Oral health assessment and care practices in long-term care: a convergent mixed methods study

Shauna M Hachey[*§†], BDH, MHS, RDH; **Hannah A Crouse**[§ΔΦ], MA; **Rebecca H Affoo**[*§Σ], PhD, CCC-SLP, SLP-Reg, SLP(C); **Violet D'Souza**[*§†], BDS, MS, MSc, PhD; **Melissa M Huntley**[†], MN, RN, GNC; **Natasha L Symes-Osmond**[†], BN, RN, GNC(C); **Alma WL Wade**[*], DipDH, BScK, MEd, RDH; **Tamara L Wright**[*], MSc, DMD, DipPerio

PRACTICAL IMPLICATIONS OF THIS RESEARCH

- Dental hygienists play an important role in long-term care and are valued by long-term care teams.
- Person-centred oral care planning that aligns with residents' routines and preferences can improve acceptance of and adherence to care.
- Enhanced training and standardized protocols for oral assessments, oral care, and documentation will support consistency and improve care outcomes.

ABSTRACT

Background: Poor oral health in long-term care (LTC) impacts residents' nutrition, systemic health, and quality of life. LTC residents are often living with cognitive decline and functional limitations, hindering daily oral hygiene and limiting access to professional oral care services. This mixed-methods study investigated oral health assessment and care practices in an Atlantic Canadian LTC facility and the care team's perception of a dental hygienist's role in LTC. **Methods:** Data were collected through semi-structured interviews and focus groups with residents, unpaid caregivers, and nursing and care staff, as well as through a retrospective chart review to explore oral health practices and their documentation. Qualitative and quantitative data underwent thematic and descriptive statistical analysis, respectively. **Results:** Between June 2023 and March 2024, 35 paid caregivers, 6 residents, and 1 unpaid caregiver were interviewed, and 14 charts were reviewed. Findings reveal complex factors influencing oral health, including perceptions of inadequacy, cultural attitudes, challenges in implementing consistent care due to staff shortages and residents' responsiveness to oral care, and the critical role of the dental hygienist. **Conclusion:** The results highlight the need to integrate oral health professionals into LTC facilities and emphasize the importance of person-centred approaches to oral care to improve oral health practices and ultimately enhance residents' quality of life.

RÉSUMÉ

Contexte : Une santé buccodentaire compromise dans les établissements de soins de longue durée (ESLD) a une incidence sur la nutrition, la santé systémique et la qualité de vie des résidents. Les résidents d'ESLD vivent souvent avec un déclin cognitif et des limitations fonctionnelles, ce qui nuit à l'hygiène buccale quotidienne et rend plus difficile l'accès à des services professionnels de soins buccodentaires. Cette étude à méthodes mixtes a porté sur l'évaluation de la santé buccodentaire et des pratiques de soins dans un ESLD du Canada atlantique ainsi que sur la perception de l'équipe de soins quant au rôle de l'hygiéniste dentaire dans les ESLD. **Méthodes :** Les données ont été recueillies au moyen d'entrevues semi-structurées et de groupes de discussion avec les résidents, les soignants non rémunérés et le personnel infirmier et de soins, ainsi que dans le cadre d'un examen rétrospectif des dossiers pour explorer les pratiques de santé buccodentaire et leur documentation. Les données qualitatives et quantitatives ont fait l'objet d'une analyse statistique thématique et descriptive, respectivement. **Résultats :** Entre juin 2023 et mars 2024, 35 aidants rémunérés, 6 résidents et 1 aidant non rémunéré ont été interviewés, et 14 dossiers ont été examinés. Les constatations révèlent des facteurs complexes qui influent sur la santé buccodentaire, notamment les perceptions d'inadéquation, les attitudes culturelles, les difficultés à mettre en œuvre des soins uniformes en raison de la pénurie de personnel et la réactivité des résidents aux soins buccodentaires, et le rôle essentiel de l'hygiéniste dentaire. **Conclusion :** Les résultats soulignent la nécessité d'intégrer les professionnels de la santé buccodentaire dans les ESLD et renforcent l'importance des approches de soins buccodentaires axées sur la personne pour améliorer les pratiques de santé buccodentaire et, en fin de compte, la qualité de vie des résidents.

Keywords: caregivers; dental hygienists; dentistry; geriatric; long-term care; oral health; oral hygiene
CDHA Research Agenda category: access to dental hygiene care and unmet needs

[*]Faculty of Dentistry, Dalhousie University, Halifax, NS, Canada
[§]Healthy Populations Institute, Dalhousie University, Halifax, NS, Canada
[†]Nova Scotia Health, Canada
[Δ]Department of Sociology and Anthropology, Dalhousie University, Halifax, NS, Canada
[Φ]Department of Sociology and Anthropology, Carleton University, Ottawa, ON, Canada
[Σ]Faculty of Health, Dalhousie University, Halifax, NS, Canada

Correspondence: Shauna Hachey, BDH, MHS, RDH; spunch@dal.ca
Manuscript submitted 7 February 2025; revised 10 March and 1 August 2025; accepted 13 August 2025

INTRODUCTION

Poor oral health can interfere with nutritional intake and status,[1] worsen systemic conditions,[2–4] and negatively impact quality of life[5]. Older adults living in long-term care (LTC) are more at risk for poor oral health compared to the general population due to inadequate daily mouth care resulting from cognitive, physical, and functional declines,[6–8] predisposing health conditions and associated medications,[2,9] and lack of access to professional services. Accessing offsite professional oral care is challenging for LTC residents who struggle to adapt to new environments, lack transportation, and/or require caregiver accompaniment. Furthermore, many LTC residents rely on unpaid and paid caregivers (staff) to assist with daily oral care and to coordinate professional care.[10–12]

Access to quality oral care in LTC is more critical than ever. Canada's population of adults aged 65 years and older is growing[13] alongside the proportion of this population who maintain their natural teeth[14]. A 2012 study in Atlantic Canada highlighted disparities in access to care and high rates of unmet oral health needs among older adults living in LTC compared to older adults living independently.[12] Since that study, guidelines for oral health assessment and care planning have been developed for LTC. Little is known about current oral assessment and daily mouth care practices in LTC in Atlantic Canada.

To help LTC residents maintain good oral health, an interprofessional approach that promotes and delivers the geriatric oral health triad, which includes regular oral assessments, oral hygiene care (i.e., daily oral care and professional oral hygiene care), and dental treatment as required, is recommended.[10] Professional onsite services are particularly important for those who experience difficulty seeking external services and those who have chronic conditions linked to oral health.[1–9] The dental hygienist is considered a key care team member. However, there is a paucity of literature on the integration of a dental hygienist into the LTC team in Canada. This study aims to investigate oral health assessment and care practices and the perceived benefits of integrating dental hygienists into the interprofessional LTC team.

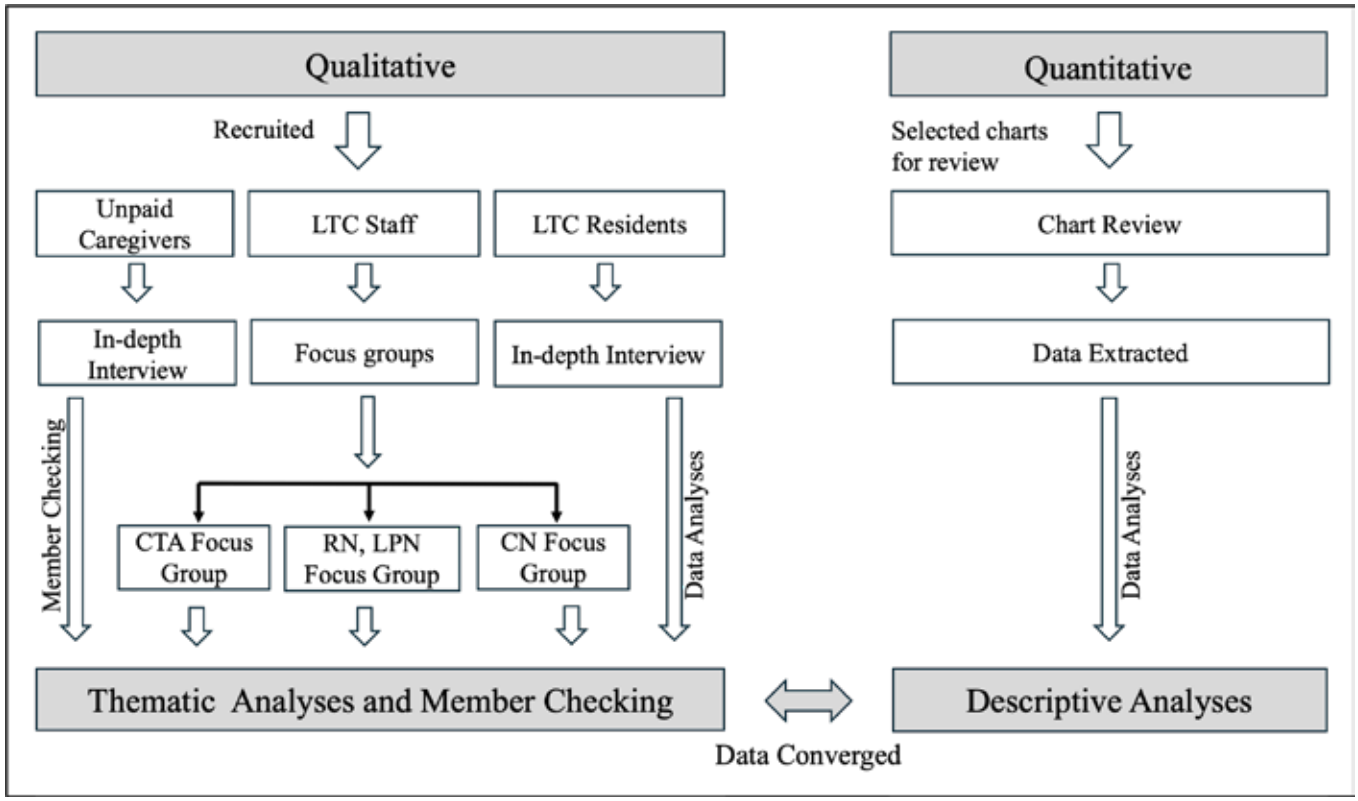
METHODS

Between July 2023 and March 2024, this convergent mixed methods study (qualitative descriptive and retrospective chart review)[15] was conducted at a 175+ bed LTC facility in Atlantic Canada (Figure 1). This LTC was selected because of its recent pilot of a dental hygienist staff position. Ethics approval (File #1027394) was obtained, including a waiver of the consent process for the retrospective chart review. All data have been de-identified, and references to staff positions have been included only when relevant.

Research team reflexivity and positionality

The research design was informed by grounded theory

Figure 1. Convergent mixed methods design



techniques, including purposive and theoretical sampling, as well as concurrent qualitative and quantitative data collection and analysis.[16] Researchers were able to practise reflexivity throughout the research process, allowing the study to evolve as data collection and analysis progressed.[17] The principal investigator (SH) is a dental hygienist with experience in geriatric care and research. In contrast, the research assistant (HC) was a sociology graduate student with qualitative research experience and no background in oral health. SH led the study design, HC collected data, and all authors contributed to the study design, data analysis, and dissemination.

To situate the LTC facility, the site operates under provincial guidelines for LTC, including oral health assessment and care provision. Provincial guidelines have not been referenced in this article to maintain the anonymity of the LTC facility. However, they were used during data collection and analysis as a benchmark to assess the adequacy of oral health assessment and care planning practices.

Conceptual framework

The Health Belief Model (HBM) is an accepted framework that suggests an individual's perception of a personal threat from an illness, combined with their belief in the effectiveness of the health behaviour, can predict the likelihood of adopting that behaviour. The interview guide was developed using the 5 dimensions and 2 constructs of the HBM (Figure 2).[18–20]

Qualitative data collection

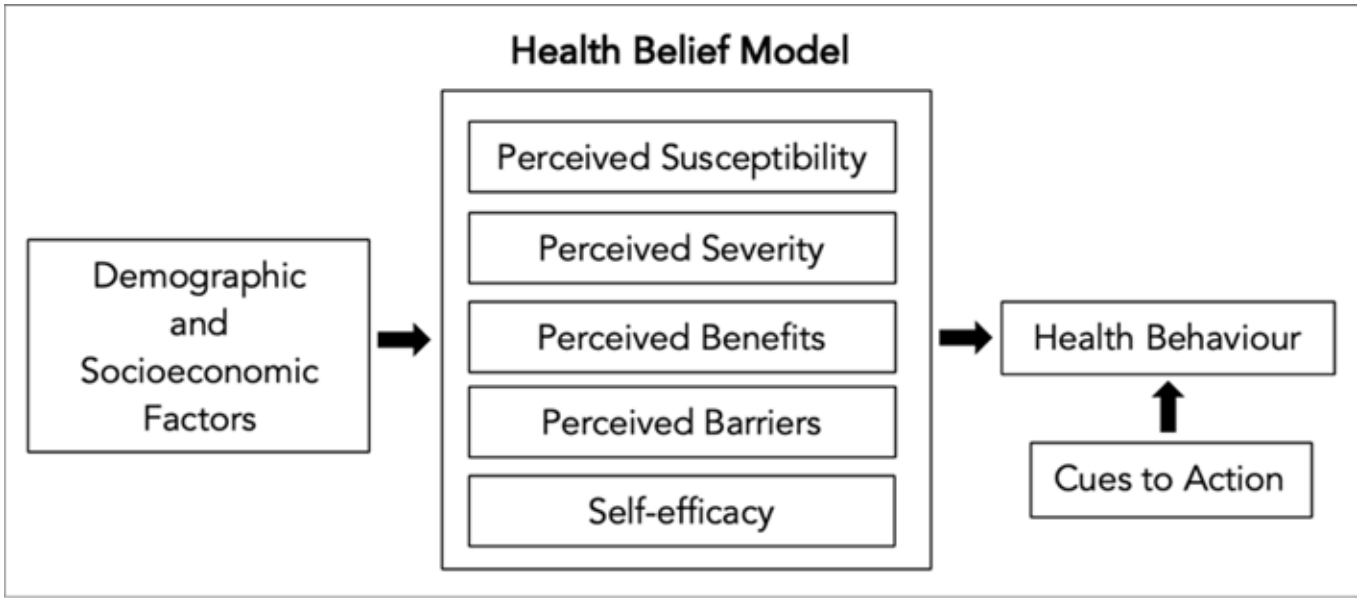
To obtain multiple perspectives, the research team conducted semi-structured interviews with LTC residents and unpaid caregivers, who also served as substitute decision-makers, and focus groups with LTC staff involved in any aspect of oral care (i.e., charge nurses [CN], registered nurses [RN], licensed practical nurses [LPN], and care team assistants [CTA]) (Supplementary Material S1).

The recruitment strategy included internal staff emails and the LTC's advisory groups, as well as signage throughout the facility. Additionally, co-investigators and site staff (MH, NS-O) assisted in identifying staff participants. For those who expressed interest, the research assistant (HC) provided information about the study, screened for eligibility, and reviewed and obtained (verbal, audiorecorded) consent at the beginning of each interview. All participants were offered a gift card as a token of appreciation.

Quantitative data collection

Used in both the aging and oral health literature,[21–23] quantitative data were collected by reviewing resident charts. Using G-Power software, a confidence level of 95%, and a margin of error of ±4%, the required sample size for a full study was 136 charts. Ten percent of the sample is recommended for a pilot[24]; therefore, data from 14 charts were extracted. Charts were randomly selected (2 from each of the 7 units) by placing residents' room numbers into an online randomization tool, excluding residents admitted within the previous 6 months. Meeting with managerial nursing staff to identify relevant documentation and variables was critical to creating a comprehensive data extraction table. The research assistant extracted data from charts following training, calibration, and pilot testing of the data extraction process with the principal investigator. The past year of chart data was reviewed, specifically, documentation within the clinical geriatric assessment, oral assessment and care planning, and the nursing care plan and log of daily care. In addition, dependence during activities of daily living (ADLs), frailty scores, cognitive

Figure 2. Health Belief Model



status (i.e., MMSE score), and communication status (e.g., speech, hearing, and vision impairments) were recorded.

Data analysis

Qualitative data were analyzed using a 2-stage approach. All interview and focus group recordings were transcribed verbatim, coded, and thematically analyzed using Braun and Clarke's 6-phase method.[25] First, interview data were inductively coded to identify emergent themes. Thematic structures were achieved by 1) becoming familiar with the transcripts, 2) generating initial codes, 3) iteratively coding transcripts, 4) identifying emergent themes, 5) organizing a thematic map to review, and 6) defining identified themes.[25] This first stage of data analysis allowed exploration of themes beyond the model, ensuring the model's appropriateness, and preventing data from being "forced" into its framework.[26] From this analysis, 8 themes emerged: 1) defining oral health, 2) oral health beliefs, 3) oral health status, 4) onsite professional care, 5) oral care practices, 6) daily oral care plans, 7) orientation and training, and 8) facilitators and barriers to care. Researchers then independently mapped subthemes to the HBM model and compared their mapping until consensus was reached. Quotations from staff and the unpaid caregiver are indicated by their respective participant identification number (e.g., P10), and quotations from resident participants are indicated using an R-prefix (e.g., R3). The supporting quotations (Supplementary Material S2) are referenced using a Q-prefix (e.g., Q17).

The quantitative data from residents' charts were analyzed using StataNow 18.5, and descriptive statistics were calculated to show frequencies and measures of central tendency. Frailty and MMSE scores were categorized, based on criteria from Rockwood[27] and Davey and Jamieson[28], respectively. Due to a single mild level of frailty case, "mild" and "moderate" frailty were combined.

RESULTS

Qualitative findings

A total of 42 people participated between June 2023 and March 2024, including 35 staff members (7 CNs, 16 RNs/LPNs, and 12 CTAs), 6 residents, and 1 unpaid caregiver (Table 1). Focus groups and individual interviews were 40 to 62 minutes in length. Field notes captured non-verbal cues.

Five in-person focus groups were conducted with staff during working hours: 1 with CNs, 2 with RNs and LPNs, and 2 with CTAs. The CNs had a separate session to minimize power imbalances. Member checking with staff was unsuccessful due to work commitments. A sixth focus group with CNs validated data analysis and further explored emerging themes.

Resident participants were interviewed individually, in person, and the 1 unpaid caregiver was interviewed virtually via Microsoft Teams. Although the caregiver reviewed their interview transcript, member checking was not conducted with residents due to the brevity of their responses. With consent, the authors acknowledge that the unpaid caregiver participant is an oral health care provider.

Table 1. Demographics of study participants (N = 42)

Staff (n = 35)	%
Gender	
Female	85
Male	15
Years in current position	
Less than 1 year	14
1 to 5 years	26
6 to 10 years	34
More than 10 years	26
Age	
39 years and under	35
40 to 49 years	23
50 to 59 years	29
60 years and over	14
Residents (n = 6)	**%**
Gender	
Female	33
Male	67
Age	
84 years and under	50
85 to 89 years	17
90 to 95 years	17
Over 95 years	17
Years as resident	
Less than 1 year	33
1 to 2 years	50
3 or more years	17
Unpaid caregiver (n = 1) is not included	

Social and psychosocial characteristics

When asked to define oral health, many residents insinuated oral health was genetically predetermined (Q1). In contrast, public health education was highlighted, specifically how daily oral care practices, such as toothbrushing, were not

taught at home (Q2) but in school (Q3). Residents also spoke about demographic and socioeconomic factors influencing their oral health, including unaffordability, rurality, and lack of access to water fluoridation (Q4-5).

When speaking about residents, staff expressed that oral care becomes less of a priority with age (Q6). Other staff contested this idea and proposed that residents' oral health declines because of staff practices (Q7). Staff identified culture and lived experience as influencing practice and, in turn, daily oral care for dependent residents (Q8). Additionally, a staff participant asserted that residents have increasingly complex care needs, inhibiting the staff's ability to assist with oral care (Q9).

Perceived susceptibility

The residents' oral health was described as "inadequate" (P21) and "poor" (P30), with staff noting that a decline in oral health typically accompanies cognitive decline (Q10). Some shared the belief that poor oral health in LTC is inevitable (Q11), while others disputed this belief, suggesting oral health depends on the residents' desire to maintain good oral hygiene habits (Q12). The notion that oral care is low priority for residents was further contested when a staff participant suggested that residents do not ask for oral care either because they do not want to be a bother to staff or because they forget to ask, referring to residents experiencing cognitive decline (Q13).

As previously mentioned, residents often cited genetics as the reason for their oral health status. In contrast, many residents suggested that good oral health depends on daily and professional oral care (Q14). For some residents, good oral health meant retaining their natural teeth (Q15) and was viewed as impossible to achieve otherwise (Q16).

Perceived severity

When defining oral health, staff participants positively described it as having a "clean mouth, good oral hygiene" (P34) and a "healthy tongue" (P30). Another staff participant described the mouth as requiring special care because "the mouth is the gateway to the body" (P5). They also cited a variety of negative repercussions of not maintaining the residents' oral health: mouth pain, reluctance to eat, and weight loss (Q17).

Many conversations involved the oral health of residents with dementia. Staff stated that, although residents may not explicitly say they are in pain, staff have the expertise to identify the signs (Q18). Staff participants described choosing whether to perform oral care as "balance," weighing the risk of upsetting residents with dementia by performing oral care against what is "more important": oral care or breakfast, for example (Q19).

Self-efficacy

Staff orientation and training were identified as influencing staff's confidence in completing oral care and assessment practices. For example, some staff participants described their orientation to the facilities' oral health guidelines as a "big education" (P6), whereas others recalled having a "faint" (P14) recollection of oral health orientation and training, stating, "I was never oriented towards it" (P3). Some spoke of a desire for a more specific protocol and training that would provide them with the necessary skills for oral care (Q20). Others felt that since oral care is something people typically do for themselves, there wasn't a need for formal orientation and training (Q21). While staff felt comfortable providing daily oral care (i.e., toothbrushing), oral assessments were performed with less confidence (Q22). They also reported consulting a physician when concerned about a resident's oral health and encountering resistance, with physicians suggesting residents should see a dentist instead. Physicians would, however, manage "certain circumstances," such as pain (Q23, Q24).

Residents expressed confidence in their ability to complete their daily oral care, citing their lifetime of experience as key to their ability to manage oral care independently (Q25). Residents who were less confident shared a considerable desire to remain independent in their oral care, even if self-care might not provide them with the best outcome (Q26, Q27).

Like staff participants, the unpaid caregiver participant identified "refusal" as a key barrier to oral care. However, they described encouraging their loved one to accept care (Q28). While the caregiver wished the resident to remain independent (Q29), they acknowledged that the level of independence can "depend on his day [and] depend on his mood" (Q30). Relatedly, the caregiver spoke about differences they observed between regular and temporary care staff, indicating the regular staff were more likely to attempt to overcome resistant behaviours and perform oral care (Q31).

Perceived barriers

Increasing medical complexity and care needs of LTC residents were proposed as contributing to heavier staff workloads. When asked about the barriers to residents' oral care, staff agreed that the provision of oral care depends on staff-to-resident ratios, competing care needs, time, and the residents' behaviour, resulting in inconsistent oral care practices. Staff described competing needs in the morning as particularly challenging and overstimulating for residents (Q32). Cleaning dentures in an ultrasonic denture bath was provided as an example that was "not very practical" (Q33). Staff acknowledged that the problem is perpetuated by inconsistent oral care practices, worsening residents' oral hygiene, and increasing the time required for the staff to assist with oral care (Q34).

Staff participants identified residents' responsive behaviours as impeding oral care. They acknowledged that oral care was most often attempted at the end of care, when residents are often agitated and, therefore, more likely to refuse care or become responsive. They also acknowledged

residents' right to refuse care (Q35). The rationale for the unique challenges experienced was that oral care is a "closer kind of care" (P8). Fear of harm was frequently reported and commonly described as being bitten. Staff believed residents' confusion leads to a perceived need to protect themselves (Q36, Q37). For these reasons, 1 staff member speculated that cognitive decline is an automatic precursor to declining oral health (Q38). However, other staff challenged this idea and felt it was "dangerous" to assume these behaviours cannot be overcome (Q39).

Lastly, staff participants described how culture influenced oral health beliefs and, in turn, attitudes and personal and professional oral care practices (Q40). With rapidly changing staff and resident demographics, staff reiterated that culture is an important factor influencing oral care practices.

Perceived facilitators

Staff expressed a desire for "care planning" (P32) to create individualized approaches to oral care. Myriad care planning options or facilitators were provided, such as attempting oral care in a "quiet, calm space" (P32) or "right after the meds" (P8) to help manage responsive behaviours in the morning. Similarly, staff used visual cues (Q41) or redirection to gain cooperation. Other staff discussed instances when they were successful after multiple attempts (Q42). Given the busy nature of morning schedules, staff stated that they attempt oral care in the morning and at night, and suggested they are most successful before bedtime. One staff member emphasized how "being really flexible and creative is super important" (P34) and described how they provide a soft facecloth for the resident to bite on, reducing the risk of harm and improving care acceptance (Q43). Maintaining oral care routines was viewed as critical. The caregiver stated that "any major change in routine" (P36) would be disruptive to a resident's cooperation during oral care. Routine and care planning was emphasized by staff, who felt that it "should be part of the plan, the routine that people have" (P16).

Unpaid caregivers were viewed as "allies" (P34) in many ways. Specifically, staff participants commented that residents are more likely to cooperate when family members are present. The caregiver explained "I always encourage him" (P36) to do oral care, affirming the staff participant's statements regarding the supportive role of caregivers. Another staff participant commented on families' willingness to buy supplies when asked. Allyship was also described by a resident, who stated that if they had a concern with their oral health, they would "get my daughter to look" (R4). Similarly, the unpaid caregiver described increasing preventive measures by providing additional oral care for their loved one, even though it was routinely done by staff (Q44).

Perceived benefits (presence of the dental hygienist)

Staff participants described varied experiences with the onsite staff dental hygienist. Overall, they recommended 4 key roles for the dental hygienist: 1) providing routine oral hygiene visits for all residents, 2) completing consults as needed, 3) coordinating offsite care, and 4) delivering staff education. They emphasized the need for a consistent dental hygienist presence. This need was reiterated by residents, with one stating, "I am anxious to get in for a cleaning" (R2). The unpaid caregiver participant found that booking an appointment with the staff dental hygienist "was a very easy process" (P36). They stated that the dental hygienist is "such a wonderful resource to have" and expressed that having this resource onsite is "so necessary because it's too difficult for so many of the residents to get out (into the community), so to be able to keep them in their environment is so important" (P36). When asked about how the onsite staff dental hygienist has impacted the care of their loved one, this caregiver expressed that maintaining adequate oral health was one of the most important considerations when their loved one entered LTC (Q45).

Perceived benefits (oral health)

While there was a strong awareness of the importance of oral care, it did not always translate into practice. Staff participants expressed differing values and proposed that these differences contributed to inconsistent daily oral care practices among care staff. Staff found oral care to be the most challenging aspect of care, often prioritized last or not at all (Q46). Other staff stressed that, regardless of the challenges, mouth care should be a "pertinent part of care" (P31) because oral health is "an indication of their overall health" (P33).

Staff participants saw it as their role "to maintain that comfort, speaking, no smell, eating comfortably, [and] swallowing well" (P22). By providing routine oral care, staff reported identifying a "correlation between oral health and quality of life, and good health," and "those who have good oral health tend to be more confident" (P27). Similarly, a resident participant shared the desire to maintain their natural teeth and considered "preventive work...an investment" (R2), while another resident emphasized the importance of "taking good care of what you have" (R1), as they felt that dentures were not as good as having their natural teeth. They also shared that by maintaining good oral health, "I can eat well now" and can "talk to people" (R1).

Cues to action

Further emphasizing the role of the unpaid caregiver, staff participants considered their role to include that of an oral care advocate and suggested that advocacy improves care (Q47). However, attributed to changing demographics, a staff participant stated, "we are getting a lot of people coming in with no family" (P34). In this case, another staff participant empathetically stated that "...we've bought

supplies ourselves when we are grocery shopping" (P30) for residents who do not have family support.

During initial and annual assessments, staff participants stated that they use "a checklist, like, 'is the mouth symmetrical, is there any pain, do they have like debris in their teeth?'" (P34). They also look for signs such as "bleeding, loose teeth, colour changes, disease" (P8) and "canker sores and stuff like that, if the gums are swollen or deteriorated" (P9). However, unscheduled oral assessments take place for a variety of reasons, such as when "someone else reports something, like tooth decay, bleeding gums, loose tooth, some discomfort" (P2) or "when they [residents] stop eating as much, [have] pain when removing or putting their dentures in, or any swelling" (P4).

After indicating that it would be inappropriate to ask an independent adult if they brushed their teeth (Q48), staff participants described the techniques they use to determine whether residents are performing daily oral care. One of them recalled how they take note of residents' toothbrushes to determine if they have been used (e.g., bristles were becoming worn) or whether supplies, such as toothpaste, need replenishing.

When asked about how the level of ADL assistance was determined versus oral care assistance, a staff participant described, "there's people that can't move around in bed and get dressed, but once they're set up, they can (do oral care)" (P32). Another participant explained that they determine level of dependency for oral care through observation, which often happens at mealtimes since "eating, it can be independent, so if they're [able to] put the spoon to them, then they can do the same thing with a toothbrush" (P34). They elaborated that the residents who are deemed independent "may not do the perfect job of doing their care, but...they can hold it [toothbrush], and they do a little bit" (P34).

Quantitative findings

Documentation of oral care practices was reviewed in 14 resident charts. Residents were between 84 and 99 years, with a mean age of 92 years. More than half (57%) were men. Half were severely frail, had moderate or severe MMSE scores or experienced a communication impairment. Only 15% exhibited responsive behaviour. Most (57%) residents had partial or full dentures and only 36% had natural teeth. While 72% required assistance with ADLs, only 50% required assistance with oral care. While oral care was completed 1.26 times per day on average, 5 resident charts indicated no daily oral care on 1 or more days (Table 2). Days without oral care were most often attributed to residents' refusal.

When data extraction began, it was apparent that residents' charts were becoming digitized, making some of the chart documentation from the previous year inaccessible. Relevant documentation, such as nursing care plans, oral health assessments, and clinical geriatric assessments, remained. However, the nursing basic care

Table 2. Descriptive chart documentation (N = 14)

	Mean (SD)
Age (Years)	91.83 (±4.84)
Average daily oral care frequency[a]	1.26 (±0.23)
	%
Initial and yearly oral assessment (No)	29
Complete oral care plan (No)	79
One or more days without care (No)	36
Resident gender (Male)	57
Frailty category	
Mild/moderate	43
Severe	50
Missing data	7
MMSE category	
May be normal/mild	43
Moderate	21
Severe	29
Missing data	7
Communication status (Impaired)	50
Responsive behaviours (No)	85
Denture status	
No teeth	7
Natural teeth	36
Partial dentures	21
Full dentures	36
Assistance with activities of daily living	
Independent	14
Varies	43
Dependent	29
Missing data	14
Oral care assistance	
Independent	36
Assisted	21
Dependent	29
Missing data	14

[a]Based on data available from the previous month of documentation

flow records had been restarted. On average, 1 month of care flow records was available for each resident.

Inconsistent and incomplete chart documentation was observed. For example, a resident's nursing care plan stated they had upper and lower natural teeth, while the oral health assessment stated that they had complete upper and lower dentures. Initial or annual oral assessment(s) were missing for 4 residents. Lastly, a complete oral care plan was defined as including recommended dental hygiene techniques and products, and most (n = 11) of the oral care plans were incomplete in that respect (Table 2).

Of the 14 charts reviewed, only 10 had complete documentation of frailty and MMSE scores, communication status, responsive behaviours, dentate status, and level of ADL and oral care assistance. Table 3 reports percentages of missing oral assessments, missing or incomplete oral care plans, and at least 1 day without documented oral care among these 10 charts. Either an initial or annual oral assessment was missing from charts of residents with severe frailty, "may be normal" or "mild" MMSE scores, and natural teeth or natural teeth and dentures. Oral care plans were missing or incomplete from the charts of all residents with natural teeth and partial dentures and of residents who did not require assistance with oral care. Residents with complete dentures and residents who independently managed their care were missing documentation of daily oral care less often. Average frequencies of oral care per day were also recorded in Table 3. The chart review suggests oral care was completed most frequently among residents without a communication impairment (1.29 times/day) and least often among residents with responsive behaviours (1.03 times/day).

DISCUSSION

Using a mixed methods research design, oral assessment and care practices in LTC and perceptions of integrating a dental hygienist into the interprofessional care team were explored. Two key findings span the HBM framework: 1) oral health in LTC is multifactorial and complex, and 2) LTC policy and supports matter.

Oral health in LTC is multifactorial and complex

The perception among LTC staff was that residents' oral health is generally poor, especially among those with cognitive decline. Participants discussed a range of immutable and mutable contributing factors. In contrast to the evidence that daily oral care and professional care are drivers of good oral health, genetic factors were said to predetermine oral health status. Similarly, rurality, financial constraints, and level of health literacy resulting from one's upbringing were also thought to predetermine oral health status. This finding highlights the need to improve upon LTC residents' self-efficacy to maintain good oral health.

Changing demographics in LTC were viewed by staff as a barrier, resulting in more oral care dependency. The aging population is increasing the demand for LTC, and wait times for placement are longer.[29] Similarly, many older adults want to age in place and only consider transitioning to LTC late in life.[30] Therefore, an older LTC population with more complex comorbidities and care dependency is emerging.[31] In tandem, the complexity of oral care is increasing. People are retaining their natural teeth for longer,[14] and tooth replacement options are more advanced. Dental implants gained popularity during the early 2000s and will inevitably become more prevalent in LTC; caregivers will be faced with the additional challenge of implant care.[32]

Canada's workforce is also becoming more diverse.[33,34] Within this study, staff highlighted how culture and social background influence oral health attitudes and personal and professional practices. Moreover, as newcomers and refugees age, the LTC resident population will become more diverse.[35] Both scenarios present challenges and opportunities to support paid caregivers through education and training, and policy enabling culturally responsive approaches to oral care.[36]

Lastly, oral care emerged as a challenging but pertinent aspect of care. Oral health was viewed as an investment in health and well-being, reducing pain, improving nutrition, and potentially reducing the risk of systemic disease. However, maintaining good oral health in residents with cognitive decline was viewed as impossible by many staff members. Fear of harm (being bitten) and residents' refusals were commonly reported barriers. Attributed to high rates of staff turnover and vacancies, insufficient time to overcome these barriers was also reported by Soilemezi et al.[37] There is a need to empower paid caregivers with adequate time, communication strategies, and person-centred approaches when providing oral care to LTC residents experiencing cognitive decline.

LTC policy and support matters

Oral care independence is desired by residents and families. Positive outcomes when residents remain independent in their oral care are well documented and, by extension, independence allows residents to maintain a sense of identity.[38] Residents must be supported to remain independent, which can be accomplished by including adaptive oral care and memory aids as part of the care planning. Person-centred care planning was viewed as a facilitator of care and a means to improving acceptance of care by residents with responsive behaviours, especially for new or temporary staff unfamiliar with residents. Specifically, staff participants reported that care planning must accommodate the resident's routine, allowing for oral care to happen at the time of day that works best for the resident and avoiding attempts when residents are reluctant to accept care. Unpaid caregivers should be considered during care planning as they are viewed as allies and capable of improving residents' acceptance of care. It is notable that in this study, the ability to implement an oral

care plan depended on staff-to-resident ratios. This finding is consistent with the Chen et al. study,[39] which reported that nurses with fewer residents to care for throughout the day had a better attitude towards and self-efficacy in performing oral care, the highest scores being among nurses with 6 or fewer residents.

Staff are "…trained to brush their teeth" but acknowledge the need to identify and intervene at earlier stages of oral disease and the need for domiciliary professional care. The onsite dental hygienist role was defined as the onsite dental hygiene clinician, consultant for staff and residents, coordinator of offsite care as needed, and educator. While not common practice, these study findings and other recent literature[40] support the integration of oral health professionals into the LTC care team. System and institutional policy change is needed to make this role the norm.

The quantitative results provided the opportunity to triangulate the qualitative data. Table 3 displays oral health documentation that compares differences within and between variables. Only charts with complete documentation were included (N = 10). Although the retrospective chart review was not adequately powered to conduct complex statistical analyses, this investigation offers insights into patterns warranting further exploration. Staff view cognitive decline as a risk factor for oral decline and find dentures easier to care for than natural teeth. Chart documentation findings support staff views. Based on the chart findings, residents who are cognitively well or only mildly impaired, severely frail and dependent on others for ADLs, and have natural teeth appear more likely to be missing an initial or annual oral assessment.

While only 2 charts documented responsive behaviours, the average frequency of oral care per day was lowest for those residents, corroborating the staff's fear of harm and the residents' reluctance to accept care. The frequency of oral care was highest among residents without a communication impairment. Staff participants refuted the belief that residents did not want daily oral care. Instead, they felt that the residents did not ask for oral care because they were forgetful or did not want to burden staff. These findings suggest that communication influences the frequency of daily oral care.

None of the residents assessed as independent to manage their oral care had an oral care plan on file. This discovery aligns with the belief that staff do not feel it is their place to monitor whether independent residents complete their daily oral care. Despite some staff participants acknowledging that they do not monitor residents' self-care, chart documentation suggests that residents who independently complete their care are less likely to go a day without oral care compared to their counterparts who require assistance. Furthermore, assessing the level of dependence for oral care varied among staff. To better calibrate the oral assessment, implementation science research measuring the utility of a performance-based assessment tool that includes oral hygiene status is warranted.

Incomplete or missing oral care plans were more frequent among residents with complete or partial dentures, and those with complete dentures were less likely to go a day without oral care. The authors propose that staff confidence in caring for dentures may contribute to these findings. While denture care was considered easy, use of the LTC unit's ultrasonic denture cleaner was thought to be impractical. The efficacy of ultrasonic denture cleaning is in question, though it is recommended.[41,42] The authors suggest that individual ultrasonic home-care denture cleaners be considered when care planning.

Ongoing efforts to improve oral health in LTC

Since this study concluded, nurse educators have made concerted efforts to focus on oral health during staff orientation. The nurse educators are collaborating with the staff dental hygienist to promote awareness of available onsite services. The dental hygienist now participates in oral health education during the orientation of all new hires (RN, LPN, CTA, and allied health). During orientation sessions, oral assessment and care planning are reviewed. Additionally, they have included demonstrations of oral care aids, approaches to providing oral care to residents with cognitive decline, and simulation with a manikin, allowing staff to practise oral care techniques.

Future directions

This study provides baseline data to measure the impact of the integration of a dental hygienist in LTC through natural experimental research. It also fills a gap in the literature, as previous evidence of minimizing responsive behaviours is over a decade old and not on oral care specifically.[43] To empower caregivers, there is a need to synthesize existing evidence on communication strategies and approaches to oral care for LTC residents experiencing cognitive decline.

Limitations

The study was conducted in 1 LTC in the Atlantic region of Canada, and thus, observations may not be generalizable to other LTC facilities. Only 1 unpaid caregiver, also an oral health care provider, participated, limiting the generalizability to other unpaid caregivers. The brevity of residents' responses may have affected the validity of the conclusions drawn. The professional roles of the staff were not reported to protect anonymity; therefore, differences in professional perspectives are unknown. In addition, there is potential for bias due to research team members' (HC and SH) involvement in multiple stages of the study. Moreover, the pilot retrospective chart review included a small sample of charts. There was also missing and inconsistent chart documentation, although this key finding prompts the recommendation to improve documentation practices.

Table 3. Frequency of oral health chart documentation (N = 10)[a]

	Missing an initial or yearly oral assessment (%)	Oral care plan is incomplete or missing (%)	Gone at least 1 day without oral care (%)	Frequency of oral care per day[b] (Mean)
Frailty category				
Mild/moderate (n = 5)	0	80	80	1.17
Severe (n = 5)	40	60	60	1.22
MMSE category				
May be normal/mild (n = 5)	80	80	80	1.17
Moderate/severe (n = 5)	20	60	60	1.22
Communication status				
Impaired (n = 5)	20	60	80	1.11
Not impaired (n = 5)	20	80	60	1.29
Responsive behaviours				
Yes (n = 2)	0	50	100	1.03
No (n = 8)	25	75	63	1.24
Dentate status				
No teeth (n = 1)	0	0	100	1.05
Natural teeth (n = 2)	50	50	100	1.30
Natural teeth/dentures (n = 3)	33	100	66	1.18
Full dentures (n = 4)	0	75	50	1.19
Assistance with activities of daily living				
Independent (n = 2)	0	100	50	1.20
Varies by day/dependent (n = 8)	25	63	75	1.20
Oral care assistance				
Independent (n = 5)	20	100	60	1.19
Assisted/dependent (n = 5)	20	40	80	1.20

[a]Four charts with missing data were excluded. Numeric data indicate percentages and, when possible, the mean of the sample with the indicated variable of interest.
[b]Based on data available from the previous month of documentation

CONCLUSION

Oral care in LTC is complex and challenging. Study findings affirm a need to improve oral care practices and develop new strategies. Person-centred planning for oral assessment and care practices can improve self-efficacy and support residents in carrying out daily oral hygiene independently when possible. Care planning must consider communication, harm reduction strategies, and caregiver allyship. Integrating dental hygienists into LTC care teams is essential to enhancing health outcomes and quality of life for LTC residents.

ACKNOWLEDGEMENTS

This study was funded by the Canadian Foundation for Dental Hygiene Research and Education and the Dalhousie Research Support Fund.

CONFLICTS OF INTEREST

The study authors have no conflict of interest to declare.

REFERENCES

1. Algra Y, Haverkort E, Kok W, van Etten-Jamaludin F, van Schoot L, Hollaar V, et al. The association between malnutrition and oral health in older people: a systematic review. *Nutrients*. 2021;13(10):3584.
2. Herrera D, Sanz M, Shapira L, Brotons C, Chapple I, Frese T, et al. Periodontal diseases and cardiovascular diseases, diabetes, and respiratory diseases: Summary of the consensus report by the European Federation of Periodontology and WONCA Europe. *Eur J Gen Pract*. 2024;30(1):2320120.
3. Khadka S, Khan S, King A, Goldberg LR, Crocombe L, Bettiol S. Poor oral hygiene, oral microorganisms and aspiration pneumonia risk in older people in residential aged care: a systematic review. *Age Ageing*. 2021;50(1):81–87.
4. Simpson TC, Weldon JC, Worthington HV, Needleman I, Wild SH, Moles DR, et al. Treatment of periodontal disease for glycaemic control in people with diabetes mellitus. *Cochrane Database Syst Rev*. 2015;2015(11):CD004714.
5. Kotzer RD, Lawrence HP, Clovis JB, Matthews DC. Oral health-related quality of life in an aging Canadian population. *Health Qual Life Outcomes*. 2012;10:50.
6. Jockusch J, Hopfenmüller W, Nitschke I. Influence of cognitive impairment and dementia on oral health and the utilization of dental services: Findings of the Oral Health, Bite force and Dementia Study (OrBiD). *BMC Oral Health*. 2021;21(1):399.
7. Seo HY, Jeon JE, Chung WG, Kim NH. Activities of daily living and oral hygiene status of older Korean patients in a long-term care facility. *Int J Dent Hyg*. 2017;15(2):154–60.
8. Hakeem FF, Bernabé E, Sabbah W. Association between oral health and frailty: a systematic review of longitudinal studies. *Gerodontology*. 2019;36(3):205–215.
9. Pei XM, Zhou LX, Tsang MW, Tai WCS, Wong SCC. The oral microbial ecosystem in age-related xerostomia: a critical review. *Int J Mol Sci*. 2024;25(23):12815.
10. Chalmers JM, Ettinger RL. Public health issues in geriatric dentistry in the United States. *Dent Clin North Am*. 2008;52(2):423–46, vii–viii.
11. McNally M, Lyons R. *The silent epidemic of oral disease: Evaluating continuity of care and policies for the oral health care of seniors*. Ottawa (ON): Canadian Health Services Research Foundation; 2004.
12. Matthews D, Clovis J. *The oral health of our aging population study*. Halifax (NS): Dalhousie University; 2012.
13. Public Health Agency of Canada. Aging and Chronic Diseases [Internet]. 2020. Available from: canada.ca/en/public-health/services/publications/diseases-conditions/aging-chronic-diseases-profile-canadian-seniors-report.html
14. Health Canada. *Report on the findings of the oral health component of the Canadian Health Measures Survey* 2007–2009. Ottawa (ON): Minister of Health; 2010. Available from: publications.gc.ca/collections/collection_2010/sc-hc/H34-221-2010-eng.pdf
15. Creswell JW, Plano Clark VL. *Designing and conducting mixed methods research*. Los Angeles (CA): SAGE Publications; 2017.
16. Chun TY, Birks M, Francis K. Grounded theory research: A design framework for novice researchers. *SAGE Open Med*. 2019;7:2050312118822927.
17. Reich J. Power, positionality, and the ethic of care in qualitative research. *Qual Sociol*. 2021;44(4):575–81.
18. Rosenstock IM, Strecher VJ, Becker MH. Social learning theory and the Health Belief Model. *Health Educ Q*. 1988;15(2):175–83.
19. Walker K, Jackson R. The Health Belief Model and determinants of oral hygiene practices and beliefs in preteen children: a pilot study. *Pediatr Dent*. 2015;37(1):40–45.
20. Solhi M, Zadeh D, Seraj B, Zadeh S. The application of the Health Belief Model in oral health education. *Iran J Public Health*. 2010;39(4):114–24.
21. Morrison-Koechl J, Liu SH, Banerjee A, Heckman G, Keller H. Nutrition and non-nutrition-related challenges predict time to death in long-term care residents: a retrospective chart review. *J Multidiscip Healthc*. 2023;16:2823–2837.
22. Mincer RC, Zahr RH, Chung EM, Kubak B, Sung EC. A retrospective chart review evaluating pre-operative dental extractions on patients with end-stage heart failure undergoing advanced surgical cardiac therapies. *Oral Surg Oral Med Oral Pathol Oral Radiol*. 2022;134(6):702–707.
23. Heinrich CH, McCarthy S, McHugh S, Donovan MD. Identification of potentially inappropriate medications in frail older adults residing in long-term care: a retrospective chart review study. *Drugs Real World Outcomes*. 2023;10(1):97–106.
24. Vassar M, Holzmann M. The retrospective chart review: important methodological considerations. *J Educ Eval Health Prof*. 2013;10:12.
25. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol*. 2006;3(2):77–101.
26. MacFarlane A, O'Reilly-de Brún M. Using a theory-driven conceptual framework in qualitative health research. *Qual Health Res*. 2012;22(5):607–618.
27. Rockwood K, Song X, MacKnight C, Bergman H, Hogan D, McDowell I, et al. A global clinical measure of fitness and frailty in elderly people. *CMAJ*. 2005;173(5):489–95.
28. Davey R, Jamieson S. The validity of using the Mini Mental State Examination in NICE dementia guidelines. *J Neurol Neurosurg Psychiatry*. 2004;75(2):343–44.
29. Scott E, Rudoler D, Ferma J, Stylianou H, Peckham A. System-level factors affecting long-term care wait times: a scoping review. *Can J Aging*. 2024;43(4):507–517.
30. Stones D, Gullifer J. "At home it's just so much easier to be yourself": Older adults' perceptions of ageing in place. *Ageing & Society*. 2016;36(3):449–81.
31. Koller D, Schön G, Schäfer I, Glaeske G, van den Bussche H, Hansen H. Multimorbidity and long-term care dependency—a five-year follow-up. *BMC Geriatrics*. 2014;14(1):70.
32. Elani H, Starr J, Da Silva J, Gallucci G. Trends in dental implant use in the US, 1999–2016, and projections to 2026. *J Dent Res*. 2018;97(13):1424–1430.
33. Statistics Canada (Demosim team). *Population projections on immigration and diversity for Canada and its regions, 2016 to 2041: Overview of projection assumptions and scenarios*. Catalogue no. 17-20-0001. Ottawa (ON): Minister of Industry; 2022.
34. Spetz J, Trupin L, Bates T, Coffman J. Future demand for long-term care workers will be influenced by demographic and utilization changes. *Health Affairs*. 2015;34(6):936–45.
35. Kilaberia T. Negotiating social diversity in residential care for older persons. *Journal of Contemporary Ethnography*. 2021;50(4):466–96.

36. Lange J, Mager D, Andrews N. The ELDER expansion project: Building cultural competence among long term home care workers. *Appl Nurs Res.* 2013;26(2):58–62.

37. Soilemezi D, Wanyonyi K, Hill V, Manthorpe J. Views of homecare staff and carers on oral needs and dental care for people living with dementia: a qualitative study. *Int J Geriatr Psychiatry.* 2023;38(12):e6039.

38. Johnson I, Morgan M, Jones R. Oral care, loss of personal identity and dignity in residential care homes. *Gerodontology.* 2023;40(2):200–206.

39. Chen M, Weng Y, Zhang J, Gu L, Chen W, Qiao M, et al. Factors associated with nurses' attitudes for providing oral care in geriatric care facilities: a cross-sectional study. *BMC Oral Health.* 2023;23(1):801.

40. Villacorta-Siegal N, Joseph K, Gardner N, Joseph K, Smith J, Gallucci C, et al. Integration of a dental hygienist into the interprofessional long-term care team. *Gerodontology.* 2024;41(1):125–40.

41. Felton D, Cooper L, Duqum I, Minsley G, Guckes A, Haug S, et al. Evidence-based guidelines for the care and maintenance of complete dentures: a publication of the American College of Prosthodontists. *J Prosthodont.* 2011;20(Suppl 1):S1–S12.

42. Lim T, Burrow M, McGrath C. Efficacy of ultrasonic home-care denture cleaning versus conventional denture cleaning: a randomised crossover clinical trial. *J Dent.* 2024;148:105215.

43. Konno R, Kang H, Makimoto K. The best evidence for minimizing resistance-to-care during assisted personal care for older adults with dementia in nursing homes: a systematic review. *JBI Evidence Synthesis.* 2012;10(58):4622.