significant health, workforce and economic demands on these countries. There is a need to understand the implications this will have in the provision of care to this extremely diverse group of society. It will have significance on the way the workforce is developed, the requirement for increased numbers of specialists and improving dental professionals attitudes towards care of the older person.

2.2.3.1 Workforce does not reflect population demand

The current NZ oral health/dental workforce does not have sufficient numbers to provide care to all the frail older people residing within institutions. This is a major barrier that needs attention at multiple levels. The first of these is that there are very few specialist dentists currently working, and training in NZ. RHs do not have affiliated dentists working within their facilities and DHBs do not have sufficient numbers of suitably qualified dentists to provide care to all of our institutionalised older people because the dentists currently working within DHBs have their time divided between treating; trauma, surgery, and special needs adults and children.

General dental practitioners have previously identified three main barriers to them providing care to this group of the population, lack of financial incentive, impracticality and inconvenience, and they feel that this service should be provided within the public sector (Chalmers et al. 2001; Antoun et al. 2008).

Antoun et al. (2008) identified that a major barrier in provision of care to the older person was lack of a qualified workforce to meet their medical and dental requirements. Owing to the older population having increased retention of teeth and greater periodontal needs, older patients were identified as having more sophisticated OHC demands. Their research investigated the NZ general dental workforce beliefs about older institutionalised people's oral health. The main themes they identified as barriers were that; RH/LTC facility's staff attitudes and knowledge were questionable, there was a need for government initiatives and action; and that the current dental workforce was not in a position to provide efficient and sustainable care to this group of the population. Guay (2005) discusses the pathways for improving access to dental care for vulnerable elders in America and acknowledges that the workforce is an important factor in provision of care. Guay (2005) expands on this and states, that for any access programme to be successful, there must not only be an adequate dental workforce, but the workforce must be willing and able to provide care. This theme is carried through in the work of Harford (2009) who examined the financial and workforce impacts of population ageing in Australia. They found that it was extremely important to understand how the mix of care needed by the older population is likely to change. This would have a direct influence on workforce planning, including undergraduate, postgraduate and continuing education programmes. The workforce that is developed needs to meet the requirements of the population that it works within. It is a consumer-demand situation and there is a need to provide avenues for specialist qualifications where there is an identified need for a service within the population.

2.2.3.2 Need for specialists in geriatric dentistry

Limitation in the ability of the general dental practitioner to provide adequate care to frail older patients is highlighted in the conclusion of Harford (2009), who found that there is existing evidence to suggest that the oral health needs of older people are currently neither well understood or well met by the profession. This could be due to
either a deficiency in general dental practitioners training; or a lack of access to ongoing skill development in this area. These concepts are discussed in the next few paragraphs.

Older patients currently present with a unique and challenging set of medical, and psychological issues to be managed. Some of these would be considered to be out of the scope of the general dental practitioner. Over time and with experience practitioners develop skills in particular scopes of dentistry. Especially in those areas they deal with most regularly. Private medical insurance companies work on this premise. Insurance premiums are based on levels of competency. Competency of a practitioner revolves around a number of factors, including; level of qualification, on-going education and training, and positive outcomes over multiple performed procedures. The more often you perform a procedure the better your results and the more predictable your outcome. If you fail to achieve regular predictable outcomes, your insurance company may increase your premiums or restrict your scope of practice. This is done to reduce the chances of liability and having to 'pay out'. These are factors that are also regulated by a practitioner’s governing body and in NZ under the Health Practitioners Competence Assurance Act 2003\(^9\). HPCAA was passed in the best interest of public safety. Its purpose is to protect the health and safety of members of the public by providing mechanisms to ensure the life long competence of health practitioners. It ensures that registered health practitioners are not permitted to practise outside their scope. It directs their registration authorities to certify that a given practitioner is competent to provide services within their scope of practice when they issue an annual practising certificate, and that certain activities are restricted and only are able to be performed by suitably qualified registered health professionals.

The patrons of private dental practices do not normally comprise high numbers of frail older adults. These individuals are best suited for treatment in a setting where their medical backgrounds are known, and their safety is less likely to be compromised in any way. Institutionalised older people often have legal complications with respect to capacity to consent for treatment, guardianship, power

of attorney and absolute need for treatment. Consent issues were identified in the research by Wyatt (2009) in their 5 year follow up study of older adults dental utilization habits. They found that only 10% of these individuals could consent for themselves, the remainder had to be consented via relatives or public trustees. Consent for treatment needs to be dealt with in a way that is sensitive and respectful to the individual. The process for consent can be time consuming but is critical for provision of treatment. Consent issues cannot be overlooked, and require the skills of practitioner competent in assessing the legal issues that surround these cases. Not investigating these issues yet providing treatment could be considered as physical abuse and avoiding treating an individual due to lack of understanding of the laws that surround capacity and consent, is negligence. These skills develop with continuous application and are not routine practice for the regular dental practitioner. It could be expected that for the public safety under the HPCAA 2003 that the provision of treatment for these patients is best left to those who are skilled in its delivery. This group of the population is extremely diverse. They range from the functionally dependent, to the extremely frail institutionalised residents of LTC facilities. A considerable number of these patients are not suitable for dental treatment in the general setting and require treatment in a setting equipped for their medical needs, by a professional adept in all areas that are relevant in to their care.

2.2.3.3 Low numbers of specialist dentists

Owing to the present shortage of suitably qualified special needs dentists in NZ, there are limited numbers of practitioners to provide care to the extremely frail older population. Current dental and oral health training needs to reflect this change in population requirements. The current NZ dental workforce is not in a position to provide in-house dental care and services to all RH/LTC facilities throughout the country nor are facilities equipped for this to occur. Our DHBs provide limited access to dental care, not all DHBs in NZ have a dental department so the range of treatment provided may be restricted depending on the region. Smaller DHBs may have access for trauma and emergency care only, where as the larger centres often have access to a full range of dental treatment including; paediatrics, special needs, oral and maxillofacial surgery and routine dental care for the financially compromised.
New Zealand has only a handful of special needs/geriatric dentists who predominantly work within the public health sector. These professionals are currently able to provide care in only a limited capacity to the older population. They also provide treatment for many of the older special needs and medically compromised patients who have grown out of the specialist paediatric services. The Department of Labour 2005 occupational skill shortage assessment of the dental work force identified that nationally the absolute number of dentists is adequate. The New Zealand Dental Association 2006 more specifically found, that although the absolute number of dentists was adequate, rural areas and the public sector were experiencing a workforce shortage. The latter part of this was due to fewer young dentists entering or continuing within the public sector.

Specialist post-graduate training is currently expensive and very time consuming. This may pose a substantial barrier, as dentists may be reluctant to take time off work while training. Study in NZ also accumulates a substantial degree of financial burden. Undergraduate training in care for the older person is limited and post graduation there are few training courses and opportunities for dentists to gain further skills specifically in provision of dental care for the institutionalised or frail older person. Younger dentists graduating with high student loans may be reluctant to undertake public health dentistry, as this area of the profession can be seen as stressful, poorly remunerating, thankless and unrewarding, especially when compared to the more lucrative private sector.

2.2.3.4 Dentists' attitudes as a barrier to care provision
Undergraduate dental training does not involve a significant amount of working on patients outside of the dental practice setting. The dental chair is indoctrinated as the place where dental treatment takes place. Most dental practitioners feel uncomfortable providing treatment outside the context of a traditional dental surgery (Wyatt 2009). Domiciliary care does not make up a significant part of NZ undergraduate dental training and is considered a public health issue. The practice of domiciliary dental care is more routinely seen in the UK under the NHS General

10 www.dol.govt.nz Dentist: Occupational Skill Shortage Assessment, November 2005
Dental and Community Dental Services (Fiske and Lewis 2000). In NZ a limited amount of domiciliary care is provided by the armed services. Which more recently in NZ has been providing healthcare services to the outer islands of the Pacific.

Chalmers et al. (2001) surveyed dental practitioners and DON perceptions of care of residents in Adelaide NHs. They found that dentists reported a number of reasons that were prohibitive to them providing dental care to the older institutionalised adults. These were that the conditions were difficult to work in, there was a lack of dental chairs and that they found it hard to find time for dentistry that they felt was ‘community work’. Multiple respondents reported lack of financial incentive to provide this type of service. There was the overall feeling that, NHs and the government should be responsible for the cost of regular dental screenings and residents then pay only for treatment. Dental practitioners felt that the dental care for the older patient was one that should be covered by the domain of public health with a reasonable amount of government intervention and subsidy. Financial repercussions are not only a concern for the dental practitioner but also for the resident, their families and the LTC facilities as outlined under financial barriers.

2.2.4 Financial barriers
The cost associated with dental care is a significant issue for the older person, as they are generally at a stage of their life where they are not working and have had to shift to a fixed income. Dental care for adults in NZ is not subsidised and is generally completely privately funded. This can become a considerable issue for the older person living in subsidised care, as their incomes decrease and their overall healthcare needs increase (Giddings et al. 2008). This comes at a time in the older persons life when ability to access dental care may be more difficult due to functional and mental health reasons. These views were expressed by Smith (2010) in her paper on the public health policy surrounding oral health and well-being of older adults living in residential aged-care facilities. Finances were identified as being a substantial barrier to care that works at multiple levels. Firstly the older population may find it a barrier on the personal level as they are at a time in their lives where they are no longer earning a regular income; and secondly there is limited state funded support available to them for dental care because dentistry is primarily privately funded in NZ. Although in most major centres in NZ there is
access to some dental care via DHBs, this is limited and often available as only emergency or accident related care.

Access to care, mobility and taxis all impose a financial strain on NHs and their residents. Functionally, mentally and medically dependent residents may require constant caregiver attention on outings to specialist appointments. This imposes both time and financial constraints on facilities and on patients. Releasing personnel to assist residents at appointments poses a financial concern for the LTC facilities and increases the stress on those staff left to work in the facilities, especially if it leaves them short staffed. Costs extend beyond the domain of professional fees for dental care. Transportation, taxis and fuel, lost wages, and childcare were identified as acquisition or opportunity costs in previous research by Guay (2005). He concluded that these costs can amount to a significant financial burden on the consumer, and if the patients are unable to meet these costs, then even the offer of free treatment is still unaffordable.

Moreover, staff working in LTC facilities have been categorised and a majority are comprised of low-paid, semi-skilled workers (Parsons et al. 2003). This poses a financial barrier for these workers themselves when seeking dental care. Dental caries and dental neglect have previously been identified as being associated with social inequalities and lower socio-economic status (SES) groups (Thomson et al. 2004). The common risk factors for dental caries; low SES, poor diet, tobacco use and age, are shared with other prominent non-communicable diseases namely diabetes, cancer and cardiovascular disease12. The treatment of these diseases may pose further financial burden on the individual. It follows then that, treatment and promotion of excellent OHC is not just about reducing the amount of dental caries, it is also about promoting improvement in the overall health of the individual. Improved oral health via preventive measures such as daily oral hygiene may alleviate problems and help improve general health leading to reduced medical costs associated with poor health. The opposite of this is true, neglected oral care and the consequent need for dental treatment could prove costly. It may not only increase the financial burden associated with treatment of dental disease, but as a cross-over, due

12 Good Oral Health for All, for Life – The Strategic Vision for Oral Health in New Zealand. New Zealand Ministry of Health August 2006
to links in dental and general health, may impose further medical costs. This effect is true for both staff and residents alike. If they rate dental care as a low priority due to it being financially unobtainable, they are more likely to have irregular symptomatic attendance patterns. As expressed by McKelvey et al. (2003), if caregivers themselves have poor oral health, poor self-care practices and low dental utilisation rates, this is likely to be a substantial barrier to them in providing excellent daily OHC for their dependent residents. If the individual does not consider oral care to be a personal priority, they are unlikely to see it as a priority for those they care for.

2.2.5 Low use of oral care protocols, policies and guidelines

New Zealand does not appear to have consistent standardised guidelines for the provision of oral care for residents of RH/LTC facilities. As stated earlier facilities are required to have an Age Related Residential Care services Agreement (ARRC)\textsuperscript{13} with their local DHB, which requires them to develop and document policies, procedures, protocols and guidelines for all elements of the services they provide. Dental care comes under three sections in this agreement: health education and disease prevention, personal grooming, and personal hygiene. There is little research and evidence to support the idea that these specific policies, procedures, protocols and guidelines have ever been created with respect to oral and dental care. NZ facilities are also not required to have an accredited dental practitioner linked to their facility for licensure, unlike NH in the US.

In Australia there is a requirement to have a written protocol for provision of OHC but no actual registered practitioner accredited with the facility. This topic is currently under focus by the Australian Minister for Ageing. In 2009 the Honourable Justine Elliot released a media statement on Australia’s first dental plan for NHs. The plan will endeavour to look into two main focus areas. Firstly, the establishing of a nationally consistent approach to dental assessments in the AAT (Aged Care Assessment Team), via the development and use of an oral health assessment tool. Secondly, provision of a specifically developed national training package that will

\textsuperscript{13} Ministry of Health (2007) Age Related Residential Care Services Agreement. Wellington: Ministry of Health.
focus on the areas of assessment of oral health, planning of OHC, provision of daily oral hygiene and establishing communication pathways for dental referral\textsuperscript{14}.

Facilities within the USA have strict laws, which stipulate the prerequisites for licensure. Older people when entering facilities are expected to have a baseline examination under the regulations set in OBRA'87 (Dolan et al. 2005). This Act was implemented as a comprehensive uniform health assessment tool for nursing home residents after the US Congress contracted the HCFA (Federal Health Care Financing Administration) to evaluate existing regulations and recommend improvements in nursing home care.

It declared that nursing homes were obliged to provide and arrange for all necessary services that meet professional standards of quality, including routine and emergency dental care (Katz et al. 2010). OBRA '87 states that residents are required to have a MDS (Minimum Data Set) examination completed within 14 days of admission (Thai et al. 1997). It is then required to be updated yearly thereafter. The MDS examination comprises a multi-organ system survey for nurses to complete. It has two sections, Parts L and M, which are specific to the oral/nutritional status and oral/dental status of each individual resident. If problems are identified they are marked as 'triggers' and need to be followed up using the RAI (Resident Assessment Instrument). RAI includes a set of eighteen core assessment items. These items represent common problems or risk factors for NH residents. The MDS and RAI combined allow facilities to develop individualised plans for oral care. Neither of these tools have been routinely used in the NZ residential care system although, in June 2008 the Canterbury District Health Board decided to pilot the RAI (version 2.0) in eighteen facilities of mixed type (small, large, urban, rural, hospital and dementia style units). The initial feedback was positive and although the nurses who used the system found the process of assessment to take longer, most were positive about the new format of care-plans and found them easy to use\textsuperscript{15}.

By contrast NZ does not currently have clear-cut legislative requirements. The result of this is a system where residents are seen by a dental professional predominantly in times of emergency only. Implementation of nationally consistent protocols would

\textsuperscript{14} Honourable Justine Elliot MP, Australia, (Media Release) 1\textsuperscript{st} March 2009

\textsuperscript{15} Pers Comm. Michal.Boyd@waitematadhb.govt.nz
allow for accountability and regular audit. In a study of nursing assistants working in Minnesota NHs, Thai et al. (1997) found that the staff most consistently reported concerns (for the provision of residents' mouth care) were in the areas of; time constraints, uncooperative behaviours, limited visibility, and lack of proper guidelines. The nurses surveyed believed that their ability to provide consistent daily oral care was affected by the invisibility and apparent lack of accountability for the provision of oral care. These findings were supported by the work of Coleman and Watson (2006), who spent a period of time observing CNAs while they were providing daily oral care to 67 residents in upstate New York NHs. What they observed was that particular standards of oral care were not routinely met. The most notable of these were; brushing teeth for at least 2 minutes; flossing; oral assessment; rinsing with mouthwash; and the wearing of clean gloves during oral care. Nursing staff felt that these care behaviours had been allowed to continue because although the NHs participating had policies on tooth-brushing twice daily, rinsing and mouth-washing, the oral care provided was inconsistent, and unlike the documentation required of other daily care procedures (e.g. feeding, repositioning, toileting), the documentation of oral care was virtually absent. Daily documentation of procedures allows for accountability, audit and future planning. It also works to protect the both the facility management from neglecting their duty of care to residents and also the staff from being accused of having lax standards. Inability to complete a task on a daily basis may be a reflection of time pressures, lack of training and lack of equipment to complete the process. These will not be brought to the attention of appropriate management unless thoroughly documented.

It is simply not enough to have a policy; it has to be implemented as well. Guidelines need to set achievable goals with measurable outcomes. They need to have a timeline with the opportunity for reflection and change if found to be ineffective or inefficient. Design and implementation processes need to consult staff, residents, and interested practitioners to enable guidelines to have realistic expectations and transparency.

2.2.6 Baseline examinations on admission to long term care
There is little evidence to suggest that older patients entering LTC facilities within NZ are advised to have, or be provided with, the opportunity to have a thorough oral
or dental baseline examination. The provision of thorough pre-operative evaluation and examination is advised for all patients prior to undertaking particular high-risk medical procedures such as organ transplants, chemotherapy, or head and neck radiotherapy. The purpose of these is to identify any possible oral sources of infection and to eliminate them prior to the individual undergoing the procedure. Infection is the second most common cause of mortality in organ transplant patients surpassed only by rejection of the donor organ (Somacarrera et al. 1996). Elimination of oral disease and infection pre-operatively reduces the chances of morbidity and mortality due to infection in the post-operative phase when patients are immunocompromised. Guggenheimer et al. (2005) reported that organ transplant centres in the USA have been found to postpone surgery due to dental infections, as they believe that they could cause significant problems and lead to failure of the organ transplant. Application of these principals to the frail older individuals entering RH/LTC is both sensible and justified. As reported previously a high proportion of older patients residing within facilities are on multiple medications, and a majority suffer from some form of physical, sensory or 'other' disability. It would be warranted to say that their health is compromised and baseline examination would be beneficial for documentation of any oral disease.

Reducing oral burden prior to entering LTC works in favour of both the facility and the individual; the facility gets assurance that all extensive dental neglect has been dealt with, leaving them to provide basic daily oral care and arrange regular recall and review; and the individual is provided with uncompromised dental health reducing the probability of dental problems and the requirement for emergency care. It allows for individualised treatment plans to be initiated, with the long-term aim to improve the oral health-related quality of life for the resident. Other benefits of this may be: reduced financial inconvenience to the facilities, residents and their families; lower rates of emergency dental appointments; less transportation issues; and fewer accounts of obvious dental pain and neglect.

Chung et al. (2000) found in a survey of Geneva LTC facilities, that only 33% of physicians admitted to having carried out a systematic examination of the oral cavity.

---

16 www.stats.govt.nz (Statistics New Zealand Census 2006)
for new residents. These findings were consistent with the low levels of baseline examinations Smith et al. (2008) observed in their investigation of oral health adequacy in Michigan NHs. Overall, they found that only 38% of new residents were provided with an oral examination, with less than one in five screening examinations provided by a dentist or dental hygienist. In a majority of cases the oral assessment was by visual (44%), or verbal query (38%) of the resident by a staff member.

Considering the investigation by Smith et al. (2008) was completed in the US, and US Federal Law mandates the provision of a comprehensive assessment of all new residents within 14 days of entering a care facility, the reported levels of baseline examinations in both these studies is low. Similar results have previously been reported by Kambu and Levy (1993). Their research was undertaken to examine the oral hygiene levels in Iowa intermediate nursing care facilities. The managers surveyed reported that in a majority of incidences oral hygiene was included in their care plans and just over half reported assessing new residents ability to perform oral hygiene procedures independently. Deficiencies were found in some institutions assessment processes and a third of facilities used generic oral hygiene plans. Without completing an adequate baseline examination it would be difficult to provide adequate and appropriate individualised oral care plans. This is important considering that residents’ general health and physical abilities vary. The oral characteristics; the proportion of those with natural teeth compared to those with partial and full prosthesis, would also vary considerably.

Hoad-Reddick (1992) investigated the level of assessment of older peoples health when they entered into residential care facilities in South Manchester, UK. Their investigation aimed to compare the level of dental assessments with the level of medical assessments performed. Fifty facilities were visited and in all facilities the topic of oral/dental assessments were addressed infrequently. In little over 50% of cases, caregivers assessed the abilities of new residents to care for their own dentures or teeth. Less than two-fifths of these caregivers actually made an assessment of the teeth or dentures, and only 16% admitted to having made an attempt to examine the oral cavity. These results are consistent with those previously reported and show the low rates of baseline examinations performed on new residents. If a baseline examination is not performed this results in the possibility for oral disease and
infection to go unnoticed and a tendency towards treatment provided only in acute dental situations. This pattern of care is reflected in the data reported by Hoad-Reddick (1992) who also documented the visiting patterns of outside agencies and physicians at RH/LTC facilities. Doctors were reported to visit the homes on a regular basis in over 50% of instances, compared to dentists who only provided regular calls 16% of the time. Over two-thirds of the homes stated that they would call a dentist if they felt one was needed, reflecting the tendency for acute or emergency care only. This reflected that oral health and timely treatment of oral disease was only considered important in facilities once it was causing pain, and/or inconvenience to the residents or the institution.

2.3 Systemic health and its relationship to oral health

There are many systemic diseases that have been linked to poor oral health. The main ones affecting the older population are cancer, cardiovascular disease, stroke, diabetes, osteoporosis, dementia (including psychiatric conditions), and respiratory conditions like pneumonia. These diseases are often costly to treat, require multiple medications (poly-pharmacy) and in the case of the older population may require hospitalisation.

The New Zealand Ministry of Health (MoH) proposal ‘Good Oral Health for All, for Life’ 2006 identifies that: the condition of a person’s oral health is dependent on the interplay between social, behavioural and cultural factors. Dental caries and oral diseases have social and behavioural risk factors that are in common with a number of other well know non-communicable diseases, such as diabetes, cardiovascular disease and cancers. These common risk factors include; poor diet, tobacco use, age and socioeconomic deprivation. Older adults living in RH/LTC facilities have been found to have a combination of these risk factors. When retirement is reached the older adult is usually at a stage where income is static, and financially resources are becoming limited or stretched (Jablonski et al. 2005; Smith 2010). RH diets have been found to contain high amounts of carbohydrates which when combined with poor oral hygiene increases the chances of developing dental caries. The older population has a higher probability of having a past history of smoking or tobacco use and these are known to be risk factors in cancers and lung diseases (Sasco et al. 2004).
Maintenance of oral health, and prevention of dental disease in the older person is not only important for reducing the burden of oral conditions, it is also important for the promotion of overall health. Jablonski et al. (2005) concluded, in their literature review of oral health disparities in NH elders, that poor oral health in older adults might diminish the quality and quantity of life they experience. Poor oral health has been associated with the progression of existing diseases, such as diabetes, and also with the promotion and development of new ones, such as pneumonia. Improved oral health is important as it helps to reduce the risks associated with aspiration of foreign materials including food debris and plaque bacteria. Aspiration pneumonia and associated infections are significant causes of morbidity and early mortality in the older institutionalised adult (Terpenning et al. 2001; Ishikawa et al. 2008). Research has shown that frail older patients such as those who have suffered from a cerebrovascular incident with resultant dysphagia or impaired cough reflex, stand to benefit from significant health improvements if they are provided with appropriate daily oral hygiene (Terpenning et al. 2001).

Improvement in the oral health of RH/LTC patients in the long-term has been shown to improve their quality of life through reduction of pain, improvement in eating and function, and preservation of dignity (Helgeson et al. 1996). RHs need to get beyond the thought that OHC is only a cosmetic procedure and realise that it is associated with systemic repercussions if not adequately provided (Pronych et al. 2010). Moreover, with improvements in awareness, resources and communication between the dental profession and those who routinely care for the older person, their oral health could be improved. This could reduce the detriment to them in terms of systemic illness leading to a lower burden on the health-system through, lower numbers of prescribed medications, shorter hospital stays and quicker post-treatment recovery.

RH/LTC facility nurses and caregivers play a key role in the provision of care for the ageing population. They are crucial in the development and implementation of any guidelines, including those relating to OHC. In the development of protocols there needs to be open communication between the key role players noted above and the dental profession. They are dependant on each other for positive outcomes to be achieved. The objectives of this research are to examine the perceptions of OHC of
nurses, managers and care workers in RH/LTC facilities. Also to investigate the perceived barriers in obtaining oral/dental care for residents of these care facilities. It aims to document the core level of knowledge of these staff, with the intention to clarify whether these workers have a sufficient level of education to be giving dental and oral health advice to those in their care, or whether they should be leaving this specialised advice to those in the dental profession.
3. RESEARCH AIMS AND OBJECTIVES

The aims of this study were to investigate:

1. Oral health care practices and policies in New Zealand Rest Homes and Long Term Care facilities;
2. Barriers faced by staff in facilitating residents day to day oral care and obtaining dental care for them;
3. The oral health care awareness and current oral health practises of care workers in the Rest Homes and Long Term Care facilities.

The objectives of this research were:

1. To identify the number (%) of RH/LTC facilities in New Zealand that have written OHC plans and to identify whether their staff adhere to them during daily care of residents;
2. To determine whether RH/LTC facility workers have sufficient oral health knowledge to be appropriately advising the residents in their care;
3. To gather important data detailing the numbers of facilities with protocols in place for their residents and to use this to advocate on behalf of the older patient for improved dental/oral health care.
4. METHODS

A list of all of the registered RH/LTC Facilities in New Zealand (as of July 2008) was obtained from the New Zealand Ministry of Health. Facilities were then grouped under the relevant District Health Board (DHB) and half of the facilities from each Health Board were randomly selected to give a sample of 425 facilities that proportionately represented all DHBs to undergo the survey. Ethical approval was obtained at departmental level from the University of Otago. Ngai Tahu Research Committee was also consulted (Category B Ethics approval/Appendix C).

For the survey, two questionnaires were designed with modifications from those used in a previous study on the perceptions of oral health care resources and barriers among long-term care facilities in Michigan (Smith et al. 2008). These were presented to a small group of women working as assistants in the health sector (8 participants between the ages of 35 and 65) for assessment of readability and ease of understanding. Any comments were noted and necessary adjustments were made.

Participation in the survey was voluntary. Consent was obtained from the participants and anonymity was ensured (Appendix B). A prize draw (petrol and supermarket vouchers) was made as an incentive for returning the completed questionnaire.

A first round of questionnaires was sent out in June 2009 (n=425 of both Part 1 and Part 2 of the questionnaires). Anonymous pre-paid postage-return envelopes were provided for ease of return. Questionnaires were given sequential reference numbers that were present solely for the purpose of preventing duplication of data entry.

Second and third waves of questionnaires (July and August 2009) were sent out to non-responders. In total, three waves of questionnaires were sent out at 1-month intervals with reminder letters 2 weeks following each questionnaire mailed.

Part 1 (a and b) of the questionnaire (Appendix A) was sent to the Principal managers/Director of Nursing (DON) in each facility. Part 1a was designed to obtain
an overview of the type of facility including information on the staffing profile, number and ethnicity of the residents and whether the facility had ever had a dental professional attend to give training in oral hygiene procedures. Part 1b aimed to identify: whether facilities had written care plans for the dental needs of residents; the facilities normal processes for monitoring and dealing with oral health issues; and to document the main barriers facilities face in maintaining the oral health of their residents.

Part 2 of the questionnaire was sent to Caregivers/Nurses working in the RH/LTC Facilities. It was designed to obtain an overview of the level of oral health knowledge and of the personal oral health care practises of those participating in the survey (Appendix A).

The survey responses were entered into an electronic database, and then analysed using the statistical package SPSS (Statistical Package for the Social Sciences Inc. Chicago, version 14). Logic checks and necessary "cleaning" of the data set was carried out and descriptive statistics were computed. Bivariate associations between specific outcome variables and regional RH/LTC characteristics were tested for statistical significance. Associations between categorical variables were tested for statistical significance using the chi-square test, with the alpha level set at 0.05.
5. RESULTS

5.1 Response rate
Of the 425 facilities that were sent Part 1 (Facility questionnaire) of the questionnaires, 188 returned them. Of these 49 were excluded as they did not fit the criteria for the study any more; that is, the facility was no longer functioning as a RH/LTC facility. This gave an overall response rate of 32.7% (n=139) for the ‘Facility’ questionnaire.

The response rate for Part 2 (Caregiver questionnaire) was 32.0% (n=136). In total 214 questionnaires were returned, 24 refused to participate and 54 were out of the frame of the study. Percentages regarding any of the questions relating to the topics are derived from the total sample size of those who freely participated in the survey.

5.2 Characteristics of the facilities

5.2.1 Size
The facilities ranged in size from 4 to 145 beds with the median size being 35 beds. For ease of analysis, facilities were categorised according to the number of beds: smaller facilities (33.8%) had fewer than 25 beds; medium sized facilities (33.1%) had 25-44 beds; and larger facilities (33.1%) had 45 or more beds.

5.2.2 Location
Most facilities (63.0%) were located in cities, with the remainder located in smaller centres. Three-quarters of the larger facilities were located in the cities and more of the smaller facilities were located in smaller centres, this was significant ($\chi^2 7.485$; df2; P<0.05).

5.2.3 Workforce characteristics
The workforce was predominantly made up of women (94.8%; n=3491). It comprised registered nurses (17.5%), qualified caregivers (45.5%) and unqualified caregivers/aides (37.0%).
5.2.4 Residents' characteristics

The total number of residents in the 192 facilities was 5,481. Ethnicity of the residents was reported as; Pākehā/European (92.1%), Māori (2.9%), Pacific Island (1.6%), Asian (1.4%) and ‘other’ (2.0%) were represented in much smaller proportions. The age range for residents was reported to be 18 to 107 years of age, with 94.9% being over 65 years of age.

Overall a high proportion (71.0%) of the residents were reported as being ‘frail elderly’ and 38.7% were classified as ‘having dementia’. The facilities reported that the proportion of residents with dementia ranged from 0 to 100%, (mean 41.6; sd 31.0); median proportion was 35.8%. A median split was used to categorise facilities according to their number of dementia patients. This is one of the independent variables by which the oral care data are presented.

Residents with ‘developmental disabilities’ comprised a small proportion (2.6%), as did those with ‘psychiatric disabilities’ (5.0%). An observation was made that those with ‘developmental disabilities’ were found to be mostly residing in facilities with a higher proportion of residents under the age of 65 years.
5.3 Dental care practices

5.3.1 Care plan
Written oral care plans that extended beyond basic oral care, such as daily tooth brushing and denture cleaning, were reported as being available in 35.9% of the facilities. Of these facilities, only 15.4% reported having had a dental professional assist in drafting the plan of care.

Facilities that responded positively to having a dental plan of care were also asked whether or not their staff had any problems in adhering to their protocol. Just over one in five (21.7%) of the facilities recognised that their staff had some problems adhering to their protocol.

Day-to-day coordination of the RH/LTC facility’s dental plan of care was reported as being primarily the responsibility of a registered nurse (39.5% of responses), followed by, caregiver/care-aide (25.6%), directors of nursing (23.3%) and facility administrators (7.0%). The other 4.7% of facilities did not specify who coordinated the activity. No facilities reported that coordination was the responsibility of, a dentist, dental hygienist or social worker. The response option ‘no-ones responsibility’ was not selected.

Data on whether or not facilities have written dental protocols and whether facilities have ever had a dental professional involved in professional training in oral hygiene are presented in Table 2. Dental protocols were defined for respondents as ‘written plans of care for the dental needs of its residents’ (beyond daily tooth brushing and denture cleaning).

Training was described as being in the form of either a visual or a theoretical demonstration on how to provide adequate oral hygiene procedures for the residents. Only 14.0% of facilities had ever had a dental professional attend to give training.
Table 2. Use of oral care protocols and dental demonstrators, by facility characteristics (brackets contain row percentages unless otherwise stated)

<table>
<thead>
<tr>
<th>Facility has a written oral/dental care policy/protocols</th>
<th>Have ever had a dental professional give a demonstration</th>
<th>Think having a professional demonstration would be beneficial</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location of facility</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>14 (29.8)</td>
<td>5 (10.2)</td>
</tr>
<tr>
<td>City</td>
<td>33 (39.3)</td>
<td>14 (16.1)</td>
</tr>
<tr>
<td><strong>Size of facility</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Up to 24 beds</td>
<td>13 (29.5)</td>
<td>4 (8.5)</td>
</tr>
<tr>
<td>25-44 beds</td>
<td>19 (44.2)</td>
<td>7 (15.2)</td>
</tr>
<tr>
<td>45 or more beds</td>
<td>15 (34.1)</td>
<td>8 (18.6)</td>
</tr>
<tr>
<td><strong>Proportion of dementia patients</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower than median</td>
<td>19 (32.2)*</td>
<td>8 (12.7)*</td>
</tr>
<tr>
<td>Higher than median</td>
<td>23 (28.3)</td>
<td>6 (9.7)</td>
</tr>
<tr>
<td>All combined</td>
<td>47 (35.9)</td>
<td>19 (14.0)</td>
</tr>
</tbody>
</table>

*aP<0.05  
*Missing data for 5 respondents  
#Missing data for 10 respondents

It was found that facilities located in cities were more likely to have a written oral care policy and also to have had a visual/physical demonstration provided by a dental professional. Larger facilities were more likely to have had a person in to give a physical demonstration. These results were not statistically significant. Most respondents felt that having a professional in to give a demonstration would be beneficial. Only 16.2% of the facilities knew that the New Zealand Dental Association could be contacted to provide educational (video) resources for training purposes. There were no significant differences in numbers of protocols or demonstrations levels when compared by facility size, locality or proportion of dementia patients.
5.3.2 Baseline oral examination

Facilities were asked whether new residents were advised to get an oral examination (performed by a dental professional) when entering their premises for a long-term stay. Only 11.4% of them advised residents to get a baseline dental examination before entering their facility long-term; 24.2% reported that residents were ‘sometimes’ advised to get an examination, and 64.4% responded that residents were not advised to have a dental examination.

Data on oral care policies, baseline oral examinations and equipment are presented in Table 3. The data in Table 3 shows that smaller facilities were slightly more likely than larger ones to have performed a baseline examination when residents entered for a long-term stay, even though fewer of these facilities had written oral care protocols. This pattern was also observed with the baseline examinations and facilities located rurally. In all facilities, the level of baseline examinations reported to have been performed was low, as was the number of facilities (15.8%) that reported having in-house/portable dental equipment available for the dental treatment of residents in their care.

Table 3. Rate of baseline examinations performed at admission and facilities with portable or in house dental equipment available

<table>
<thead>
<tr>
<th>Location of facility</th>
<th>Facility has a written oral/dental care policy/protocol</th>
<th>Baseline examination at admission</th>
<th>Facility has on-site or portable dental equipment available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>14 (29.8)</td>
<td>7 (14.3)</td>
<td>7 (13.7)</td>
</tr>
<tr>
<td>City</td>
<td>33 (39.3)</td>
<td>8 (9.6)</td>
<td>15 (17.0)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Size of facility</th>
<th>Facility has a written oral/dental care policy/protocol</th>
<th>Baseline examination at admission</th>
<th>Facility has on-site or portable dental equipment available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 24 beds</td>
<td>13 (29.5)</td>
<td>6 (13.6)</td>
<td>7 (14.9)</td>
</tr>
<tr>
<td>25-44 beds</td>
<td>19 (44.2)</td>
<td>5 (11.6)</td>
<td>7 (15.2)</td>
</tr>
<tr>
<td>45 or more beds</td>
<td>15 (34.1)</td>
<td>4 (8.9)</td>
<td>8 (17.4)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Proportion of dementia patients</th>
<th>Facility has a written oral/dental care policy/protocol</th>
<th>Baseline examination at admission</th>
<th>Facility has on-site or portable dental equipment available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower than median</td>
<td>19 (32.2)*</td>
<td>6 (10.3)*</td>
<td>8 (12.7)*</td>
</tr>
<tr>
<td>Higher than median</td>
<td>23 (28.3)</td>
<td>7 (11.3)</td>
<td>9 (14.1)</td>
</tr>
<tr>
<td>All combined</td>
<td>47 (35.9)</td>
<td>15 (11.4)</td>
<td>22 (15.8)</td>
</tr>
</tbody>
</table>

*Data missing for 2 respondents
*Data missing for 5 respondents
Data on baseline examinations and the availability of dental equipment in facilities with written care policies are presented in Table 4. It shows that facilities that have written ‘oral care plans’ also had slightly higher rates of self-reported baseline dental examinations. If the facility had in-house/portable dental equipment they were significantly more likely to have a written ‘oral care plan’.

Table 4. Baseline examinations performed and availability of portable/on-site dental equipment by, whether facility has written oral care plan (brackets contain row percentages unless otherwise stated)

<table>
<thead>
<tr>
<th>Facility has written oral care plan</th>
<th>Baseline examination at admission</th>
<th>Facility has on-site/portable dental equipment available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>7 (15.2)</td>
<td>12 (25.5)*</td>
</tr>
<tr>
<td>No</td>
<td>8 (9.6)</td>
<td>10 (11.9)</td>
</tr>
<tr>
<td>All combined</td>
<td>15 (11.6)</td>
<td>22 (16.8)</td>
</tr>
</tbody>
</table>

*P<0.05

Regardless of whether a baseline examination was performed all respondents were questioned on the approximate number of residents who had received dental treatment in the past 12 months. An average of 11.9% of the residents were reported as having received treatment in the past 12 months. Of the total number of respondents (n=125), 12.8% did not know what percentage of their residents had received dental treatment in the past 12 months. The primary need for treatment was reported as being for either, emergency dental care (60.3%) or routine dental care (39.7%). When asked what percentage of all residents thought to need dental care generally received it, most responded 100%, but responses ranged from 0.0% to 100.0% (average 58.2%). Facilities that did not have care plans reported a slightly lower rate than those facilities that did have care plans (56.6% sd 44.0 compared to 59.9% sd 45.6 respectively). Smaller facilities reported lower rates of residents needing dental care (54.5% sd 44.7) than larger facilities (67.6% sd 40.8). These results were not statistically significant.
5.3.3 Monitoring practices

Who the oral health of residents was most likely to be monitored by is presented in Table 5. The data shows that in just over two-thirds of cases monitoring was most likely to be completed by the staff ‘asking’ residents whether or not they had any oral/dental problems. Visual assessment of the oral cavity was reported to be performed approximately half of the time. In a very low number of cases (2.2%) the resident was examined by a dentist or hygienist. Monitoring by an unnamed party was reported in 10.8% of responses.

Staff members asking the resident if they had any oral problems or complaints occurred slightly more frequently in facilities located in smaller centres and the provision of a visual assessment of the oral cavity was more likely to occur in facilities with higher than the median number of dementia patients.
Table 5. Monitoring of oral health, by facility location, size and dementia status characteristics (brackets contain row percentages unless otherwise stated)

<table>
<thead>
<tr>
<th>Location of facility</th>
<th>Staff member asking if residents have oral complaints</th>
<th>Staff member performing a visual oral assessment</th>
<th>Dental screening performed by dentist/hygienist</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>38 (74.5)</td>
<td>25 (49.0)</td>
<td>1 (2.0)</td>
<td>3 (3.9)</td>
</tr>
<tr>
<td>City</td>
<td>56 (63.3)</td>
<td>43 (48.9)</td>
<td>2 (2.3)</td>
<td>12 (13.0)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Size of facility</th>
<th>Staff member asking if residents have oral complaints</th>
<th>Staff member performing a visual oral assessment</th>
<th>Dental screening performed by dentist/hygienist</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 24 beds</td>
<td>30 (63.8)</td>
<td>27 (57.4)</td>
<td>2 (4.3)</td>
<td>4 (8.5)*</td>
</tr>
<tr>
<td>25-44 beds</td>
<td>33 (71.7)</td>
<td>17 (37.0)</td>
<td>0 (0.0)</td>
<td>7 (15.2)</td>
</tr>
<tr>
<td>45 or more beds</td>
<td>31 (67.4)</td>
<td>24 (52.2)</td>
<td>1 (2.2)</td>
<td>4 (8.5)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Proportion of dementia patients</th>
<th>Staff member asking if residents have oral complaints</th>
<th>Staff member performing a visual oral assessment</th>
<th>Dental screening performed by dentist/hygienist</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower than median</td>
<td>42 (66.7)</td>
<td>28 (44.4)</td>
<td>1 (1.6)</td>
<td>7 (11.1) #</td>
</tr>
<tr>
<td>Higher than median</td>
<td>43 (67.2)</td>
<td>35 (54.7)</td>
<td>1 (1.6)</td>
<td>7 (11.1)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Facility has written oral care plan</th>
<th>Staff member asking if residents have oral complaints</th>
<th>Staff member performing a visual oral assessment</th>
<th>Dental screening performed by dentist/hygienist</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>31 (66.0)*</td>
<td>23 (48.9)*</td>
<td>1 (2.1)</td>
<td>7 (14.9)</td>
</tr>
<tr>
<td>No</td>
<td>61 (72.6)</td>
<td>44 (52.4)</td>
<td>2 (2.4)</td>
<td>8 (9.5)</td>
</tr>
<tr>
<td>All combined</td>
<td>94 (67.6)</td>
<td>68 (48.9)</td>
<td>3 (2.2)</td>
<td>15 (10.8)</td>
</tr>
</tbody>
</table>

*P<0.05
#Missing data for 1 respondent
*Missing data for 2 respondents
Data on the residents' ability to perform independent or assisted oral hygiene procedures are presented in Table 6. The data shows that on average, 39.9% of residents were reported to be able to perform daily oral hygiene procedures independently (no assistance at all), 27.2% of residents performed these procedures 'with assistance' and 29.8% required full assistance with daily oral hygiene. Assistance with oral hygiene procedures was required less in facilities with a lower than the median number of dementia patients (48.4% could perform independent care compared with 28.9% of residents in facilities with higher than the median number of dementia patients). There was also a slightly higher number of patients who required complete assistance with oral hygiene procedures in facilities with a higher than the median number of residents with dementia than those with fewer than the median proportion (35.5 % and 26.2% respectively).

Table 6. Ability of resident to perform independent oral hygiene procedures, by facility location, size, dementia status and care plan characteristics (mean values with SD in brackets)

<table>
<thead>
<tr>
<th>Location of facility</th>
<th>Can perform oral hygiene independently</th>
<th>Some assistance with oral hygiene required</th>
<th>Complete assistance with oral hygiene required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>38.2 (30.9)</td>
<td>27.9 (24.1)</td>
<td>29.9 (28.9)</td>
</tr>
<tr>
<td>City</td>
<td>40.9 (27.7)</td>
<td>26.7 (22.4)</td>
<td>29.8 (28.4)</td>
</tr>
<tr>
<td>Size of facility</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Up to 24 beds</td>
<td>38.9 (30.5)</td>
<td>32.1 (28.0)</td>
<td>25.4 (27.1)</td>
</tr>
<tr>
<td>25-44 beds</td>
<td>44.8 (31.8)</td>
<td>24.1 (21.6)</td>
<td>26.7 (30.6)</td>
</tr>
<tr>
<td>45 or more beds</td>
<td>35.8 (23.8)</td>
<td>25.6 (18.4)</td>
<td>37.3 (26.9)</td>
</tr>
<tr>
<td>Proportion of dementia patients</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower than median</td>
<td>48.4 (28.6)</td>
<td>23.2 (20.4)</td>
<td>26.2 (28.8)</td>
</tr>
<tr>
<td>Higher than median</td>
<td>28.9 (25.0)</td>
<td>31.3 (25.4)</td>
<td>35.5 (28.5)</td>
</tr>
<tr>
<td>Facility has written oral care plan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>39.5 (33.5)</td>
<td>27.0 (26.5)</td>
<td>28.2 (30.5)</td>
</tr>
<tr>
<td>No</td>
<td>40.3 (26.5)</td>
<td>27.1 (21.3)</td>
<td>30.5 (27.9)</td>
</tr>
<tr>
<td>All combined</td>
<td>39.9 (28.9)</td>
<td>27.2 (23.0)</td>
<td>29.8 (28.5)</td>
</tr>
</tbody>
</table>
5.3.4 Management of oral hygiene and dental emergencies

Facility Managers and Directors of nursing were asked to rate the level of satisfaction with the way in which the oral hygiene needs of their residents were met. Similarly respondents were asked about their satisfaction of how acute situations were managed (with the same response options). Response options were ‘very satisfied’, ‘somewhat satisfied’, ‘somewhat dissatisfied’ or ‘very dissatisfied’. These were then collapsed into two groupings of ‘satisfied’ and ‘dissatisfied’.

Data on the staff members’ satisfaction with how the oral health needs of residents are being met and how satisfied staff are with the way they deal with dental emergencies are presented in Table 7. Of the facilities, 72.6% reported that they were ‘satisfied’ with the way that the oral hygiene needs of their residents were being dealt with, 27.4% reported being ‘dissatisfied’. No significant differences were found with how oral hygiene needs were being met by facility location, size, or proportion of dementia patients. However, a higher proportion of respondents from facilities with written oral care plans were satisfied with the way in which the oral needs of their residents were met ($\chi^2 5.827; \text{df} 1; P<0.05$).

When asked to consider the hypothetical situation of ‘arranging dental care for a resident who appears to be in considerable dental/oral discomfort due to abscessed teeth or gums…?’ Over three-quarters of all respondents were satisfied with the way dental emergencies were dealt with. Facilities with written care plans reported slightly higher satisfaction but not significantly so.
<table>
<thead>
<tr>
<th></th>
<th>Satisfied with residents oral hygiene</th>
<th>Satisfied with how they deal with an acute/emergency dental situation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location of facility</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>36 (72.0)</td>
<td>38 (76.0)</td>
</tr>
<tr>
<td>City</td>
<td>62 (72.9)</td>
<td>64 (79.0)</td>
</tr>
<tr>
<td><strong>Size of Facility</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Up to 24 beds</td>
<td>34 (75.6)</td>
<td>36 (81.8)</td>
</tr>
<tr>
<td>25-44 beds</td>
<td>35 (77.8)</td>
<td>35 (79.5)</td>
</tr>
<tr>
<td>45 or more beds</td>
<td>29 (64.4)</td>
<td>31 (72.1)</td>
</tr>
<tr>
<td><strong>Proportion of dementia patients</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower than median</td>
<td>48 (78.7)§</td>
<td>48 (78.7)§</td>
</tr>
<tr>
<td>Higher than median</td>
<td>41 (66.1)</td>
<td>43 (74.1)</td>
</tr>
<tr>
<td><strong>Facility has written oral care plan</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>40 (85.1)*</td>
<td>37 (82.2)§</td>
</tr>
<tr>
<td>No</td>
<td>55 (65.5)</td>
<td>61 (74.4)</td>
</tr>
<tr>
<td><strong>All combined</strong></td>
<td>98 (72.6)</td>
<td>102 (77.9)</td>
</tr>
</tbody>
</table>

*P<0.05
*Missing data for 3 respondents
§Missing data for 4 respondents
¶Missing data for 9 respondents
*§Missing data for 11 respondents
5.3.5 Access to dental advice

Managers and Directors of Nursing were questioned on whether their facility has a dentist or other dental professional whom they could access for ‘regular treatment’, ‘emergency treatment’, ‘general advice’ or ‘none of the above’. Multiple responses were permitted for this question and so percentages do not sum to 100. Data on access to a dental profession for treatment and advice are presented in Table 8. Overall almost 60% of facilities had access to a dentist for regular dental care; this was higher in the LTC facilities located in cities. Almost half of the facilities had access to a dental professional for emergency treatment and over two-thirds of facilities had access to a dental professional for general advice.

Table 8. Facilities’ ability to access a dental professional for regular/emergency care and advice by, facility location, size and dementia status characteristics (brackets contain row percentages unless otherwise stated)

<table>
<thead>
<tr>
<th>Location of Facility</th>
<th>Access for regular dental care</th>
<th>Access for acute/ emergency dental care</th>
<th>Access for advice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>25 (49.0)*</td>
<td>23 (45.1)</td>
<td>31 (60.8)</td>
</tr>
<tr>
<td>City</td>
<td>58 (65.9)</td>
<td>44 (50.0)</td>
<td>67 (76.1)</td>
</tr>
<tr>
<td>Size of facility</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Up to 24 beds</td>
<td>26 (55.3)</td>
<td>25 (53.2)</td>
<td>31 (66.0)</td>
</tr>
<tr>
<td>25-44 beds</td>
<td>29 (63.0)</td>
<td>19 (41.3)</td>
<td>34 (73.9)</td>
</tr>
<tr>
<td>45 or more beds</td>
<td>28 (60.9)</td>
<td>23 (50.0)</td>
<td>33 (71.7)</td>
</tr>
<tr>
<td>Proportion of dementia patients</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower than median</td>
<td>34 (54.0)§</td>
<td>37 (58.7)*</td>
<td>47 (74.6)</td>
</tr>
<tr>
<td>Higher than median</td>
<td>42 (65.6)</td>
<td>28 (43.8)</td>
<td>43 (67.2)</td>
</tr>
<tr>
<td>Facility has written oral care plan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>28 (59.6)§</td>
<td>19 (40.4)*</td>
<td>34 (72.3)§</td>
</tr>
<tr>
<td>No</td>
<td>48 (57.1)</td>
<td>42 (50.0)</td>
<td>58 (69.0)</td>
</tr>
<tr>
<td>All combined</td>
<td>83 (59.7)</td>
<td>67 (48.2)</td>
<td>98 (70.5)</td>
</tr>
</tbody>
</table>

*P<0.05
*Missing data for 2 respondents
§Missing data for 6 respondents
*Missing data for 7 respondents
°Missing data for 8 respondents
Facilities were asked to consider the hypothetical situation of; a resident in your facility appears to be in considerable dental/oral discomfort due to abscessed teeth or gums? They were asked; where the resident’s dental problem would normally be dealt with; how soon the problem would typically be addressed; and how soon they would get an appointment at a dental surgery for treatment (Appendix A; Part 1b. Question 10). Respondents reported that dental emergencies were dealt with most often (68.4% of the time) in a general dental practitioner’s office, a dental specialist’s office 5.3% of the time and 26.3% of incidences via the hospital emergency department or hospital dental department.

How soon the same hypothetical dental problems would be addressed is show in Figure 2.

![Figure 2. How soon a dental problem would be addressed/acknowledged](image-url)
How soon the resident would get an appointment for treatment is shown in Figure 3.

**Figure 3.** How soon could the resident get an appointment at a dental surgery for treatment?
5.4 Barriers to care

The respondents were asked to rank what they felt were the greatest barriers for them in attaining good oral health for the residents in their facilities. Respondents were asked to rate on a Likert scale from 0 to 5 ('0' not a significant barrier and '5' being a significant barrier), whether the following circumstances were perceived as a barrier. Data on perceived barriers to care are presented in Table 9.

Table 9. Mean responses of respondents perceived 'barriers to good oral health'

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Mean (SD)</th>
<th>Proportion selecting '4' or '5' (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport of resident to Dentist</td>
<td>2.1 (1.9)</td>
<td>32.3</td>
</tr>
<tr>
<td>Willingness of general dentist to treat residents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at nursing facility</td>
<td>3.6 (1.9)</td>
<td>66.4</td>
</tr>
<tr>
<td>at private surgery</td>
<td>1.7 (1.6)</td>
<td>13.3</td>
</tr>
<tr>
<td>at hospital dental department</td>
<td>2.5 (1.8)</td>
<td>32.7</td>
</tr>
<tr>
<td>Time constraints on facility nursing staff</td>
<td>2.3 (1.8)</td>
<td>33.8</td>
</tr>
<tr>
<td>Lack of interest in dental care by</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resident</td>
<td>3.0 (1.7)</td>
<td>45.8</td>
</tr>
<tr>
<td>Residents family</td>
<td>2.6 (1.6)</td>
<td>30.2</td>
</tr>
<tr>
<td>Nursing staff</td>
<td>1.4 (1.3)</td>
<td>6.1</td>
</tr>
<tr>
<td>General Practitioner</td>
<td>1.7 (1.5)</td>
<td>10.7</td>
</tr>
<tr>
<td>Financial concerns of resident or family</td>
<td>3.2 (1.7)</td>
<td>52.6</td>
</tr>
</tbody>
</table>

The largest potential barrier to care for residents as perceived by the nursing staff was, the lack of willingness of the general dental practitioner to treat residents at the LTC facility. The next largest perceived barrier was 'financial concerns of residents or family' followed by the 'lack of interest in dental care by the resident'. The least inconsequential barriers were reported as, lack of interest in dental care by nursing staff, time constraints for the nursing staff, and transportation of residents to the dentist.

Data on the mean barriers to attaining good oral health for the older people residing with in LTC facilities are presented in Table 10. These have been arranged in descending order from those which respondents reported was the greatest perceived
barrier to attaining good oral health through to those which were reported as the most inconsequential. When ranked this way it can be seen that for most of the barriers, the mean scores for the city facilities were ranked higher than those from rural facilities. This pattern was also seen in the facilities that did not have written care plans. Otherwise, there were no clear gradients.
Table 10. Mean potential barriers to good oral health for residents (in order of greatest barrier to lowest barrier), by facility characteristics (standard deviation in brackets)

<table>
<thead>
<tr>
<th>Location of facility</th>
<th>Willingness to treat at facility</th>
<th>Financial concerns of family/resident</th>
<th>Lack of interest by resident</th>
<th>Lack of interest by residents family</th>
<th>Willingness to treat at hospital department</th>
<th>Time constraints on nursing staff</th>
<th>Transport of resident to dentist</th>
<th>Willingness to treat at private surgery</th>
<th>Lack of interest by General Practitioner</th>
<th>Lack of interest by nursing staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>3.6 (2.0)</td>
<td>3.0 (1.7)</td>
<td>2.9 (1.8)</td>
<td>2.4 (1.7)</td>
<td>2.5 (2.0)</td>
<td>1.9 (1.9)</td>
<td>2.0 (1.8)</td>
<td>1.5 (1.5)</td>
<td>1.6 (1.5)</td>
<td>1.3 (1.3)</td>
</tr>
<tr>
<td>City</td>
<td>3.6 (1.8)</td>
<td>3.3 (1.7)</td>
<td>3.1 (1.6)</td>
<td>2.7 (1.5)</td>
<td>2.5 (1.7)</td>
<td>2.5 (1.9)</td>
<td>2.2 (1.9)</td>
<td>1.9 (1.7)</td>
<td>1.8 (1.4)</td>
<td>1.5 (1.3)</td>
</tr>
<tr>
<td>Size of facility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Up to 24 beds</td>
<td>3.2 (2.1)</td>
<td>3.1 (1.8)</td>
<td>3.2 (1.6)</td>
<td>2.7 (1.6)</td>
<td>2.4 (1.9)</td>
<td>1.7 (1.8)</td>
<td>1.5 (1.8)</td>
<td>1.2 (1.4)</td>
<td>1.7 (1.6)</td>
<td>1.3 (1.4)</td>
</tr>
<tr>
<td>25-44 beds</td>
<td>3.8 (1.6)</td>
<td>3.1 (1.6)</td>
<td>2.6 (1.8)</td>
<td>2.3 (1.6)</td>
<td>2.8 (1.8)</td>
<td>2.5 (1.9)</td>
<td>2.4 (1.8)</td>
<td>2.1 (1.6)</td>
<td>1.5 (1.3)</td>
<td>1.3 (1.1)</td>
</tr>
<tr>
<td>45 or more beds</td>
<td>3.7 (1.9)</td>
<td>3.4 (1.6)</td>
<td>3.2 (1.6)</td>
<td>2.8 (1.5)</td>
<td>2.3 (1.8)</td>
<td>2.6 (1.9)</td>
<td>2.3 (1.9)</td>
<td>1.8 (1.6)</td>
<td>1.9 (1.4)</td>
<td>1.7 (1.4)</td>
</tr>
<tr>
<td>Proportion of dementia patients</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower than median</td>
<td>3.8 (3.5)</td>
<td>3.3 (1.6)</td>
<td>2.8 (1.8)</td>
<td>2.5 (1.6)</td>
<td>2.3 (1.9)</td>
<td>2.1 (1.9)</td>
<td>2.1 (2.0)</td>
<td>1.5 (1.6)</td>
<td>1.6 (1.5)</td>
<td>1.4 (1.4)</td>
</tr>
<tr>
<td>Higher than median</td>
<td>3.5 (2.0)</td>
<td>3.1 (1.7)</td>
<td>3.2 (1.6)</td>
<td>2.7 (1.6)</td>
<td>2.6 (1.8)</td>
<td>2.5 (1.9)</td>
<td>2.1 (2.1)</td>
<td>1.9 (1.6)</td>
<td>1.8 (1.3)</td>
<td>1.5 (1.2)</td>
</tr>
<tr>
<td>Facility has written oral care plan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>3.8 (2.0)</td>
<td>2.9 (1.9)</td>
<td>2.7 (1.9)</td>
<td>2.3 (1.7)</td>
<td>2.1 (1.7)</td>
<td>2.0 (1.8)</td>
<td>1.8 (1.8)</td>
<td>1.5 (1.6)</td>
<td>1.3 (1.3)</td>
<td>1.1 (1.1)</td>
</tr>
<tr>
<td>No</td>
<td>3.7 (1.9)</td>
<td>3.3 (1.6)</td>
<td>3.2 (1.6)</td>
<td>2.8 (1.5)</td>
<td>2.6 (1.8)</td>
<td>2.4 (1.9)</td>
<td>2.3 (2.0)</td>
<td>1.8 (1.6)</td>
<td>1.9 (1.5)</td>
<td>1.6 (1.4)</td>
</tr>
</tbody>
</table>
5.5 Respondents comments and suggestions on how to improve oral hygiene

The ‘Facility’ questionnaire had two comments sections. The first of these asked whether the staff had ever had any formal training or guidance for assistance with oral care procedures. Of the original respondents, 150 chose to make comments. Only 13.0% admitted to having some form of training and 5.0% advised that they had a dental professional attended to give the training. A recurring theme in the comments made, was that ‘In-service training in oral care would be of great value’. Of the 150 respondents, 7 reported having purchased a visual aid (such as a DVD or video) on oral care for their residents.

The final question in Part 1 asked Managers and Principal Nurses for their thoughts on how the oral health care of their residents could be improved. A list of 12 options were given and they were asked to indicate which of the scenarios they felt would be beneficial (Table 11). The option most favoured was for ‘free training by a dentist or hygienist on oral health care’, followed by ‘dentist the residents pay to visit the facility and provide treatment on a regular schedule’, and ‘dentist the residents pay to visit the facility and provide treatment as needed’. The options chosen least often were for services the facility were required to pay for.
Table 11. Nurses and Managers preferences on how they feel the oral care of their residents could be improved (in order of preference)

<table>
<thead>
<tr>
<th>Percentage (%)</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>89.2</td>
<td>Free training by a dentist or hygienist for your staff on oral health care</td>
</tr>
<tr>
<td>42.4</td>
<td>Dentist the residents pay to visit the facility and provide treatment on a regular schedule</td>
</tr>
<tr>
<td>42.4</td>
<td>Dentist the residents pay to visit your facility and provide treatment as needed</td>
</tr>
<tr>
<td>38.1</td>
<td>Hygienist the residents pay to visit your facility and clean your residents teeth as needed</td>
</tr>
<tr>
<td>36.0</td>
<td>Volunteer dentist to visit the facility and serve residents as needed</td>
</tr>
<tr>
<td>32.4</td>
<td>Volunteer hygienist to visit your facility and clean teeth as needed</td>
</tr>
<tr>
<td>20.9</td>
<td>Hygienist the residents pay to visit your facility and clean teeth as needed</td>
</tr>
<tr>
<td>12.9</td>
<td>Hygienist you pay to visit the facility and clean the residents teeth regularly</td>
</tr>
<tr>
<td>12.2</td>
<td>Dentist you pay to visit your facility and serve your residents as needed</td>
</tr>
<tr>
<td>10.8</td>
<td>Dentist or hygienist you pay to provide training for your staff on oral health care</td>
</tr>
<tr>
<td>10.8</td>
<td>Dentist you pay to visit the facility and serve residents on a regular schedule</td>
</tr>
<tr>
<td>6.5</td>
<td>Hygienist you pay to visit your facility and clean your residents teeth as needed</td>
</tr>
</tbody>
</table>

Further space for comments and discussion was set out at the end of the ‘Facility’ questionnaire. Respondents identified that the LTC facilities were aware that there are increasing numbers of residents being admitted to their facilities with their own natural teeth and that this places an increased burden on the staff. Some of the respondents’ comments are listed below:

‘Dental health as well as hygiene is a most important, but neglected aspect of the care of our elderly. Now more residents are admitted with their natural teeth and I think that a dental assessment should be part of the admitting process.’

‘We are seeing more elderly with their own teeth (or some of them) than 10 years ago’.

Others acknowledged that they have a problem, and for it to be resolved new bonds needed to be formed, and lines of communication needed to be improved with the dental profession. They felt that improvement needed to be in the forms of, treatment, training or access for general professional advice.
'The strongest form of change in improving oral health care would be in training, primarily focused at caregivers inclusive of improving assessment, dental hygiene, the use of products and equipment, improvement of protocols and development of a relationship with local dentists'.

'We would be interested in education for staff on resident's oral hygiene by a hygienist or someone from an oral care institute. I think it is sad that Dental check ups for our elderly is not considered as a real need. They have regular doctor visits 3 monthly, so why not 6 monthly dental visits?'
5.6 Caregivers' oral health, oral health awareness and self-care practices

Part 2 of the questionnaires (Appendix A) was distributed to caregivers/nurses and was an attempt to obtain an idea of their level of knowledge of oral health and their personal oral health practices. 136 individuals participated in this part of the survey (32.0% response rate).

5.6.1 Characteristics of Respondents

Of the respondents 22.8% were employed as a caregiver, 61.0% were registered nurses, and 16.2% selected ‘other’ but did not specify. Most (97.1%) were female. The mean age of the respondents was 52.1 years (sd 10.1) and the age distribution was 20 to 69 years. The average self-reported number of hours worked per week was 37.1 (sd 9.8) hours with a range from 8-to-70 hours. Of the 31 caregivers, 7 (22.6%) were tertiary-educated; among the 83 nurses, it was 79.5%, and it was 77.3% among the ‘other’ group. The difference in level of tertiary education between the types of primary employment was found to be highly significant ($\chi^2 = 34.1; 2$df; $P<0.001$).

Data on smoking are presented in Table 12, by employment category and education. Overall, fewer than one in five smoked.

Table 12. Smoking versus employment type and education level (brackets contain row percentages unless otherwise stated)

<table>
<thead>
<tr>
<th>Education Level</th>
<th>Current Smoker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary/Secondary</td>
<td>9 (20.0)</td>
</tr>
<tr>
<td>Tertiary</td>
<td>15 (16.9)</td>
</tr>
<tr>
<td>Primary Employment</td>
<td></td>
</tr>
<tr>
<td>Caregiver</td>
<td>6 (20.0)</td>
</tr>
<tr>
<td>Nurse</td>
<td>14 (17.1)</td>
</tr>
<tr>
<td>Other</td>
<td>4 (18.2)</td>
</tr>
<tr>
<td>All combined</td>
<td>24 (17.9)</td>
</tr>
</tbody>
</table>
5.6.2 Dentate status

Data on dentate status in relation to age, level of education and primary type of employment are presented in Table 13.

Table 13. Dentate status and denture use, by respondent characteristics (brackets contain row percentages unless otherwise stated)

<table>
<thead>
<tr>
<th></th>
<th>Dentate</th>
<th>Wear one or more dentures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 50 years</td>
<td>49 (92.5)</td>
<td>6 (11.5)*</td>
</tr>
<tr>
<td>&gt; 50 years</td>
<td>68 (87.2)</td>
<td>22 (27.5)</td>
</tr>
<tr>
<td><strong>Education level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary/Secondary</td>
<td>37 (82.2)</td>
<td>12 (26.1)</td>
</tr>
<tr>
<td>Tertiary</td>
<td>80 (92.0)</td>
<td>17 (19.5)</td>
</tr>
<tr>
<td><strong>Primary Employment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caregiver</td>
<td>26 (83.9)</td>
<td>6 (19.4)</td>
</tr>
<tr>
<td>Nurse</td>
<td>73 (92.4)</td>
<td>15 (18.8)</td>
</tr>
<tr>
<td>Other</td>
<td>18 (81.8)</td>
<td>8 (36.4)</td>
</tr>
<tr>
<td>All combined</td>
<td>117 (88.6)</td>
<td>29 (21.8)</td>
</tr>
</tbody>
</table>

*P<0.05
*Missing data for 1 respondent

A significantly (P<0.05) higher proportion of those older than 50 wore dentures compared to those less than 50 years of age. Among those who were dentate, the mean self-reported number of natural teeth the respondents had was 23.4 (sd 9.1), with the range being from 0 to 34. Of the one-fifth who wore at least one denture, 96.3% reported wearing their dentures all-the-time, and 74.1% of this group admitted that this also included wearing the prosthesis to bed.

The preferred method of cleaning their own dentures was reported by most respondents (70.9%) as either brushing or combined brushing with toothpaste on a daily basis, or by soaking their dentures in Steradent®.
5.6.3 Use of services

When questioned on the importance of oral health, 92.6% responded that it was 'very important', 7.4% said it was 'important'. Of the respondents, 63.7% identified themselves as regular dental attenders and 57.1% had attended within the last 12 months. In just over two-thirds of cases the usual reason for visiting the dentist was for a 'check-up' and in the remainder of cases it was due to pain or an emergency. Of those that reported attending the dentist on a regular basis a significant proportion also felt that oral health was 'very important'. Those that identified it as only being 'moderately important' were more likely to attend only in an emergency but this difference was not significant.

Of the (42.2%) that had not attended the dentist for a regular 12-monthly check up their primary reasons for not attending are represented in Figure 4.

![Figure 4. Primary reason for not attending dentist in last 12 months](image)
The characteristics of the respondents versus the dental attendance patterns of staff are presented in Table 14. The data shows that of those who reported being a regular dental attenders, a significant (P<0.05) proportion were older than 50 years-of-age. Slightly less than two-thirds of this group also reported having attended the dentist in the last 12 months. Regular dental attenders were also more likely to have a tertiary level of education, (n=62; 69.7%). There were no significant differences reported between the primary type of employment (caregiver, nurse, other) and patterns of attendance.

Table 14. Characteristics of respondents versus dental attendance patterns (brackets contain row percentages unless otherwise stated)

<table>
<thead>
<tr>
<th>Age</th>
<th>Self reported Regular dental attendance</th>
<th>Usual reason visit Check-up</th>
<th>Attended within last 12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 50 years</td>
<td>31 (58.5)</td>
<td>30 (57.7)a</td>
<td>28 (53.8)a</td>
</tr>
<tr>
<td>&gt; 50 years</td>
<td>55 (67.9)</td>
<td>58 (75.3)</td>
<td>48 (60.0)</td>
</tr>
<tr>
<td>Qualification level</td>
<td>24 (52.2)a</td>
<td>26 (60.5)</td>
<td>19 (42.2)</td>
</tr>
<tr>
<td>Primary/Secondary</td>
<td>62 (69.7)</td>
<td>62 (72.4)</td>
<td>57 (64.8)</td>
</tr>
<tr>
<td>Tertiary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary Employment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caregiver</td>
<td>15 (48.4)</td>
<td>18 (62.1)</td>
<td>16 (53.3)</td>
</tr>
<tr>
<td>Nurse</td>
<td>57 (69.5)</td>
<td>57 (70.4)</td>
<td>48 (59.3)</td>
</tr>
<tr>
<td>Other</td>
<td>14 (63.6)</td>
<td>13 (68.4)</td>
<td>12 (54.5)</td>
</tr>
<tr>
<td>All combined</td>
<td>86 (64.2)</td>
<td>88 (68.2)</td>
<td>76 (57.6)</td>
</tr>
</tbody>
</table>

aP<0.05
5.6.4 Self-care practices

Brushing and flossing habits versus respondent characteristics are presented in table 15. Most (88.0%) of respondents reported that they brushed their teeth twice daily or more frequently. Regular flossing was reported by fewer than two-thirds of respondents and one-third reported regular use of a mouthwash. Of those that flossed regularly, 66.4% reported that they had been professionally shown how to do so. A significant proportion of those who had been shown how to floss reported to flossing on a regular basis. There was a significantly different level of regular flossing reported in those older than 50 years-of-age, compared to those who were younger, this was also similar for those with a tertiary level of education compared to those with lower levels of education.

Table 15. Respondent oral hygiene practices by respondent characteristics (brackets contain row percentages unless otherwise stated)

<table>
<thead>
<tr>
<th>Age</th>
<th>Brush 2 times daily</th>
<th>Floss regularly</th>
<th>Have been shown how to floss correctly</th>
<th>Use mouthwash on a regular basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 50 years</td>
<td>46 (88.5)</td>
<td>27 (51.9)</td>
<td>27 (51.9)*</td>
<td>15 (28.8)</td>
</tr>
<tr>
<td>&gt; 50 years</td>
<td>64 (87.7)</td>
<td>47 (64.4)</td>
<td>56 (76.7)</td>
<td>29 (39.2)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Qualification level</th>
<th>Brush 2 times daily</th>
<th>Floss regularly</th>
<th>Have been shown how to floss correctly</th>
<th>Use mouthwash on a regular basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary/Secondary</td>
<td>35 (85.4)</td>
<td>19 (46.3)*</td>
<td>22 (53.7)*</td>
<td>14 (33.3)</td>
</tr>
<tr>
<td>Tertiary</td>
<td>75 (89.3)</td>
<td>55 (65.5)</td>
<td>61 (72.6)</td>
<td>30 (35.3)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Primary Employment</th>
<th>Brush 2 times daily</th>
<th>Floss regularly</th>
<th>Have been shown how to floss correctly</th>
<th>Use mouthwash on a regular basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caregiver</td>
<td>23 (82.1)</td>
<td>13 (46.4)</td>
<td>12 (42.9)</td>
<td>12 (41.4)</td>
</tr>
<tr>
<td>Nurse</td>
<td>68 (87.2)</td>
<td>49 (62.8)</td>
<td>56 (71.8)</td>
<td>23 (29.5)</td>
</tr>
<tr>
<td>Other</td>
<td>19 (100.0)</td>
<td>12 (63.2)</td>
<td>15 (78.9)</td>
<td>9 (45.0)</td>
</tr>
</tbody>
</table>

| All combined        | 110 (88.0)          | 74 (59.2)       | 83 (66.4)                              | 44 (34.6)                      |

*p<0.05
5.6.5 Importance of oral health

Data on the importance of oral health by respondent characteristics are presented in Table 16. Most respondents (92.6%) reported that oral health was very important. A significant difference was seen between those with lower levels of education and tertiary education, as all respondents in the primary and secondary qualification levels believed that oral health was 'very important', this was significant ($\chi^2=5.517$; df 1; $P<0.05$). When separated into respondent characteristics oral health was still seen to be 'very important' by all respondents.

Table 16. Self reported importance given to oral health by, respondent characteristics (brackets contain row percentages unless otherwise stated)

<table>
<thead>
<tr>
<th></th>
<th>Moderately important</th>
<th>Very important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 50 years</td>
<td>4 (7.5)</td>
<td>49 (92.5)*</td>
</tr>
<tr>
<td>&gt; 50 years</td>
<td>6 (7.3)</td>
<td>76 (92.7)</td>
</tr>
<tr>
<td>Qualification level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary/Secondary</td>
<td>0 (0.0)</td>
<td>46 (100.0)*</td>
</tr>
<tr>
<td>Tertiary</td>
<td>10 (11.1)</td>
<td>80 (88.9)</td>
</tr>
<tr>
<td>Primary Employment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caregiver</td>
<td>1 (3.2)</td>
<td>30 (96.8)</td>
</tr>
<tr>
<td>Nurse</td>
<td>8 (9.6)</td>
<td>75 (90.4)</td>
</tr>
<tr>
<td>Other</td>
<td>1 (4.5)</td>
<td>21 (95.5)</td>
</tr>
<tr>
<td>All combined</td>
<td>10 (7.4)</td>
<td>126 (92.6)</td>
</tr>
</tbody>
</table>

*Missing data for 1 respondent

Data on the relationship between dental attendance patterns and how important respondents rated oral health are presented in Table 17. A significant proportion of those who attended the dentist on a regular basis reported oral health as being important ($\chi^2=5.925$; df 1; $P<0.05$). There was a significant difference in the level of importance of oral health reported between those who attended the dentist regularly and those who attended only in an emergency ($\chi^2=14.5$; 1 df, $P<0.001$).
Table 17. Self-reported importance given to oral health by, respondent attendance patterns (brackets contain row percentages unless otherwise stated)

<table>
<thead>
<tr>
<th></th>
<th>Moderately important</th>
<th>Very important</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Regular Dental Attendance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>3 (3.4)</td>
<td>83 (96.6)*</td>
</tr>
<tr>
<td>No</td>
<td>6 (12.2)</td>
<td>43 (87.8)</td>
</tr>
<tr>
<td><strong>Usual reason for dental visit</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check-up</td>
<td>1 (1.1)</td>
<td>87 (98.9)*#</td>
</tr>
<tr>
<td>Emergency</td>
<td>8 (19.5)</td>
<td>33 (80.5)</td>
</tr>
<tr>
<td><strong>Last reported dental visit</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;12 months ago</td>
<td>2 (2.6)</td>
<td>74 (97.4)*%</td>
</tr>
<tr>
<td>&gt;12 months ago</td>
<td>7 (12.3)</td>
<td>50 (87.7)</td>
</tr>
<tr>
<td>All combined</td>
<td>9 (6.8)</td>
<td>127 (93.2)</td>
</tr>
</tbody>
</table>

*P<0.05  
#P<0.001
*Missing data for 1 respondent
#Missing data for 3 respondents
%Missing data for 7 respondents
5.6.6 Advising residents

Respondents were asked if they ever gave advice on oral care to the people/residents in their facilities. This data is presented in Table 18. Most (84.3%) of the staff reported that they gave oral care advice. A higher proportion of caregivers reported giving advice to residents compared to nurses or other staff members but these results were not found to be significant.

Table 18. Whether staff gives oral care advice to residents by, respondent characteristics (brackets contain row percentages unless otherwise stated)

<table>
<thead>
<tr>
<th>Advice</th>
<th>Yes</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>\leq 50 years</td>
<td>46 (88.5)</td>
<td>6 (11.5)*</td>
</tr>
<tr>
<td>&gt; 50 years</td>
<td>67 (82.7)</td>
<td>14 (17.3)</td>
</tr>
<tr>
<td>Qualification level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary/Secondary</td>
<td>37 (82.2)</td>
<td>8 (17.8)</td>
</tr>
<tr>
<td>Tertiary</td>
<td>76 (85.4)</td>
<td>13 (14.6)</td>
</tr>
<tr>
<td>Primary Employment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caregiver</td>
<td>27 (90.0)</td>
<td>3 (10.0)</td>
</tr>
<tr>
<td>Nurse</td>
<td>69 (84.1)</td>
<td>13 (15.9)</td>
</tr>
<tr>
<td>Other</td>
<td>17 (77.3)</td>
<td>5 (22.7)</td>
</tr>
<tr>
<td>All combined</td>
<td>113 (84.3)</td>
<td>21 (15.7)</td>
</tr>
</tbody>
</table>

*Missing data for 1 respondent
5.7 General dental knowledge
The last section of the survey allowed for the respondent to document their level of oral health knowledge. The questions chosen allowed for written answers (brief or detailed) as it was thought that the answers may give insight into the types of advice that respondents were giving to those in their care. Some of the questions were a repetition of the background information obtained in the initial part of the caregiver questionnaire. This was deliberate and intended to see whether what respondents said they did, and what they advised others to do, were the same thing. The responses were analysed for recurring themes.

5.7.1 How often should we brush and for how long?
Responses ranged between 2-4 times per day. Just over half of the respondents (56%) advised brushing 2 times daily, and the remainder advising to brush, 3 or more times daily. Over two-thirds reported that 2-3 minutes of tooth brushing twice daily was preferable. There was a large range in the answers of how long to brush for. One-in-six advised on brushing for less than a minute and at the other end of the scale, less than one-tenth (6.0%) advised brushing for longer than 5 minutes. Two of the 136 respondents advised brushing for 10 minutes or longer.
5.7.2 Why do you think it is necessary to brush our teeth?

The predominant answer to this question was, to maintain healthy gums and prevent decay (36.4% of respondents) followed by removal of plaque, bacteria and food particles from the mouth (32.2% of respondents), 25.1% of respondents reported that is was to, reduce bad breath/or promote fresh breath and 10.1% stated that brushing your teeth improves general health or reduces the chances of infection.

The recurring themes for why respondents thought it is necessary to brush their teeth are displayed in Figure 5.

Figure 5. Reasons why respondents think it is necessary to brush their teeth

Some of the respondents showed that they had a more detailed knowledge of oral health stating that; the fluoride in toothpaste strengthens the teeth, brushing stimulates blood flow to the gums and, the maintenance of good oral health enables the intake of good nutrition. A single respondent replied that you have ‘better chances of being kissed if you have fresh breath!’
5.7.3 How often do you think a person should attend the dentist?

Nearly two-thirds of respondents advised that regular 12-monthly attendance was normal, approximately one-third advised attending more frequently and the remaining 4.0% of responders advised that greater than 12-monthly was reasonable practice. More detailed data on the respondent’s dental attendance patterns and reasons for attending the dentist are previously reported in Table 14. It also shows that just over two-thirds reported regular (12-monthly) dental attendace.

![Bar chart showing dental attendance frequency](image)

**Figure 6. How often should a person attend the dentist?**

5.7.4 Do you think that people with dentures need to attend the dentist on a regular basis?

Of those that responded, a majority (74.0%) believed that denture wearers should attend the dentist. Just over one-fifth of respondents felt it was not necessary to attend the dentist on a regular basis and 3.0% were not sure. The main reasons why denture wearers should attend the dentist were reported by the respondents are due to; gum shrinkage resulting in dentures becoming ill-fitting, to check the health of the gums, and that ongoing problems/ulcers should be checked out by the dentist.
5.7.5 What diseases/disorders do you know of which occur in the mouth?
Respondents were asked to identify as many diseases and disorders that they knew of that occur in the oral cavity. The range of pathology and frequency with which it was mentioned are reported in Figure 7. The range of different conditions mentioned was large, a few (leukoplakia, black hairy tongue, blocked salivary glands) were quite dentally specific. “Pyorrhoea” and “pyritis” (dated terminology) were mentioned on 5 separate occasions.

![Figure 7. Diseases/disorders which caregivers identified as occurring in the mouth, and frequency they were reported](image)

5.7.6 Do you think that oral health and general health are linked in any way?
Of the 139 people that responded to this question, the overwhelming majority (99.0%) answered yes. The predominant themes for the link are summarised in the following statements: germs can affect the organs; poor teeth leads to toxins in the body; poor oral health can lead to increased chances of pneumonia in the elderly; infections in the gums can lead to blood infections and chest infections; absence of pain leads to better quality of life; cavities can cause cardiac disease; digestion
begins in the mouth so oral health affects what you eat; poor dental health leads to poor nutrition, which can lead to poor general health and weight loss; and immunocompromised patients are more susceptible to infections.
6. DISCUSSION

6.1 Summary of findings

A two-part structured questionnaire was sent to 425 facilities selected for participation in this survey of oral health care protocols and practices in New Zealand RH/LTC facilities. Fewer than one-third (32.4% combined; 32.7% Part 1; and 32.0% Part 2) of those selected chose to respond to the survey. Written OHC protocols within New Zealand LTC facilities are not legislated for, and this was highlighted in the finding that just over one-third of facilities had written plans of care for the dental needs of their residents, with one-fifth of the staff members reporting that they had difficulty in adhering to these plans. Fewer than one in six facilities with written care plans reported that a dental professional assisted them in drafting it. Two-thirds of the time, daily management of oral hygiene and dental care was primarily the responsibility of qualified nurses; in the remaining instances, it was provided by caregivers and other staff. Low levels of training in oral care were reported and only one-in-seven facilities had ever had a dental professional attend solely for this purpose. Fixed or portable equipment was available in less than one-sixth of facilities, and baseline examinations were not routinely performed on residents entering facilities for a long-term stay, with only one-eighth reporting that they provided this service.

Only one in eight residents were reported to have received dental treatment in the last 12 months, and, in nearly two-thirds of cases, treatment was for an acute situation. Dental problems were assessed in residents by way of the staff asking them whether they had any concerns, or by staff visually examining their oral cavity. In very few incidences (2.2%), the examination was completed by a dental professional. When it came to self-care, two-thirds of residents required at least some assistance with oral care, only one-third could perform it independently. In facilities with a higher proportion of dementia residents, the number of patients requiring complete assistance with oral care was higher, reflecting their higher dependence on others for care.
Over two-thirds of the facilities were satisfied with the way in which staff dealt with oral hygiene and dental care for their residents; a similar number were satisfied with the way dental emergencies were dealt with. Facilitating this was the fact that over 60% of the RH/LTC facilities reported that they had access to a dentist for regular care; this rate was higher among the facilities located in cities. Approximately half of the facilities had access to a dental professional for emergency care, and over two-thirds had access to a dental professional for advice. It was reported that, in a hypothetical acute dental situation, a majority of cases would be dealt with in the general dental practitioner’s office or at a hospital dental department. The situation would usually be acknowledged and addressed within 24 hours and an appointment for treatment would be made within 1-3 days.

One of the important objectives of this study was to identify the predominant barriers encountered by staff in trying to obtain dental care for residents. The greatest barrier reported was the lack of willingness of dental practitioners to treat residents at the facilities. The lowest reported barrier was a lack of interest in dental care by the facility’s nursing staff. Time constraints, financial concerns and transportation issues were all rated as moderate barriers. A majority of respondents indicated that the preferred option for improving oral health care for their residents would be through providing free training to staff by a dentist or hygienist. The least favoured option was for the facility to pay a hygienist to visit the residents and clean their teeth on a regular basis.

The second questionnaire was designed to investigate the OHC awareness and oral/dental health knowledge of care home workers in LTC facilities for older people in New Zealand and also to document the current oral health practices of those same workers. A general overview of the worker characteristics was obtained and it revealed that; one in five were working as a caregiver, nearly two-thirds were registered nurses, and one-sixth did not specify their occupation. The majority (98.1%) of staff were female and their mean age was 52.0 (sd 10.1) years, they worked (on average) 37 hours per week and, overall, two-thirds had a tertiary level of education. These findings are consistent with those of Yamada (2002) and Parsons et al. (2003) who reported a 90.1% and 95.6% proportion of female workers respectively. Yamada (2002) reported that 27.5% of nurse-aides had had a
tertiary education level, which is slightly higher than the current study’s 22.6%. The number of hours worked was also largely consistent with that reported by Yamada (2002), who reported that (between the years of 1997-1999) the average reported number of hours worked was 34.9 per week; in the current study it was 37 hours. One difference between the current study’s findings and those reported by Parson et al. (2003) and Yemada (2002) is that their workers were younger on average (36.9 years and 36.4 years respectively), than the 50.5 years for caregivers reported in this study. This may possibly be due to our mean age being compacted for all worker groups: nurses, caregivers/aides. Fewer than one in five currently smoked, which is consistent with the current Ministry of Health estimates for New Zealand women of 21.8% smoking over the age of 15 years.

Most (88.6%) of the respondents were dentate, fewer than one in five wore a dental prosthesis and over two-thirds identified themselves as regular dental attenders and had attended in the last 12 months. A significant proportion of these were over 50 years of age. Of those who were not regular attenders (36.3%), half identified their predominant reasons for not attending as being financial reasons, anxiety/phobia (in one in five cases) and time constraints in about one-tenth of cases. Some 5% of sporadic attenders reasoned that their low attendance was due to oral health being seen to be of low importance. With respect to self-care practices, nearly nine-in-ten reported that they brushed twice daily or greater; just under two-thirds flossed regularly and one-third used mouthwash regularly. These findings are consistent with those of Bakdash (1995), who systematically reviewed a number of large studies in the USA and found that (on average) 97.0% of individuals reported brushing their teeth twice daily or greater; just over 41% flossed once daily, and just under one-third (28.0%) used mouthwash regularly.

The vast majority (92.6%) of respondents rated oral health as being very important and many of them were also regular dental attenders. In this study, there was a significant difference between the rated level of importance of oral health of those who attended the dentist regularly and those who attend only for emergency reasons

Most staff reported that they regularly gave out oral health advice to the residents in their care.

When questioned about their own personal beliefs on oral health care and the advice that they gave out to residents, just over half recommended brushing twice daily and just over two-fifths advised that brushing three times daily was optimal. Over two-thirds advised brushing for two to three minutes per session. These recommendations are consistent with the evidence-based guidelines published by Davies et al. (2003), who advised brushing twice daily or more frequently, using fluoride toothpaste, and brushing for longer than one minute, or of sufficient length to systematically maximise plaque removal. The advice they gave was also consistent with their own self-care practices (Table 15), confirming the old adage that they do appear to ‘practice what they preach’.

The respondents’ reasons for brushing were: for the removal of plaque, bacteria, food debris; to maintain health and prevent decay; to use the fluoride in toothpaste to strengthen the teeth; that brushing reduces the chances of infection; and brushing stimulates the blood flow to the gums. All of which are in accordance with current dental teaching. Most (96.0%) believed that a person should attend the dentist on a 12-monthly basis and a majority also felt that it was necessary for denture wearers to attend the dentist regularly. When it came to their knowledge of disorders and diseases in the mouth, a wide range of pathology was identified. Most commonly noted were gingivitis, inflammation, periodontal disease, candidiasis/thrush, ulcers and cancer. A broad range of knowledge was shown and, in nearly all cases, staff felt that oral health and general health were linked. Supporting reasons given for this were that: poor oral health can lead to infection, septicaemia and pneumonia; digestion begins in the mouth; and poor oral health can affect what one eats, affect nutrition and lead to weight loss. They also proposed that dental cavities can lead to cardiac disease and that immuno-compromised patients are more susceptible to infections. These responses reflected a reasonable level of knowledge of oral diseases, oral hygiene care and its relationship with general health. Possibly the most important comment made by a respondent was that ‘absence of pain leads to a better quality of life’. An important question that has to be raised here, though, is
that the level of knowledge that the staff expressed appears to be adequate, and their
current oral health care practices follow current evidence based guidelines. How can
we be sure that what staff say they are doing, and what they are actually doing are
the same thing, as opposed to them just saying what they think the researcher would
like to hear? The second issue is whether these practices are being confirmed in the
care and advice provided to residents. Exploration of these issues would require
further observational and interventional research.

6.2 Comparison with other studies
This was the first survey of this type (in the author’s knowledge) to be undertaken
in New Zealand. The current investigation via qualitative measures documented the
health knowledge of staff but also quantified their daily oral health care practices
and the main barriers they encountered when accessing dental care themselves.
Broadly similar investigations have previously been undertaken elsewhere, but none
(to date) has documented the level of protocols and the barriers which RH/LTC
facilities in NZ have in accessing oral care for their residents. Research by
McKelvey et al. (2003) investigated the oral health knowledge and attitudes of staff
caring for older people using a qualitative method, but it did not report whether
facilities had protocols and policies in place for the daily and longer-term oral care
of their residents.

6.3 Strengths and weaknesses of the current study
An important component of this study was whether or not the findings could be
generalised to all NZ RH/LTC facilities. The list obtained from the NZ MoH
contained 851 facilities registered as RH or LTC/hospital facilities currently
operating in NZ. These were sorted by their respective DHBs; half (425) were then
randomly selected. This was to ensure that facilities in each region or DHB would
be represented proportionately. The response rate of 32.4% was very disappointing,
considering that three waves of questionnaires were sent out at one-month intervals,
with reminder letters after each wave. The low response rate to this survey means
that the data must be interpreted with care. With a low response rate comes the
potential for non-response bias, which arises when there are systematic (non-
random) differences between responders and non-responders. This in turn raises
concerns that the estimates from this study are not generalized to all facilities.
Although the characteristics of non-responding facilities are not known, it must be assumed in this study that they are comparable to those which responded. The factors that support this are that: all regional DHBs were included in the survey; New Zealand's population is relatively small (4,269,000 in 2008)\(^{18}\); and, over the past two decades, the ethnic composition of the residents in LTC facilities does not appear to have changed. Thomson and Cautley (1996) and Kiata et al. (2005) both reported ethnic proportions in the NZ facilities they surveyed which are similar to those which are reported in this research. Most the residents were Pākehā/European (92.1%), with Māori (2.9%), Pacific Island (1.6%), and Asian (1.4%) and 'other' (2.0%) making up the remainder. The characteristics of those working in the facilities were very similar to those found in other studies. The majority (98.1%) were women; they worked (on average) 35 or more hours per week, and their caregiver education were comparable to those reported by Yemada (2002) and Parson et al. (2003). That the staff and residents had similar characteristics to those reported elsewhere, and that the ethnic distribution of residents has shown minimal change over time suggests that the findings from this study may not be able to be generalised to the current population of institutionalized older people, but it is possible to argue that they may be representative.

The questionnaires for this study were based on similar ones provided by Smith et al. (2008) from their study of nursing homes (NH) and alternative long-term care facilities (ALTCF) in the State of Michigan, USA. They obtained a response rate of 22% for ALTCF and 32% for NHs which is similar to that achieved in this national survey. Locker (2000) asserted that low response rates are a feature commonly associated with mail surveys. Particular methods can be undertaken in attempt to improve response rates, such as multiple waves, financial incentives, coloured questionnaires and reminder letters. These are all strategies that were employed in this investigation in an attempt to improve response rate and reduce the possibility of nonresponse bias. With respect to the total original number of facilities currently operating in NZ, the investigation response rate equates to approximately one-in-six RH/LTC facilities being represented in the final data.

\(^{18}\) [www.stats.govt.nz](http://www.stats.govt.nz) An overview of New Zealand’s people, economy and environment 2009
The reasons for such a low response rate are unclear. One reason maybe, apathy towards oral health or towards participation in surveys in general. Moreover, a low priority placed on OHC is mentioned in many articles (Pyle et al. 2005; Dharamsi et al. 2009), if oral health is of low priority, perhaps participation in a survey on oral health is also of low priority.

From the original sample (n=425) nearly half did not respond at all. One eighth were found to be out of the sample frame because they either were no longer functioning as a RH/LTC facility or they should not have been included in the original sample list obtained from the MoH (which included the details of some other types of facilities such as private hospitals). A small number (5.6%) explicitly refused to participate, and a proportion of those took the time to write a response letter explaining why they did not wish to participate; interestingly this would have taken as much time as completing the questionnaire. A few reported that their facility policy dictated that staff were not to participate in surveys at work. There are two interesting themes here. The first is that due to time pressures and increased work demands, there was not enough time to complete the questionnaire: as one respondent commented 'I regret that I do not have the time to address this to the extent required and cannot readily access the relevant figures'. Time pressures and lack of time for staff to complete duties are commonly reported and the research by Yamada (2002), Parsons et al. (2003) and Dharamsi et al. (2005) supports this notion. The other interesting theme is that the management has imposed a collective rule that staff are not to participate in surveys relating to work. This could either be a measure put in place to protect the staff from the increased workload of filling out questionnaires, or an attempt by the facility to protect itself by restricting the public access to information on its policies and processes. It may be an attempt to minimise external scrutiny and, in the current media climate (where RH/LTC facilities have been repeatedly accused of resident neglect), it would seem that this apparent lack of transparency could quite possibly be a protective measure.

Poor question design and responder interpretation for a couple of questions was a problem in questionnaire Part 1. Unfortunately, the age of the residents was not collected as a discrete variable and it was reported by respondents as an inconsistent array of bands, so no analysis by age of resident was possible. Limited observations
could be made from the data that were generated. One observation was that facilities reported having younger residents (below 50 years) in their care, were also more likely to have residents with developmental disabilities. This could reflect the de-institutionalisation of patients with psychiatric and developmental disorders in New Zealand in the 1980s. In 1985, the Fourth Labour Government announced the adoption of the policy of community living for people in long-term institutional care. The Labour Government’s policy announcement was followed by the closure of several major psychiatric hospitals and specialised institutions for people with intellectual disabilities. The Government policy caused widespread hospital and ward closures, displacing hundreds of people with psychiatric and intellectual disabilities from New Zealand hospitals and institutions such as Carrington, Cherry Farm, Kingseat, Lake Alice, Mangere, Ngawhatu, Ravensthorpe and Seacilff. The Government also developed transitional programmes for ex-patients to shift into community-based care\(^\text{19}\). This resulted in some of these individuals being transferred to the care of RHs due to their inability to be fully cared for in the community or family setting. Another important element to be considered here is that these younger residents with developmental or traumatic injuries are similar to older patients with dementia, mental disabilities, stroke-induced brain injuries or related conditions and are more likely to require higher levels of assistance with ADL. This is consistent with the findings of Thole et al. (2010) in their investigation of care providers’ attitudes towards oral hygiene in Iowa intermediate care facilities for residents with either acquired or developmental disabilities. Only 16% of individuals were found to require no assistance with OHC procedures. These circumstances are more likely to increase the demands placed on staff in the provision of complete care.

Collection of ethnicity data for the respondents in the caregiver questionnaire would also have been beneficial. Information on the ethnic distribution of staff working in the facilities would have been valuable for the future development of OHC training programmes, which could then be customised to the ethnic diversity of the staff. Ethnic group is a risk marker consistently associated with higher caries rates and

\(^{19}\) The Closure of the Templeton Centre; A thesis submitted in partial fulfillment of the requirements for the degree of Master of Arts in Sociology by David Lemon, University of Canterbury, 2001.
lower SES in the New Zealand population\textsuperscript{20}. Ethnicity and low SES are both factors that have been shown to adversely influence attendance for dental treatment (Donaldson et al. 2008). If staff have negative attitudes towards dentistry (and subsequently poor attendance patterns), this could influence the oral health advice they give to residents in their care. The ethnic distribution of the older people within the facilities has been mentioned previously. In this respect, the current study's findings are relatively consistent with those reported in 1996 by Thomson and Cautley and more recently Kiata et al. (2005). There were very few older people from ethnic minority groups residing within LTC facilities. There are complex reasons for this, many of which are related to cultural concepts of care of the older person. Traditionally, Māori have embraced the wider ‘Whānau’ approach to the family, which involves several generations of members all living together. This results in older family members usually living and being cared for at home as opposed to within an institutional setting (Edwards et al. 2007).

The preventive dental strategies for older populations report (Cautley et al. 1997) advises that the numbers of older Māori people are increasing at a rate faster than the population in general, and that a substantial proportion of the 17,000 Māori currently living in Australia will return to NZ upon retirement. Thus the numbers of older Māori persons living in RH/LTC over the coming years may significantly increase, especially if the family unit is changing and becoming more ‘nuclear’ as opposed to the model of extended family living under one roof. This will have implications for the treatment needs of older individuals, because certain diseases are more prevalent within particular ethnic groups. Caregivers need to be aware of these disease patterns for provision of evidence-based prevention and treatment (for example diabetes and heart disease are more prevalent among Māori and Pacific people)\textsuperscript{21}. These as identified earlier share common risk factors with periodontal disease and dental caries. Importantly, although ethnicity data were not collected for the staff who participated in the second part of the survey, there is evidence to suggest that the ethnic profile of this part of the workforce shows some diversity but this depends on the survey region (Kiata et al. 2005). Intercultural conflict has been


\textsuperscript{21} Hauora; Maori Standards of Health IV. A study of the years 2000-2005. www.hauora.maori.nz
suggested as a reason for job dissatisfaction; it can create problems between carer and resident, especially with the highest proportion of older residents being of Pākehā/European descent and high numbers of staff being from ethnic minority groups. To be appropriate, guidelines and teaching arrangements need to take these cultural factors into account.

The total number of staff working in each facility was also reported inconsistently because of poor question structure. This did not allow for the generation of FTE (full time equivalent) estimates for staff. The total number of staff was reported, but it was not clear whether these people worked full-time or part-time and so generation of a staff to resident ratio was unable to be undertaken. No conclusions can be drawn on the adequacy of workforce with respect to possible limitations imposed by inadequate staffing ratios. It would have been valuable to compare the levels of satisfaction, and perceived barriers to oral care in facilities with higher staff-to-resident ratios to those which had lower ratios.

6.3.1 An absence of protocols

In this study, only 35.9% of facilities were found to have written plans of care for the dental needs of their residents; by contrast, Smith et al. (2008) reported that only 11% of the ALTCF and 63% of the NH they surveyed had written plans for the dental needs of their residents despite such policies being mandatory in the US. Federal regulation of RHs in the US differs from the system in NZ. In the US, OBRA ’87 stipulates that an oral examination must be carried out within 14 days of entry into a LTC facility, and that all residents are to be provided with written oral care plans (Dolan et al. 2005). New Zealand facilities currently are required to meet annual licensing and certification regulations in order to continue functioning. Facilities must have a contract for Age Related Residential Care (ARRC), which details that residents must be adequately cared for with respect to their everyday needs. The facilities must ensure that they have developed appropriate guidelines and policies relating to health, health promotion, pain management and personal hygiene (Smith 2010). The findings of the current study do not indicate that this has been adequately completed. In March 2009, the Australian Minister for Aging released a media statement detailing that Australia was establishing a national dental plan for nursing homes. They developed the Aged Care Assessment team in
order to establish a consistent approach to dental assessments through the use of an oral health assessment tool. In the US, the Minimum Data Set (MDS) and Resident Assessment Index (RAI) are two such ‘tools’ that are currently used. These enable comprehensive (multi-organ) health assessment of residents entering facilities long-term. Internationally, it has been recognised that there is an absence of public policy on the ageing population. The World Health Organization in 2005 called for this to change by the development of policy and setting of targets for oral health (Smith 2010). Australia has set goals in order to achieve this; by contrast, the New Zealand government has yet to follow suit. One possible explanation for this is that, due to the scarcity of available well-adapted policies in other countries, it is difficult to identify and then adopt ones that are proven and effective.

The current study’s findings show that the use of OHC guidelines is very low and that, where guidelines are in place, there has been minimal collaboration with dental professionals in drafting them. Without guidelines for staff to follow, there is no minimum standard to which they can be held accountable. There is the potential for the poor oral health of residents to go undetected through either poor documentation or reporting methods that are inadequate. Implementation of appropriate guidelines is the first step towards providing consistency in oral/dental care. When the MDS and RAI tools were initially introduced into US nursing homes, their use was not well implemented. Research on their effectiveness described some areas of negativity about their value in improving consistency in oral health measures. These tools provided a consistent framework for the documentation and provision of oral care, and a hierarchy for determining accountability, but the assessments were not well implemented; training in their use was minimal, and when effectiveness and accountability were examined, they were found to be inconsistent (Thai et al. 1997; Dolan et al. 2005). It would be beneficial for such regulations to be introduced in NZ, but the current study’s findings suggest also that there is a dire need for provision of training and continuing education for RH staff in OHC. It would be appropriate during implementation that this training is provided and for expectations to be made obvious.
taking the time to understand the more intricate workings and difficulties the staff have in daily provision of oral care to the residents. The nursing home culture differs substantially from that of the typical dental practice. Unless an understanding of these is obtained, guidelines that are both useful and workable cannot be developed. Kayser-Jones (1996) highlighted the importance of interdisciplinary collaboration between dentists and nurses if oral health was to be adequately provided. Management and DONs have the insight to the workings of the facilities which need to be combined with the knowledge and skills of the dental profession. Policies need to outline the appropriate provision of OHC as a daily requirement and outline procedures for access to dental care outside the facility when it is required.

In this investigation, the reluctance of dental professionals to provide treatment to the residents at the LTC facility was reported by facility management to be a major barrier to good oral health for residents, yet very few facilities (15.8%) reported having on-site dental equipment or access to domiciliary care in an attempt to reduce this barrier. If care is unable to be provided on-site, it would be logical to think that the facility would have planned and developed links with the dental professionals for provision of routine and emergency dental treatment in the community setting. This is not reflected in the current study’s findings, as fewer than 60.0% of facilities had access to a dental professional for regular dental care and even fewer for acute episodes of oro-dental pain. Respondents reported that their facilities had a high level of satisfaction with the way in which they dealt with acute/emergency dental situations; this appears contradictory, because they reported having no specific protocols for provision of care, and did not have equipment available for on-site treatment, and claim to encounter substantial barriers in accessing dentists.

6.3.3 Staff adhering to the protocols
In the low number of facilities which had oral care plans for residents, one in five staff members (21.7%) admitted that they had trouble adhering to those plans. Respondents were not asked what or why they had difficulty, but one reason could be the low reported levels of professional training staff were given in the provision of appropriate oral care, with only 14.0% reporting such involvement. Lack of
training is also a factor that has consistently been reported as a barrier to provision of oral care (Chalmers et al. 1996; Chung et al. 2000; Frenkel et al. 2002). A majority (90.5%) of respondents in the current study indicated that they felt that having a dental professional give training in oral care would be beneficial. The question that has to be asked here is that, if the overwhelming majority felt it would be beneficial, why had they not organised it already? Was this because they had attempted to get a professional in but had been unsuccessful (or; due to time pressures, finances, staffing shortages and low motivation they had been unable to arrange it), or were they were just saying what they thought the author would like to hear?

Other investigations have reported that the main reasons staff did not adhere to guidelines were; time constraints, difficult patients, and low levels of accountability (Chung et al. 2000; Chalmers et al. 2001; Dharamsi et al. 2009; Thole et al. 2010). This suggests that there are minimal sanctions for poor follow-through on this task. Staff not adhering to protocols also reflects the lack of workability of the guidelines. They need to be developed specifically for the type of facility, as demented and highly dependent residents will require a higher degree of care, as was demonstrated in the study completed by Thole et al. (2010) who found that few of the residents in the intermediate care facilities they surveyed could perform OHC procedures independently. The main difficulties reported by care providers in assisting residents with OHC were residents biting, gagging and residents moving a lot or refusing to open their mouths. This emphasises the need for appropriate information and training to be provided to care staff.

Daily reporting and documentation are also important components required for consistent feedback on the level of care that is given. They enable the institution to enforce their standards of care, and allow for accountability and revision of processes if necessary. Identification of a dedicated provider or staff member who is solely responsible for ensuring that oral care is completed would create a consistent and accountable pathway for feedback and improvement. Caregivers have expressed an interest in these types of improvements and, although they admitted that the provision of oral hygiene was their responsibility, they also felt there was a
need for dental professional assistance in matters involving oral care (Chung et al. 2000).

The findings of the current study showed that there was no single dedicated provider responsible for the daily oral hygiene of the dependent residents of LTC facilities. Responsibility was divided among Directors of nursing, registered nurses, caregivers/aides and other parties. With multiple staff responsible, this could easily lead to confusion, inconsistent care provision or the provision of no care at all. Little or no training in oral care was also reported; this is something that could easily be rectified through the purchasing of one of the many oral hygiene training resources such as: ‘Oral Care for the Elderly’\(^\text{22}\), which was produced by The New Zealand Dental Association in 2002; or the ‘Practical Oral Care’ video which was produced by Colgate Oral Care in conjunction with the Australian Dental Association (Chalmers et al. 2005). There are other such tools, such as the document *Guidelines for the Development of Local Standards of Oral Health Care for People with Dementia* (Fiske et al. 2006), which provided excellent information on the provision of oral hygiene for difficult and resistant patients. Fiske et al. (2006) also provided scaffold documents which could be adapted to the type of facility, enabling daily reporting and baseline charting. This would enable regular reporting and auditable, transparent documentation of any care provided. There is a need for better resource allocation from the dental profession, LTC facilities and the government. The dental profession needs to put itself in a position to encourage and provide LTC staff with greater support and feedback. Facilities need to acknowledge that they have problems with this area and that they need to instigate a better chain of accountability, improved motivation of staff, together with appropriate training and sanctions where required.

**6.4 Barriers to care: dementia, finances, facility size, transport**

The oral hygiene of residents within rest homes has been reported in many articles as being poor. Over 70.0% of the respondents in the current investigation indicated that they were satisfied with the oral hygiene of their residents and the way in which their dental needs were being met. Over 65.0% of residents required either some or

\(^{22}\) New Zealand Dental Association; Oral Care for the Elderly (2002) nzdinfo@nzda.org.nz
complete assistance with oral care, and greater assistance was required for patients with dementia. Coleman et al. (2006) and Thole et al. (2010) identified that OHC was less likely to be delivered to patients who showed resistant behaviors, because caregivers were not confident in providing care to these patients for fear of being bitten or hurt. The provision of care is also reliant on caregiver confidence and skills. Residents have been found to be less likely to resist care if engaging communication techniques and appropriate patient positioning are utilised (Coleman et al. 2006).

The perceived need for dental care in the older institutionalised adult is a key motivator to their acceptance of dental care and seeking out treatment when it is required. In the current study, lack of interest in dental care by the resident (or the resident’s family) was indicated as being a moderate to substantial barrier to care. Research has found that older people rate their own oral health as low and oral health for them is a low priority (Berkey et al. 1991; Thomson et al. 1996; Boreani et al. 2010). They may accept being less physically able and having symptoms of being unwell but are likely to regard these feelings as inevitable consequences of aging. This in itself is a substantial barrier to the maintenance of good oral health, because the patient is not motivated and fails to see the need to seek or maintain their oral health. Without the motivation of the individual, it may seem futile to push for the attainment of optimal oral health, as these residents are also more likely to show resistant behaviour.

Nine of the ten possible barriers to good OHC were ranked higher by city facilities than by their rural counterparts. At first glance, this seems paradoxical because cities generally have higher numbers of specialists, hospitals, public transport and general resource availability. However, a possible explanation for this is that cities contained larger facilities so were also more likely to have greater numbers of residents, greater time constraints, and higher rates of multi-ethnic staffing. Kiata et al. (2005) indicated that conflict related to intercultural caring was cited as a reason for staff dissatisfaction and higher turnover rates. A high rate of staff turnover compromises the quality and consistency of the care provided for the residents. Rotation of resident care assignments was expressed as an area of job dissatisfaction by respondents in Parsons et al. (2005). Development of solidarity between
caregiver and resident, especially with the highly dependent dementia patients, is essential for provision of good oral hygiene. Such bonds do not develop if turnover is high and assignments are continually changing. Transporting residents to appointments was indicated as a moderate barrier for facilities in obtaining dental care, although it is difficult to say why. Residents from RH/LTC facilities have to travel outside the facilities for other specialist services, so why should dental care be any different? Or is transportation of residents to all external appointments considered an inconvenience?

Dental care is consistently spoken of as a financial burden and often indicated to be unaffordable for the older person on a limited income. This is supported by Giddings et al. (2008), who concluded that affordability is a critical issue for many older people as their incomes decrease and their oral healthcare needs increase. Financial concerns of the family or resident were reported in the current investigation as the second highest barrier to good oral health, confirming the notion of dentistry being unaffordable. Financial concerns were also cited as the predominant reason for staff not attending the dentist on a regular basis. Both of these findings confirm that affordability is a major issue in accessing dental care. As people age, it has been suggested that visits to the physician increase and dental visits decrease (Harford 2008; Manski et al. 2010). This may be especially true for those living in RH/LTC facilities, where finances need to be rationed between essential medical costs and intermittent expenditure, such as that for dentistry. Improved emphasis on the need for better daily oral hygiene of residents may assist in reducing the inconvenience of oral pain and the financial burden for the resident, and so improve their oral-health-related quality of life. Considering that dental caries is a preventable disease, a greater emphasis on preventive strategies and raising awareness could be one way of reducing the financial impact that dental disease has on an individual over the life course. Improving the provision of daily oral hygiene for the residents may also act to reinforce its importance in the eyes of care staff, resulting in better awareness and care for the residents and staff alike.

The Government needs to take some initiative towards subsidising care for the older population. Oral health is not currently seen as part of overall health and is not funded accordingly. Dentistry in NZ is almost entirely privately funded and there
are limited avenues for subsidised care through the public health system. Obtaining care through the public hospital setting can impose less financial burden on the individual but comes with the disadvantage of prolonged waiting times. Most outpatient dental services receive patients only by referral. Patients may obtain treatment at a lesser cost but, for the individual in pain, there can be an extended length of time on a waiting list. Respondents in the current survey were asked ‘how soon a dental problem would be addressed?’, and most indicated that this would be within 48 hours of recognition. When asked ‘how soon a resident could get an appointment at a dental surgery/hospital dental department?’, approximately one-third indicated that the resident would normally receive treatment via a hospital dental department and that that facility would address the problem within 48 hours of presentation. Combining these times means that the problem would be addressed and an appointment for treatment would be obtained within four days. This finding is surprising, considering the length of dental waiting lists in the NZ public health system. Acute but non-life-threatening referrals are prioritised (using the National Access Criteria for First Assessments)\(^2^3\) to have a wait of between two weeks to six months depending on the details of the referral document. In the current study facilities seemed to contradict this because, when asked to rank potential barriers to good oral health, they indicated that, general dentists’ willingness to treat residents at the local hospital dental department was only a moderate barrier to good oral care; however the extended waiting times that go with non-acute hospital dental care would more realistically rank it as a more significant barrier.

Facilities indicated that they were readily able to access and obtain care, even though there are limited pathways for this. They rated finances, transportation, residents and provision of treatment at hospital departments as moderate barriers to care, yet were very satisfied (72.6% of cases) with the oral health of their residents. Interpreting these findings is challenging: either RH in New Zealand do not have poor oral care in their older residents, or perhaps the respondents appear to be exaggerating the actual care that is being provided to the residents. That is they are placing a positive spin on the situation for the reader via indicating high levels of satisfaction even though their residents could actually be suffering from oral

neglect. Many previous reports have shown that caregivers and nurses lack the knowledge to identify dental disease and pathology (Kiyak et al. 1993; Preston et al. 2000; Frenkel et al. 2002; Jablonski et al. 2005); this may lead to oral disease being left unidentified and untreated in such individuals.

6.5 Future planning for facilities and staff

If the baseline oral status of the residents is not charted, it is difficult to assess any changes that occur subsequent to institutionalisation. It would be beneficial to the resident for a baseline examination to be completed, but this may impose a further burden on the care facility because it would indicate that there is a need to direct further resources towards improving oral health and treating any identified disease. Failure to provide treatment would be deemed to be negligence. Fewer than one in eight of the responding facilities in this study reported undertaking baseline oral examinations of residents. This is consistent with recent reports from the literature (Berkey et al. 1991; Chung et al. 2000; Smith et al. 2008). By not providing a baseline oral examination, they essentially have no documented evidence of oral disease and there is therefore no motivation to treat the disease unless it becomes symptomatic. Considering that a majority of dental disease is preventable, it is astonishing that facilities can act in a manner that shows such little responsibility. A possibility for rectifying this situation is by the provision of legislation similar to that which is currently operating in the US under OBRA ‘87 and which has recently been introduced in Australia. For this to occur, directives need to be implemented at the government level which regulate a minimum standard of care to be provided, together with regular audit of this process to ensure that it meets those standards. The policy needs to be standardised in both public and private facilities. In New Zealand, facilities funded privately are not subject to the contractual obligations under the ARRC and, even though they are required to be licensed, there needs to be uniformity in policies on oral care, no matter how the facility is funded. Although the MDS and RAP were implemented under OBRA ‘87 in the United States, there is evidence to suggest that the process was not robust, and that appropriate training and support were not given to staff. The protocols were found to be useful only when the people using them had knowledge and understanding of OHC and the merits of properly providing it. It has been reported that assessment of residents’ oral health is typically completed by nursing staff, dietitians or other
health care professionals. These staff identified few oral health problems when completing oral health assessments using the MDS (Thai et al. 1997; Katz et al. 2010). This emphasises the need for a dental professional to oversee the process; this may subsequently lead to improved recognition and treatment of disease, while also opening avenues for education and skill improvement for care staff.

6.6 Adequacy of understanding of oral/dental disorders
In this investigation, the facility staff displayed a reasonable knowledge of the range of disorders and diseases which occur in the oral cavity (although it is the author’s belief that in some instances an encyclopaedia may have been used because of the obscurity of some of the answers). Disorders such as leukoplakia, black hairy tongue, blocked salivary glands, xerostomia and the oral manifestations of vitamin deficiencies are some of those reported. These are terms which are well known and used by dental personnel, but they are not often mentioned by general practitioners, nurses and other health-care workers outside of the dental profession. “Pyorrhoea” and “pyrritis” were reported on five separate occasions. These are older terms which refer to inflammation and infection of the gingiva. They are not as commonly used these days by professionals but are occasionally mentioned by older patients. Their use gives an indication of the age of the responder and, on review of the completed questionnaires, it was found that these responses were given by care staff who were between 57 and 65 years of age. In one instance, the facility had failed to read the directions on the front of the questionnaire and an 89-year-old resident (whose responses were omitted) had completed the questionnaire instead of a nurse or caregiver.

6.7 Miscellaneous issues raised by respondents
Respondents were asked for comments and suggestions about their current level of service and what they felt could be implemented in order to assist with maintaining the oral health of their residents. In multiple responses staff identified that they had noticed a trend towards more older people entering RH/LTC with more of their own natural teeth. This became a problem when these patients could not complete oral hygiene procedures independently. The most considerable barriers reported by respondents were residents and the resident’s families, finances, time, transportation of residents and lack of staff training in oral care. They also indicated that they
would prefer a dental professional to visit the facilities on a regular basis (as our
general medical colleagues do), to provide screening for the residents. A few
respondents provided insight into how they felt the problem could be addressed.
Many respondents mentioned the provision of a mobile service. Other suggestions
were for better government/DHB funding for those residents over 65 years of age
and for IHC residents under 65 years of age; portable dental equipment; and 12-
monthly hygienist in-service training.

A number of respondents requested information and resources such as an oral health
DVD or video, but had not thought to contact the New Zealand Dental Association
for assistance with obtaining these. One response reflects the complexity of the
problem: 'No local dentists here would visit a rest home. Wheelchair/walker access
severely limits the choice of dental surgery. More dentists willing to do age
sensitive dentistry and not a lot of work that is not actually necessary and very
costly.' LTC facilities have residents with disabilities, access problems and limited
finances, but also with the dental profession being unwilling to treat these patients
or providing unrealistic treatment options. Current training of the dental workforce
needs to be developed for provision of services in accordance with the changing
needs and requirements of the population. It is a consumer-demand relationship and
we are moving towards an economic phase in which a smaller proportion of the
population comprises the workforce, with a very 'top-heavy' ageing population.
Their treatment needs may be more complex than previous generations, but they are
not financially prepared to pay high prices at a time in their lives when their income
has become static.
7. CONCLUSIONS

The long-term benefits of optimal oral health are widely reported, yet oral hygiene procedures are still widely thought of solely as measures performed only for cosmetic purposes. The general health and systemic repercussions of poor oral health are seldom given the respect that they deserve until the devastating effects they can have on the individual’s health are brought to light. Improvement in the oral health of residents in aged-care facilities has been shown to benefit their quality of life through reduction of pain, improvement in eating and function, and preservation of dignity (Helgeson et al. 1996). Moreover, with improvements in awareness, greater resource allocation and better communication between the dental profession and those who routinely care for the older person, the oral health of residents could be improved. This could reduce the detriment to them in terms of systemic illness, leading to a lower burden on the health system through lower numbers of prescribed medications, shorter hospital stays, and quicker post-treatment recovery.

New Zealand’s population is ageing. With improvements in dental technology, fluoridation programmes and better access to care over the past century, more and more of the older population are retaining their own natural teeth into retirement. These adults are seen as the “high amalgam generation” (Treasure and Whyman 1995) and their dental needs and expectations will be significantly greater than those of past generations. They have been identified as having dental caries and periodontal needs at the same level as any younger cohort, and deserve to have access and care at the same level as them. With age, medical conditions, frailty, and disability or dependence on others for activities of daily living they may have limited ability to fully complete their own oral hygiene care. Moreover, oral health in the institutionalised older population has been widely reported to be poor and its maintenance is often a neglected duty. With this in mind, it would be timely for the New Zealand government to begin to seriously consider the World Health Organization’s call to set public policy and targets for improvement of oral health in older individuals (Smith 2010).
Current aspects which restrict the access and availability of care for the older population directly relate to the available workforce. There are two major groups that need to be considered here: those who work in residential care homes (namely nurses and caregivers), and the dental profession.

First, there is currently no comprehensive policy that adequately details the basic level of oral care that must be provided within institutions. It is not mandatory for facilities to provide training and education specifically in provision of oral healthcare, yet caregivers and nurses have been identified as lacking in knowledge and understanding of dental disease and how to provide care, especially in circumstances where residents' behaviour may be resistant (Fiske et al. 1994; Chalmers et al. 1996; Chung et al. 2000; McKelvey et al., 2003). Residents are not given a baseline examination on entry to long-term care, nor are they routinely recommended to have a dental check prior to entry. Regular routine dental appointments are not mandatory and so dental care tends to be provided only in an emergency or as required. These are both factors that could be addressed via public policy detailing a minimum standard of care, against which the facility would be able to be audited and held accountable.

Second, the dental workforce does not have sufficient members trained to adequately provide care to this group of the population. There are insufficient numbers of public health and specialist geriatric dentists currently practising in New Zealand, and general dental practitioners are generally reluctant to leave their surgeries to carry out care (Antoun et al. 2008). Domiciliary care is not an integral component of the undergraduate training course and there is limited access to portable equipment, unlike in the United Kingdom where this service is more routinely provided under the National Health System, as described by the British Society for Disability and Oral Health (Fiske and Lewis 2000). District Health Boards and the Government could easily rectify this by provision of a mobile dental service, not unlike that which is currently provided in remote areas of the country under the dental benefits system. This is a service that respondents identified as something that would be beneficial and would alleviate some of the issues involved with transportation of frail older patients; it would also serve to lessen the burden placed on local hospital dental departments by freeing up appointments. Training at the postgraduate level is
something that has only recently become available in New Zealand and Australia. This will hopefully help to both improve access to skilled care, and provide sufficiently educated professionals to advocate for oral health care on behalf of older individuals.

Multi-tiered policy would hope to address all aspects of oral care for this group of the population. It has been summarised well by Smith (2010), who provided an overview of policy goals and objectives. The overall goal is to provide improved and maintainable oral healthcare for the older adult living in residential care. This could extend to encompass all of the wider community of older individuals, as they also have difficulties in accessing care. More specifically, her objectives identify common themes supported by the findings of the current study. There needs to be improvement in the oral health knowledge and training for care staff within facilities, particularly on how to provide for residents' day-to-day oral hygiene care. Policies and guidelines for daily oral care and access to external services need to be developed; they need to be timely, affordable and encompass all forseeable barriers. All residents need to be examined on entry and their oral care needs discussed, documented and instigated. These need to be provided by appropriately trained personnel. The workforce needs to be developed to meet the needs of the older population. This may involve utilisation of both dentists and dental professional auxiliaries (namely hygienists and technicians) to provide a service that is seamless and equitable. Fundamentally, the service needs to both advocate for improved oral health care on behalf of the older population and promote access to oral health services for this important and deserving group.

The Government needs make greater provision for oral health care in the ageing population. It needs to realise that the dental needs of the older population are much more sophisticated and complicated than in the past, due to better access to care, fluoridation, better caries prevention programmes and changes in social norms regarding tooth retention. They need to support the efforts of people working in the aged care sector and the dental profession, as both are currently under-resourced and inadequately prepared to meet the future demands of this proportion of the population. Previous research has shown that oral health and general health are linked, and poor oral health has been associated with poor oral health related quality
of life. Development and implementation of legislation that mandates the use of
evidence based policies and guidelines for the provision of oral health care to
residents in aged-care facilities is just one way to begin to address this situation.
REFERENCES


Chalmers JM, Carter KD and Spencer AJ. Caries incidence and increments in Adelaide nursing home residents. *Special Care in Dentistry* 2005; 25(2): 96-105.


Helgeson M, Smith B, Johnsen M and Ebert C. Dental considerations for the frail elderly. *Special Care in Dentistry* 2002; 22(3): 40s-55s.


Jablonski RA, Munro CL, Grap MJ and Elswick RK. The role of behavioural, environmental, and social forces on oral health disparities in frail and functionally dependent nursing home elders. *Biological Research For Nursing* 2005; 7(1): 75-82.

Jantana S, Crampton P and Filoche S. The case for integrating oral health into primary health care. *The New Zealand Medical Journal* 2009; 122 (1301); ISSN 1175 8716.


Thomson WM. Dental caries experience in older people over time: what can the large cohort studies tell us? *British Dental Journal* 2004; 196: 89-92.


Zimmerman S, Gruber-Baldini AL, Hebel R, Barton L, Brookvar K, Taler G, Quinn CC and Magaziner J. Nursing home characteristics related to Medicare costs for
APPENDIX A

Questionnaire; Parts 1a, 1b and 2
ID Number:

Part 1a.
For Managers or Principal Nurse
(A few questions about your Facility)

UNIVERSITY
of
OtaGo

Te Whare Wananga o OtaGo
NEW ZEALAND

The following questionnaire should only take 5 - 10 minutes to complete. It seeks general information on the characteristics of your Facility.
1. Total Numbers of resident in the Facility/rosl home
   (Number in each ethnic group)
   Pakeha/European □   Maori □   Pacific Island □   Asian □   Other □

2. Location of the Facility □ Rural □ City

3. Population of the community your facility is located in?
   □  <5000   □  5000 to 10 000   □  10 000 to 50 000   □  50 000 to 100 000   □  100 000 to 500 000   □  >500 000

4. What is the age range of adults in your care?

5. How many of these residents:
   Are over the age of 65 years?
   Are frail elderly?
   Have dementia?
   Are persons with developmental disabilities?
   Are persons with psychiatric disabilities?

6. How many nurses/caregivers working at this facility?
   Number of Registered Nurses □   Number of Caregivers/qualified □
   Number of unqualified Caregivers/Asides □

7. What is the number of male nurses/caregivers?

8. What is the number of female nurses/caregivers?

9. What is the age distribution of staff working at your facility? (Number of workers in each age group)
   <20yrs □   20-29yrs □   26-39yrs □   31-35yrs □
   36-49yrs □   41-45yrs □   46-59yrs □   51-55yrs □
   56-69yrs □   61-65yrs □   66yrs+ □

10. Have you ever had anyone (such as a Dental professional/Hygienist) in to give formal (theoretical/visual demonstration) training or guidance for assistance with oral care procedures? □ Yes □ No
11. Are you aware that the New Zealand Dental Association has video resource tools, which can be provided for training/educational purposes? □ Yes □ No

12. Any other comments/questions?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
Part 1b.

Questions related to oral health/dental health of residents at your Facility
(To be completed by Manager or Principal Nurse)

The following questionnaire should only take 5 - 10 minutes to complete and seeks information on access to and provision of dental care in your Facility.
1. Does your Facility have a written plan of care for the dental needs of its residents?  
   (Beyond daily tooth brushing/preventive cleaning)  
   [ ] Yes  [ ] No  
   If yes, did a dental professional assist in drafting it?  
   If no, go to question 3.  
   [ ] Yes  [ ] No  
   If yes, did a dental professional assist in drafting it?  
   [ ] Yes  [ ] No  
   Do you know if staff find any problems in adhering to this protocol?  
   [ ] Yes  [ ] No

2. Who is primarily responsible for day-to-day coordination of your Facility’s dental plan of care?  
   [ ] Facility administrator  [ ] Caregiver/Care Aides  [ ] Social Worker  
   [ ] Director of Nursing  [ ] Dentist  [ ] Other staff member (specify)  
   [ ] Other RN  [ ] Dental hygienist  [ ] No one

3. Which of the following best describes the type of dental equipment typically utilized for the treatment needs for your residents?  
   [ ] Stationary/built-in equipment within the facility  
   [ ] Portable dental equipment  
   [ ] Dental treatment is rarely or never performed within the facility

4. The next few questions are about residents entering your Facility for a long-term stay;  
   a) What percentage of these are likely to receive an oral examination performed by a dental professional?  
   Approximately ___%  
   b) Is a baseline oral/dental examination recommended to residents when they initially enter the facility for long term?  
   [ ] Yes  [ ] No  [ ] Sometimes

5. Approximately what percentage of residents in your facility received dental treatment (other than a dental examination) during the past 12 months?  
   [ ] Approximately ___% (or ___ of ___ residents)  
   [ ] Do not know  
   a) Of those who did receive treatment, what was the main reason for treatment?  
      Emergency dental care ___%  
      Routine dental care ___%
6. Of all residents who are identified as needing dental care, what percentage do you think actually receive that treatment?

Approximately ___%

a) Who is their oral health most likely to be monitored by?
- [ ] Staff member asking them if he/she has any oral/dental complaints
- [ ] Staff member performing a visual oral assessment
- [ ] A dental screening performed by a dentist or hygienist
- [ ] Other

7. What percentage (%) of your residents can perform daily oral hygiene?

Indepently _____ %
- [ ] With assistance ______%
- [ ] Not able to, requires complete assisted care ______%

8. Please rate your satisfaction with the way the oral hygiene needs of residents at your facility are being met:

- [ ] very satisfied
- [ ] somewhat satisfied
- [ ] somewhat dissatisfied
- [ ] very dissatisfied

9. Do you have a dentist or other dental professional who is accessible to the patients/older people in your care for dental treatment?
- [ ] General dentist private office
- [ ] Dental specialist private office (ie oral surgeon)
- [ ] Hospital Dental Department/Emergency Department
- [ ] Other (Specify)

10. Consider the hypothetical situation: A resident of your facility appears to be in considerable dental/oral discomfort due to abscessed teeth or gums ...

a) If the dental treatment is provided outside the facility, in which setting is it most likely to be provided? (please check one)
- [ ] General dentist private office
- [ ] Dental specialist private office (ie oral surgeon)
- [ ] Hospital Dental Department/Emergency Department

b) How soon would the problem typically be addressed:

- [ ] Immediately
- [ ] Within 24 hours
- [ ] Within 1-2 days
- [ ] Within 4-7 days
- [ ] Longer than 7 days
- [ ] Other (Specify)
c) How soon could this resident get an appointment at a dental surgery for treatment?

- [ ] Within 24 hours
- [ ] Within 1-3 days
- [ ] Within 4-7 days
- [ ] Longer than 7 days
- [ ] Other (Specify)________

<table>
<thead>
<tr>
<th>Time constraints on facility</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing staff</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of interest in dental care by</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resident</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residents Family</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursing staff</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Practitioner</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial concerns of</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resident or family</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11. Please rate the following potential barriers to good oral health for residents at your facility:

- [ ] (Not significant barrier) 5 (Significant barrier)

<table>
<thead>
<tr>
<th>Potential Barriers</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transporting resident to dentist</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Willingness of general dentist to treat residents</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At nursing facility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At private surgery</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At hospital dental department</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time constraints on facility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursing staff</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of interest in dental care by</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resident</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residents Family</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursing staff</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Practitioner</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial concerns of</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resident or family</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
12. We would like your thoughts on how the oral health care of your residents could be improved. Please tick any of the following changes that you feel would be beneficial.

- Free training by a dentist or hygienist for your staff on oral health care
- Dentist of hygienist you pay to provide training for your staff on oral health care
- Dentist you pay to visit the facility and serve residents on a regular schedule
- Dentist the residents pay to visit the facility and provide treatment on a regular schedule
- Dentist you pay to visit your facility and serve your residents as needed
- Dentist the residents pay to visit your facility and provide treatment as needed
- Volunteer dentist to visit the facility and serve residents as needed
- Hygienist you pay to visit the facility and clean the residents' teeth regularly
- Hygienist the residents pay to visit your facility and clean your residents' teeth as needed
- Hygienist you pay to visit your facility and clean your residents' teeth as needed
- Hygienist the residents pay to visit your facility and clean teeth as needed
- Volunteer hygienist to visit your facility and clean teeth as needed

Other suggestions for improving oral health care in your facility/agency:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Your position: [ ] Director of Nursing [ ] Other (please specify) __________________________

138
ID Number:

Part 2.
General Oral Health Questionnaire
(To be completed by a Nurse or Caregivers)

The following questionnaire should only take 5 - 10 minutes to complete and seeks information on personal knowledge of oral health.
Some personal background information

1. What is your main type of employment?
   - Caregiver
   - Nurse
   - Other (please specify)

2. What is your age? 

3. What is your gender? Male Female

4. What is the average number of hours you work in a week as a Caregiver/Nurse? 

5. What is your highest level of qualification?
   - Primary
   - Secondary
   - Tertiary

6. Do you currently smoke? Yes No

7. How important do you think oral health is?
   - Not important
   - Moderately important
   - Very important

8. Do you attend the dentist on a regular basis? Yes No

9. What is your usual reason for attending the dentist? Check up Pain/Emergency

10. When was the last time you attended the dentist? 

   a) If greater than 12 months ago, what was the primary reason for not attending regularly? (tick only one)
   - Anxiety/phobia
   - Finances
   - Wear dentures
   - Oral health is of low importance
   - Time constraints

11. Do you have your own natural teeth? If answer No then go on to question 16
    Yes No

    How many of your own teeth do you have? 

12. How often do you brush your teeth?
   - <1 x per day
   - 1 x daily
   - 2 x daily
   - 3 x daily
   - >3 x daily

13. Do you floss on a regular basis? Yes No

14. Have you ever been advised on how to floss correctly? Yes No
<table>
<thead>
<tr>
<th>Question</th>
<th>Option 1</th>
<th>Option 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>15. Do you use mouthwash on a regular basis?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>16. Do you have dentures/partial dentures?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>a) do you wear them?</td>
<td>Always</td>
<td>Sometimes</td>
</tr>
<tr>
<td>b) do you wear them to bed?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>c) how often should dentures/plates be cleaned?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) How do you usually clean/care for your dentures?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. Do you give oral care advice to older people/residents in your care?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>General Dental Knowledge (be as brief or complex as you would like)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. Why do you think it is necessary to brush our teeth?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. How often should we brush and for how long?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. How often do you think a person should attend a dentist?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. Do you think people with dentures need to attend the dentist on a regular basis?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. What diseases/disorders do you know of which occur in the mouth?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23. Do you think that oral health and general health are linked in any way?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>(Reason)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX B

Information sheet and consent form
Questionnaire

Information sheet/Consent Form for those taking part in a survey of:

Oral Health Care in the Older Population

There will be a prize draw at the end for participating individuals.

To enter, please read and fill out the following information sheet and return it to us with you completed questionnaire.

There are 2 parts to this questionnaire; separate consents need to be signed for each part.

As part of my Doctorate in Clinical Dentistry I am undertaking some research into the Oral Health Care needs/requirements of our older population. As a Dental practitioner in a Hospital Dental Department, I am seeing increased numbers of elderly patients from Long Term Care Facilities and Rest Homes.

These residents are difficult to treat in the dental setting due to access barriers and they often have complicated medical histories. Provision of basic oral care for older people, who lack independence, can also be very frustrating for those responsible for their daily care.
My research is to look into the care our older people are receiving and how we can improve it. We know that rest homes are often very busy and that attending the dentist can be a very stressful occasion for both staff and residents. Currently New Zealand has very few dental practitioners with specialist training in treatment of these residents. Time delays in arranging appointments for these patients can be extremely frustrating for those involved.

Thank you for showing interest in this project and for carefully reading this information sheet prior to deciding whether to participate. If you decide to participate it is on an entirely voluntary basis and all participants will remain anonymous. You may withdraw from being in the project at any time and without any disadvantage to yourself of any kind.

Participation involves completing a questionnaire; this should only take 10-20 minutes of your time. Please fill it out and return it to us in the pre-paid self addressed envelope provided.

All completed questionnaires will be placed in a draw for one of the 3 following prizes, which will be drawn at the end of the survey.

- $200 petrol vouchers + $100 Supermarket vouchers
- $100 petrol vouchers + $50 Supermarket vouchers
- $50 petrol vouchers + $25 Supermarket vouchers

The findings of the project may be published and will be available to read. Every attempt will be made to preserve anonymity.

If you have any questions about our project either now or in the future please feel free to contact either:

Who is overseeing the survey?
Dr Andrea Kelsen BDS,
Dental Department
C/-Taranaki Base Hospital,
David Street,
New Plymouth.
+64 6 753 7706
Andrea.Kelsen@tdhb.org.nz

Who is going to help her?
Professor Robert M Love, BDS, MDS
PhD, FRACDS
Department of Oral Diagnostic and Surgical Services
Sir John Walsh Research Institute
School of Dentistry,
PO Box 647, Dunedin,
New Zealand
+64 3 479 7121
Consent

I have read the information above and understand what it is about. All my questions have been answered to my satisfaction. I understand that I am free to request further information at any stage.

I know that:

- My participation is entirely voluntary.
- I am free to withdraw from the project at any stage.
- The data collected will be destroyed at the conclusion of the project (raw data and results on which the project depends will retained in secure storage for five years after which they will be destroyed).
- The project findings may be published, but every attempt will be made to protect my anonymity.
- Reasonable precautions have been taken to protect data transmitted by email but that security of the information cannot be guaranteed.

I agree to take part in this project.

....................................................................................................................... ........................................
(Signature of participant) (Date)

(This Proposal has been reviewed and approved by the University of Otago Ethics Committee)

Prize Draw Ticket

To be eligible for the prize draw you need to complete the details below so that it can be drawn at completion of the survey.

(Details will be detached and kept separately from completed questionnaires so information will still remain anonymous).

NAME: ....................................................................................................................... 
ADDRESS: ................................................................................................................. 
PHONE NUMBER: ...................................................................................................
APPENDIX C

Ngai Tahu Research Consultation Committee
Title: Could We Be Doing More To Look After The Oral Health of Our Institutionalised Older Population.

The Ngāi Tahu Research Consultation Committee (The Committee) met on Tuesday, 24 June 2008 to discuss your research proposition.

The Committee considers the research to be of importance to Māori health.

The Committee notes that the researchers have identified that “Traditionally Māori have not resided within rest homes this may identify a trend towards higher numbers of Māori residing within NZ’s Rest Homes”

The Committee strongly encourage that ethnicity data be collected as part of the research project and recommend the use of the Census question on ethnicity.

The Committee suggests dissemination of the findings to relevant Māori health organisations, for example the National Māori Organisation for Dental Health, Oranga Nīho and to Associate Professor John Broughton, Māori Health and Dental Health, University of Otago.

The Committee would also value a copy of the research findings.

The recommendations and suggestions above are provided on your proposal submitted through the consultation website process. These recommendations and suggestions do not necessarily relate to ethical issues with the research, including methodology. Other committees may also provide feedback in these areas.

Nāhaku noa, nā

Mark Brunton
Kaitakawaenga Rangahau Māori
Facilitator Research Māori
Research Division
Te Whānau Wānanga o Ōtago
Ph: +64 3 479 8738
e-mail: mark.brunton@otago.ac.nz
Web: www.otago.ac.nz

The Ngāi Tahu Research Consultation Committee has membership from:

Te Rūnanga o Ōtākou Incorporated
Kāti Huirapa Runanga ki Puketawāki
Te Rūnanga o Moeraki