# Daily oral hygiene in residential care

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## ABSTRACT

**Introduction:** Significant improvements have occurred in the overall oral health status of the Canadian community population; however, oral health in residential care continues to be a long standing problem. Despite the importance of preventing oral diseases and of maintaining a person's psychosocial wellbeing, daily oral hygiene is recognized as a low priority for staff, administration and government inspectors. **Purpose:** The purpose of this paper was two fold: To present findings based on factors associated with daily oral hygiene in residential care homes in Ontario, and to discuss solutions based on current legislation in residential care. **Methods:** Data collected on 17,848 older persons in Ontario during *ideas for Health* projects used the Minimum Data Set (2.0), and identified the characteristics associated with having daily oral hygiene performed by staff or resident. **Results:** Approximately 2 per cent of residents were not receiving any daily oral care of teeth or dentures. Older persons with higher scores on the Activities in Daily Living (ADL) scale ($p=0.03$) and persons who were more care dependent ($p<0.0001$) were significantly more likely to receive daily oral care. **Conclusions:** While daily oral care is being provided to older persons with higher care needs, frail older persons in residential care with lower scores on the ADL scale are less likely to have daily oral care. This paper supports further educational and regulatory initiatives—including the integration of gerontology and geriatrics in the dental sector—as a solution to provide oral care to this segment of the Canadian population.

## RÉSUMÉ

**Introduction:** L'état de santé buccodentaire de la population des communautés canadiennes s'est grandement amélioré; toutefois, les soins de santé buccodentaire dans les institutions demeurent un problème depuis fort longtemps. Malgré l'importance de prévenir les maladies buccodentaires et de maintenir le bien-être psychosocial des personnes, l'hygiène buccodentaire quotidienne demeure toujours une faible priorité pour le personnel, les dirigeants et les inspecteurs du gouvernement. **Objet:** Cet article a un double objet : présenter les données fondées sur les facteurs associés à l'hygiène buccodentaire des soins quotidiens dispensés dans les foyers de l'Ontario et discuter des solutions fondées sur la législation courante concernant les soins en institutions. **Méthodes:** Les données, qui ont été recueillies auprès de 17 848 personnes âgées de l'Ontario lors des *Projets d'idées pour la santé*, proviennent du Minimal de données (2,0) et identifient les caractéristiques associées à la réception des soins d'hygiène buccodentaire dispensés par le personnel ou les résidents. **Résultats:** Environ 2 pour cent des résidents ne recevaient pas de soins buccodentaires quotidiens, dents naturelles ou artificielles. Les personnes âgées qui avaient des résultats plus élevés dans les activités courantes dans l'échelle d'Activités de la vie quotidienne (AVQ) (p=0,03) et celles qui dépendaient le plus des soins (p=0,0001) étaient significativement plus portées à recevoir des soins buccodentaires. Conclusions : Alors que les soins buccodentaires quotidiens sont dispensées aux personnes plus âgées qui en ont le plus besoin, les plus dépendantes des soins en institutions, qui ont des résultats d'AVQ plus faibles, sont moins susceptibles d'avoir des soins buccodentaires quotidiens. Cet article soutient davantage les initiatives d'éducation et de réglementation pour résoudre la prestation de soins buccodentaires à ce segment de la population canadienne.


**Key words:** oral health, dental care, oral hygiene, long term care, geriatrics, interdisciplinary

## INTRODUCTION

With an increase in dental service utilization since 1972, significant decreases in dental disease, including tooth loss and coronal caries have occurred in the Canadian population.[1] Despite this overall improvement in the oral health status and utilization, disparities in the overall Canadian population continue to exist.[1] Of notable concern is the ongoing issue of accessing dental care especially for older persons who live in residential care homes.[2–7]

Despite the recognized importance to older persons overall health and wellbeing, receiving oral healthcare in residential care continues be a long standing problem. While accessing dental professionals in residential care for emergency dental situations and yearly visits to dental professionals are typically covered under provincial *Long Term Care Acts*,[5] violations are known to occur. These barriers to providing dental care are well established in the literature; and often include financial,[8] demographic characteristics in older persons,[9] and environmental factors, including transportation and availability of dental providers,[10] and legislative barriers.[11] Both federal and provincial organizations in Canada are working towards solutions.[12,13]

Furthermore, daily oral hygiene is another known problem for staff members. Provincial *Long-term care Homes Acts* rarely regulate the maintenance of daily

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oral hygiene,[5] and again, where such regulation exists, violations still occur. British Columbia, for instance, has a regulation that residential care homes take joint responsibility with dental professionals and staff for the maintenance of daily oral hygiene. However, Jiang and MacEntee[11] had found that both staff and administration did not implement such regulation due to inadequate collaboration among dental professionals, administrators and government inspectors. Despite staff recognizing the importance of providing oral care, conflicting priorities,[14,15] attitudes from administration and clear lack of attention from government officials[11,14] prevent older persons in residential care from receiving basic oral care.

Solutions to providing daily oral hygiene for the prevention and maintenance of dental diseases in residential care are less established. While a number of organizations in Canada have developed educational materials for staff members in residential care,[16–19] these materials are often criticized for providing a "band-aid" approach to dental care. Of additional concern is that such initiatives often lack long term sustainability.[20] Consequently, active solutions by all persons involved in the overall care, including dental care of older persons, are urgently needed.

Few researchers within the gerontological literature have responded to providing solutions for older person's oral healthcare. While dental professionals have long advocated that oral healthcare will remain peripheral to other healthcare concerns until policy makers are informed of the problem,[4] gerontologists have well understood the history of abuse and neglect issues in residential care, including both the prevention and maintenance of the physical health and psychosocial wellbeing within these care homes. While parts of the dental literature have focused on establishing a causal relationship between oral health and systemic diseases,[21–36] older persons within care homes are already characterized by functional impairment along with clinical complexity. Instead of focusing on causal associations in these populations, ensuring both the prevention and maintenance of oral health for both the psychological and social wellbeing[37] and for nutritional aspects[38] of these persons should be of utmost priority for both gerontologists and policy makers in residential care.

Development of any innovative approaches to providing dental care for older persons in this population will require careful consideration of the trends—for example, baby boomer health dynamics—regarding the oral health status of all Canadians, including those in residential care. While less than ten per cent of the Canadian population reside in residential care,[39] community surveys indicate a need to provide ongoing preventive dental care in residential care, now and in the future.[1] While strategies for improving the oral health of older people have been discussed for global policy implementation,[40] there is a clear absence of discussions surrounding oral health status of baby boomers in the future of dental health policy, and of solutions to providing daily dental hygiene in residential care.

Given the demographic urgency of providing oral care to older persons, the purpose of this paper was to present findings from a 2008 presentation[40] during the Canadian Association on Gerontology – Annual Scientific and Educational Meeting (ASEM). Using the resident assessment instrument MDS 2.0 data, the mandated assessment instrument through residential care homes in Ontario, the paper illustrates the extent of the oral care problems in residential care and investigates the factors associated with daily oral hygiene. Ultimately, the paper provides evidence base for solutions and educational and research initiatives for oral health in residential care in Canada.

## METHODOLOGY

### Participants

The participants in the sample consisted of 17,848 older persons, with the average length of stay as 706.4 days (SD=1082.4) in residential care. Approximately 68 per cent of the sample was female, and 45.4 per cent had natural teeth. The average age of the persons in the sample was 82 years (SD=10.5).

### Data collection and analyses

Secondary data analyses based on data collected in residential care homes in Ontario during the *ideas for Health* projects (2005–06) were examined.[39] During the data collection phase, all assessments that were completed from trained assessors on the MDS (2.0) instrument were investigated for missing data and outliers by at least two *ideas for Health* project staff. Any missing data were sent back to the participating site coordinators for completion. All data were collated by two *ideas for Health* staff members. Ethics approval for data collection for the *ideas for Health* project was previously obtained through the University of Waterloo.

Data were obtained for these presentations by this author[39–43] using a secure data server designated for student access from the *ideas for Health* principal investigator. All students signed and completed forms for data privacy, protection and confidentiality. As this was an original exploratory population based study to investigate the factors associated with daily dental hygiene in residential care, previously published literature on daily oral hygiene in residential care homes,[15] were cross walked with the MDS 2.0 assessment items. Frequency analyses of all oral health problems were first conducted to illustrate the extent of the oral health status. As this was an exploratory analysis, T-tests were used determine which MDS 2.0 items were associated with daily oral hygiene ($p<0.05$).

### Measures

*Items on oral health*

The oral health status of older persons in residential care, as measured on the MDS 2.0, consists of oral hygiene measures—daily cleaning of teeth or dentures or both by resident or staff member—and oral status measures. These items are divided to include:

i. oral health problems—problems chewing, swallowing, and mouth pain, and
ii. oral health diagnoses—debris present in mouth prior to going to bed; broken, loose, or carious teeth; inflamed gums, swollen or bleeding gums, oral abscesses, ulcers or rashes.

These items are assessed by staff members, and provide a set of minimum data in residential care.

*Activities of daily living*

Lawton's activities of daily living (ADL) scale on the MDS 2.0 refers to a person's self performance regarding tasks of daily life—for example, moving between locations, eating, toilet use, and personal hygiene. Older persons can range from 0=independent (decisions are consistent, reasonable and safe) to 4=*severely impaired* (never or rarely makes decisions). Therefore, scores can range from 0 to 16, where higher scores indicate more severe impairment. Internal consistency for the ADL scale is high with alpha=0.90.[41,44]

*Cognitive impairment*

The MDS 2.0 cognitive performance scale is modelled from the mini mental state examination (MMSE) and test for severe impairment (TSI). In providing a functional measure to define the older persons cognitive status, the cognitive performance scale measures six items on the MDS 2.0; 1) short term memory, 2) whether or not the resident is able to recall the current season, 3) whether the resident remembers the location of his or her room, 4) resident remembers staff member's faces or names, 5) resident is aware that he or she is in a nursing home, and 6) if the resident is able to make decisions regarding tasks of daily life. Assessors complete this section by checking off which items the resident was able to complete or recall during the last seven days. The scale ranges from 0=*intact* to 6=*severe impairment*. This scale was has high reliability of alpha= 0.89.[44–46]

*Aggressive behaviour*

The frequency of behavioural symptoms is summed to create the aggressive behaviour scale, and includes:

i. verbal abuse—whether staff members or other residents screamed, threatened, or cursed at,
ii. physical abuse—others were hit, shoved, scratched or sexually abused,
iii. socially inappropriate behaviour—resident was disruptive or engaged in self abusive acts, and
iv. resisting care—medications and/or eating.

The scale has a high reliability of alpha = 0.79.[43]

*Depressed affect*

Mood items are used to screen for depression in residential care homes.[44] The scale consists of a core set of seven mood items which are: making negative statements, persistent anger, expressions of unrealistic fears, repetitive health complaints, repetitive anxious complaints, sad pained worried facial expressions, and tearfulness. Items are summed to give a possible score of 0–14, with higher scores indicating more depressive symptomology. The MDS 2.0 depression rating scale is validated against the Hamilton depression rating scale and the Cornell scale for depression in patients with dementia, as well as the *Diagnostic and Statistical Manual of Mental Disorders* – 4th ed. (DSM–IV).[47,48]

*Changes in health, end stage disease, signs and symptoms (CHESS)*

The CHESS scale was developed to detect frailty and instability in health.[45] The scale includes a count of health symptoms present, which are vomiting, dehydration, leaving food uneaten, weight loss, shortness of breath and edema. The scores on these items are added together, including items on end stage disease, decline in both cognition and activities of daily living. The scores on the scale range from 0=*no instability* to 5=*very severe instability*. Higher scores on the CHESS are shown with a reduction in survival time in chronic care populations.[45,48]

*Index of social engagement*

The index on the MDS 2.0 consists of social activity by the resident. These items consider whether the person is at ease interacting with others, is doing planned or structured and self initiated activities, and whether the person establishes his or her own goals, pursues involvement in the life of facility, and accepts invitations into most group activities. The items are summed together to create a social engagement index, resulting in a score of 0–6, with higher scores indicating more social engagement within the care home.[49]

## RESULTS

Missing data and outliers for all measured variables were first investigated, and no problems were found. Characteristics of the study sample are presented in Table 1. Frequency analyses (n=17,848) determined that approximately 6 per cent (n=1070) of all residents in Ontario had debris present in their mouth prior to going to bed, and that they were experiencing oral health problems such as chewing problems (26.7%; n=4765), mouth pain (1.0%; n=178); broken, loose, or carious teeth (5.1%; n=910); inflamed gums, oral abscesses, mouth ulcers and rashes (1.3%, n=232).

**Table 1**. Characteristics of Ontario residents (n=17,848)

| Characteristic | Number and Mean (SD) |
|---|---|
| Age at assessment | 82.0 (10.5) |
| Length of stay | 706.4 (1082.4) |
| Sex<br>Female | 68.3 (12187) |
| Oral status<br>Dentures | 54.6 (9744) |

**Table 2**. Factors associated with receiving daily oral hygiene in Ontario's residential care homes.

| Characteristic | No daily oral hygiene (n=499) | Received daily oral hygiene[a] (n= 17,349) | *p* value |
|---|---|---|---|
| Cognitive performance | 2.7 | 2.8 | *p*=0.57 |
| Activities of daily living | 2.9 | 3.5 | *p*=0.03 |
| Aggressive behaviour | 1.6 | 1.7 | *p*=0.76 |
| Depression | 1.8 | 2.1 | *p*=0.17 |
| CHESS | 0.5 | 0.7 | *p*<0.0001 |
| Index of social engagement | 2.4 | 2.5 | *p*=0.23 |

[a] Received any daily oral hygiene (teeth or dentures) by staff or resident

The factors associated with receiving daily oral hygiene by staff or resident are presented in Table 2. Approximately 2 per cent (n=499) of older persons in the provincial sample had no daily oral hygiene. Older persons with higher scores on the ADL scale ($p$=0.03) were significantly more likely to have daily oral hygiene. Furthermore, higher scores on the CHESS scale, indicating more health instability, were significantly more likely to have daily oral health care ($p$<0.0001). There were no significant differences regarding impairments in cognition, aggressive behaviour, social engagement and depressive symptomology (Table 2).

## DISCUSSION

The purpose of this paper was to present findings based on daily oral hygiene in residential care homes in Ontario, and to discuss solutions to providing such care. Older persons in this sample who had higher care needs were significantly more likely to have daily oral healthcare. These results highlighted that staff members in residential care were providing daily oral care to frail older persons who could not otherwise provide care to themselves—staff members undoubtedly cared for and made efforts for oral health and wellbeing of older persons. However, clinical complexity often resulted in rushed approaches to care including oral care. This was confirmed, as a number (n=499) of frail older persons reported no daily oral hygiene in Ontario's residential care homes in last seven days. This study additionally found that older persons who were frail but more care independent were less likely to have any daily oral care. Other research has found that older persons may hesitate to ask for assistance with oral hygiene.[15] Clearly, the development and implementation of strategies for oral healthcare involving government, dental professionals and gerontologists are much needed and long overdue for older persons in residential care in Canada.

Development of strategies for oral health in residential care homes is imperative to ensure the overall wellbeing of Canadian older persons. The development of organizational strategies offers solutions in both the prevention and maintenance of oral health in the residential care sector. The integration of dental care in residential care homes has illustrated ongoing difficulty from the perspective of dental professionals. Focus groups in the Pruksapong et al.[46] study had discussed a stronger need for administrative support for the provision of oral healthcare in residential care. Furthermore, the groups had indicated that lack of interest among dental professionals, and inadequate education were the main barriers in the provision of oral healthcare in residential care, highlighting the need for educational approaches to solve the issue of providing daily oral hygiene. As a solution, working groups from the Canadian Dental Association[9] have recommended both gerontology and geriatric education and training for the dental sector with the need for interdisciplinary and interprofessional team based, collaborative care.[11,12]

Interdisciplinary approaches to training in gerontology are often hindered due to the structure of Canadian universities.[47] The facilitation of gerontology at both undergraduate and graduate levels for dental professionals will assist in recruiting and preparing dental professionals for providing care to older persons in different care settings such as interprofessional teams in hospitals. It is important to note that while a lack of interest in providing dental care to this population can be addressed within dental education, there is a stronger realization of the need for both legislative and organizational changes for dentistry in residential care. For instance, while legislation in the majority of provinces has allowed independent dental hygienists to provide preventive care to this population, the scope of practice within residential care does not allow dental hygienists to provide dental care without a visit to dentist in last year.[49] Further regulatory initiatives in provinces regarding daily oral hygiene in residential care will assist in maintaining the overall oral and health of older persons. Both regulatory and educational changes to the practice of dentistry and dental hygiene—as with the creation of a specialized dental professionals—are imperative to meet the changing oral healthcare needs in this population, as are investigations surrounding baby boomer health dynamics in the future of dental health policy. Furthermore, systems' level research investigations and further investigation of different care models from gerontological researchers and practitioners will illustrate the most efficient and cost effective solutions to providing oral care in residential care.

### Strengths and limitations

These results add to the literature on oral health in residential care by empirically investigating the factors associated with receiving daily oral hygiene. Strengths include the analyses of mandated data collected in Ontario. Limitations to the research are based on clinical observations in residential care. The MDS 2.0 oral assessments are often assigned to health professionals who do not have the knowledge or expertise in assessing a mouth. Therefore, while the MDS 2.0 is designed to provide minimum data for policy implementation,[49] the frequencies of the oral health items that appear on the MDS 2.0 may be an underestimation of the true extent of the problem.[48]

## CONCLUSIONS

Improper oral hygiene practices lead to further oral health problems.[37] All residential care homes in Ontario had approximately 1 to 26 per cent of older persons experiencing oral health problems, such as problems chewing and mouth pain. These results have implications for those providing care to older persons. Chewing problems associated with or without dental pain are associated with physical problems with digestion,[37] leading to hunger and weight loss, and resulting in poorer nutritional outcomes.[38] Other oral problems are associated with speech problems, reduced social activities and intimate relationships.[37] Given the importance of proper nutrition in residential care, ensuring the prevention and maintenance of oral health throughout the lifespan—inclusive of older population in residential care—should no longer be a recognized low priority for administrators and staff members.

Solutions to providing daily oral hygiene in residential care homes must be developed in collaboration with all members in residential care, including government officials. For instance, time efficiency must be considered for frontline staff members when designing strategies to improve oral health, as many care aids frequently state that oral care cannot be completed during the period between wake, dress and breakfast routines. Further, better support for dental professionals in residential care as valued members of a care team will be imperative to ensure residential care homes maintain the overall health of these older persons. Finally, any strategy to promote and maintain the overall health and wellbeing of older persons in residential care must always consider the autonomy of older persons while promoting independence.

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