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Dentistry and nursing working together to improve oral health care in a long-term care facility



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ABSTRACT

Inadequate oral care in long-term care (LTC) facilities compromises the quality of life of residents. This study assessed oral care knowledge of, and challenges experienced by, nurses and allied nursing staff (ANS) in a LTC facility in Canada. Dentists and nursing staff used the findings to implement strategies for improved care. Using a sequential mixed method design, data on oral care knowledge and practices were collected using self-administered questionnaires ($n = 114$) and focused groups ($n = 39$). Data were analyzed using descriptive statistics and thematic analysis. While participants (>80%) felt knowledgeable and confident in providing oral care, they desired improved skills to overcome resistive behavior, communication, and wanted adapted oral care materials. Implemented strategies included skills-acquisition workshop, oral care posters, and oral health champion. Overall, our interprofessional collaboration increased awareness of the need for oral care training, and implemented strategies to help nursing staff overcome barriers in providing care.

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Introduction

Providing oral care for older adults in long-term care (LTC) facilities is a challenge in many countries.^{1–3} Older adults (≥ 65 years) make up almost 17% (~6 million) of the Canadian population and approximately 350,000 reside in LTC facilities.⁴ These facilities are public (not-for-profit) or private (for-profit) organizations that admit older adults who are then under constant supervision and receive 24-hour professional nursing care.⁵

Older adults become susceptible to poor oral health due to comorbidities including polypharmacy, physical and cognitive impairment, and restored dentition that can be difficult to maintain.⁶ This population may retain some of their natural teeth; however many use prostheses that render oral care complex.⁷ Further, close to half of the older adults in LTC facilities across Canada are taking medication for chronic diseases conditions, including psycholeptic and psychoanaesthetic medication that can lead to hypo-salivation⁸; dry mouth elevates the risk of oral disease.^{9–11} Poor oral health is also associated

with nutritional deficiencies,^{12,13} decreased oral health-related quality of life,^{14,15} and an increased mortality risk among institutionalized older adults.^{16,17} Indeed, research has shown strong association between improving oral care for older adults in LTC facilities and reduced morbidity and mortality from related systemic diseases.^{18–20}

Nurses and Allied Nursing Staff (ANS), also called orderlies, nursing aides, certified nurse assistants, nurse auxiliaries, care aides, and personal assistants²¹ provide oral care for residents in LTC facilities. Studies in Australia,²² Canada,²³ Norway,²⁴ and the United States²⁵ demonstrated oral care in LTC facilities that did not meet international standards. The lack of oral care knowledge and skills by nursing staff is a predictor of sub-optimal oral care.^{26–28}

Approaches to addressing oral care deficiencies in LTC facilities range from education of nursing staff to protocols that require daily supervision of oral care by nurses^{29–31}; however, the results of these strategies are inconsistent. Boczko and colleagues (2009) found improvements in oral care of residents following educational sessions for ANS³² yet Gammack and colleagues (2009) concluded that providing nursing staff with oral care education did not ameliorate the quality of care for residents.³³ A systematic review on oral care in LTC facilities suggests that simply enhancing nursing staff oral care knowledge is ineffective to bring about oral care improvement.³⁴ Rather, interventions that combined approaches were more effective

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in raising oral health awareness among healthcare workers and resulted in enhanced oral care for residents.³⁴ An example of such integrated approaches includes combining information on oral care with providing materials to facilitate behavior change, and providing training on oral care and self-efficacy modelling.^{29,35} The uneven outcomes of strategies to assist nursing staff in providing optimal oral care for residents underscore the importance of customized interventions.³⁵

The province of Quebec, Canada is no exception to inadequate oral care of older adults in LTC facilities.^{36,37} Our study took place in a large public LTC facility in Quebec with close to 500-bed capacity, two dental units, a dentist who visits twice a week, and a denturologist. The facility is made up of 14 units each equipped with 29–33 beds. Nurses and ANS provide 24-hour care working in shifts. Six nurses, including the head nurse, are assigned to each unit. Three nurses work during the day shift, two in the evening shift, and one during the night. There are 8–10 ANS per unit who work in shifts: five during the day, two-three in the evenings, and one at night. The ratio of ANS: patients per unit was 1:6–12 and this was constant during the three shifts.

Prior to our work, in a study in the same LTC facility, it was found that only half (51.8%) of functionally dependent residents received morning oral care, less than 30 seconds was spent on their oral care, and edentulous patients did not receive oral care.³⁶ The nursing superintendent of the facility was therefore keen to work towards improving the oral care of the residents. The purpose of our study was to follow-up on these findings. The specific objectives of our study included: i) to assess oral care knowledge and challenges of nurses and ANS; and ii) work with the nursing staff to identify and implement strategies that would help nursing staff provide optimal oral care for residents.

Methodology

Study design and conceptual framework

We used a sequential mixed method design based upon the pragmatic paradigm³⁸ for a comprehensive understanding of the research topic. The framework for action on interprofessional education and collaborative practice underpinned the conceptualization of the study³⁹ (see Fig 1). According to the framework, interprofessional education and collaborative practice contribute to a strengthened health system and improved health outcomes. We can expect optimal services when health workers of different professional background work together, along with patients, family members of patients, and communities. We began by developing a partnership between the McGill University Faculty of Dentistry and the LTC facility to work together towards improving oral care for residents. The collaborative team was comprised of two nurses, one ANS, two dental students, three health researchers, and two dentists. Our study included an assessment of oral health knowledge of nursing staff, and numerous knowledge exchanges among the research team and the participants. These actions led to the design and implementation of strategies to optimize oral care for older adults customized to the particular work culture in this LTC.

Sampling and participant selection

All the nurses and ANS ($n = 196$) were eligible to participate in the survey; excluding the head nurses. A sample size of 131 was calculated using the formula for surveys and estimating that 50% of the participants had adequate training in oral care. The nursing superintendent informed and invited all nurses and ANS to take part in the study, during weekly meetings that preceded data collection. For the qualitative phase, we aimed for three focus group discussions,

allowing in-depth understanding of the research topic.⁴⁰ The head nurses ($n = 14$ units) were invited to participate together in one focus group discussion. They were each asked to invite nurses and ANS to additional focus groups, taking into account their shifts, work experience, and perceived interest in oral care. A total of nine nurses and 16 ANS ($n = 25$) were invited and distributed into two groups of 13 and 12 participants. The nurse: ANS ratio was approximately 1:2 in each group.

Data tool and data collection

We developed a 44-item questionnaire, including validated questions from a previous study.⁴¹ The tool comprised six questions on socio-demographic characteristics, six questions on work shift and work load, eight questions on daily duties and perceived barriers to oral care, eight questions on oral care training and confidence, and sixteen questions on oral care knowledge. The response options were a mix of Likert scale and Yes/No. We piloted the questionnaire among a random sample of 20 staff of the participating facility. Minor corrections were incorporated and hard copies of the final questionnaire were distributed to 142 participants (nurses = 55; ANS = 87). Self-administered paper-versions of questionnaires were deposited in a designated box to ensure anonymity.

In the qualitative phase, we organized three focus groups (one group with head nurses, and two with a mix of nurses and ANS). One member of the research team (AB) facilitated the discussions using an interview guide and two other members (MK & JC) took notes. Discussions focused on the findings from the survey as well as current oral care provision, challenges, and ways to improve oral care. These bilingual (English and French) sessions (~60 minutes each) took place in the conference room of the LTC facility and were audio-recorded for verbatim transcription after written consent was obtained.

Data analysis

Descriptive statistics (frequencies, proportions, bar charts, means and SD) of quantitative data were performed using Excel 2010. Two authors (MK & JD) transcribed audio-recordings of focus groups and analyzed the text following the procedure for a thematic analysis⁴² drawing on the conceptual framework (Fig 1). The results of the quantitative and qualitative phases were displayed in a table, compared and integrated during two meetings of the research team. Finally, we convened two follow-up focus groups ($n = 24$) with randomly selected participants to discuss all results. Each group comprised 12 participants (4 nurses and 8 ANS), who had completed the questionnaire and/or took part in the earlier focus group discussions. In these meetings, participants were specially asked to prioritize future endeavors, including suggestion that had emerged in the qualitative data. Each participant was asked to assign a maximum of 5 points to the six proposed measures to improved oral care. An average score was calculated and the top three strategies were then designed by the research team and implemented at the LTC in the following four months.

Ethical approval: The McGill Institutional Review Board approved the study.

Results

One hundred and fourteen participants, 80.3%, returned the completed questionnaires.

The majority of the participants, 79.8%, considered they had adequate training regarding the provision of oral care. A higher proportion, 92.3%, indicated the importance of daily plaque removal for the residents, and 85.6% confirmed that using tooth brush and paste was the best method for plaque removal. About one in four of the

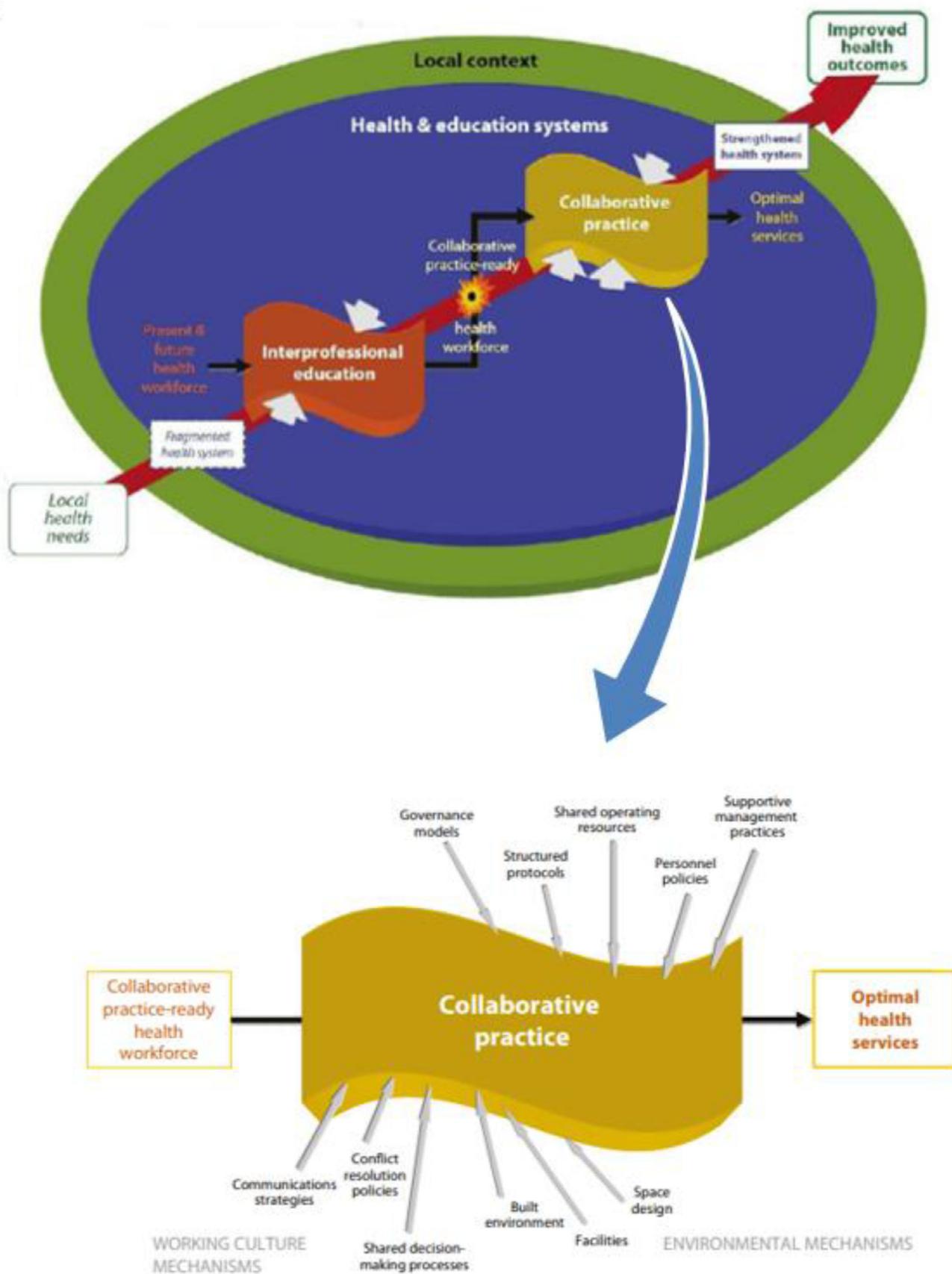


Fig. 1. Action Framework on Interprofessional Education and Collaborative Practice³⁹ (reproduced with permission).

Table 1
Socio-demographic characteristics and oral care knowledge of nurses and ANS.

Variable	Frequency n (%)
<i>Gender</i>	
Men	26 (22.8)
Women	88 (77.2)
<i>Profession</i>	
Nurse	47 (41.2)
ANS	67 (58.8)
<i>Education completed</i>	
Secondary	32 (28.1)
CEGEP (post-secondary)	51 (44.7)
University	27 (23.7)
Other	4 (3.5)
<i>Age range</i>	
Minimum	23
Maximum	63
Mean	44
<i>Years worked in LTC facility</i>	
Minimum	0.1
Maximum	39
Mean	12.9
<i>Perceived adequacy of training</i>	
Very adequate	29 (25.4)
Adequate	62 (54.4)
Not sure	18 (15.8)
Inadequate	5 (4.4)
Very inadequate	0 (0.0)
<i>Is tooth loss normal with ageing?</i>	
True	37 (32.4)
False*	77 (67.6)
<i>Is it normal for gums to bleed on brushing?</i>	
True	12 (10.5)
False *	102 (89.5)
<i>Is daily plaque removal important?</i>	
True*	106 (92.3)
False	8 (7.7)
<i>Are frequent sips of water important for dry mouth?</i>	
True*	111 (98.2)
False	2 (1.8)
<i>The best method to remove plaque is by daily brushing with paste</i>	
True*	98 (85.6)
False	16 (14.4)
<i>It is normal to sleep with dentures.</i>	
True	28 (24.6)
False*	86 (75.4)
<i>There is no link between poor oral health and general health</i>	
True	26 (22.8)
False*	88 (77.2)

* Indicates the correct response.

participants, 22.8%, suggested that there was no link between the general health and oral health of residents. Table 1 includes the socio-demographic characteristics of participants and variables on oral care knowledge from the questionnaire. In the qualitative phase of the study, thirty-nine participants took part in 3 focused group discussions. Examples of codes from the focus group transcripts included: supplies; time constraint; unfavorable perceptions; oral lesions; lack of collaboration; team approach; room for improvement; greater autonomy; dental team; adapted materials; and skills acquisition. The integrated quantitative and qualitative results are presented below under the themes, and supported with participant quotes all rendered in English.

Assessment of oral care

Focus group participants were satisfied with current levels of daily oral care provided to residents. In their view, oral care services at this LTC facility had improved significantly over the past years. They attributed the achievements in oral care to the positive changes in staff attitudes, steady supply of oral care materials by the administration, and a simplified procedure for referring residents to the dentist

and denturologist. Participants viewed oral care as a team responsibility involving ANS, nurses, residents, and family members of residents. The data illustrated the roles of stakeholders: ANS were at the forefront of oral care as they carried out the task for dependent residents and supervised the procedure for functionally independent residents; nurses played a supervisory role and were responsible for major decisions regarding residents' oral and general health; and the family members of residents supplied oral care materials and products.

Allied nursing staff appreciated the support from nurses, and all participants were confident that they had good measures in place to monitor oral care. In addition to routine oral care, a special team performed an evaluation of the general and oral health of residents every three months. One ANS with over 16 years of working experience described the current situation of oral care in the LTC facility as follows:

“... I have seen the evolution of oral care in this center over the years. Before, it was worse than this. There is a net improvement but there is always need for more. It is not 100%; nobody is perfect! We do what we can even with the reduction in the number of staff...”

Nursing staff appreciation of the need for good oral health and perceived ability to provide oral care was corroborated by responses from the completed questionnaires; less than 2% of participants mentioned that oral care was not very important Fig. 2.

Participants were asked specifically if lack of staff motivation was an issue given the inconsistency in oral care observed in Shah's study.³⁶ The responses can be summarized with this quotation from a nurse with 9 years experience:

“... I think the problem is not with motivation for us to do our work. We do not do this (referring to lapses in oral care) intentionally. There are many changes going around us. The patients who are admitted grow old...admitted patients are on palliative care and there are many changes that have happened in their lives and around us. We do our very best I think. We are not...if there are lapses, I do not think it is deliberate...”

Challenges to providing daily oral care

Participants identified residents' resistance to oral health care and lack of patient cooperation as major barriers to providing oral care. They explained that the majority of residents were above 80 years old and had cognitive impairments. Some participants were concerned that aggressive behaviors of residents with psychiatric problems could result in bodily harm to the staff members. Another challenge expressed by participants was the inability of patients and ANS to remove and replace partial dentures for some residents. In such situations, ANS reported they only cleaned the outer surfaces of the dentures and dentition. This assertion was corroborated in the focused group discussion with head nurses. A head nurse with over 10 years of experience explained:

“... Other difficult cases are those who wear prosthesis and have some remaining teeth. The personal assistants have told me that they are not able to clean their teeth. Sometimes they have bad mouth odour and sometimes we are not able to do proper oral hygiene for them...it is very difficult...”

Another ANS with five years experience explained why residents having oral lesions or ulcers are sometimes not provided oral care:

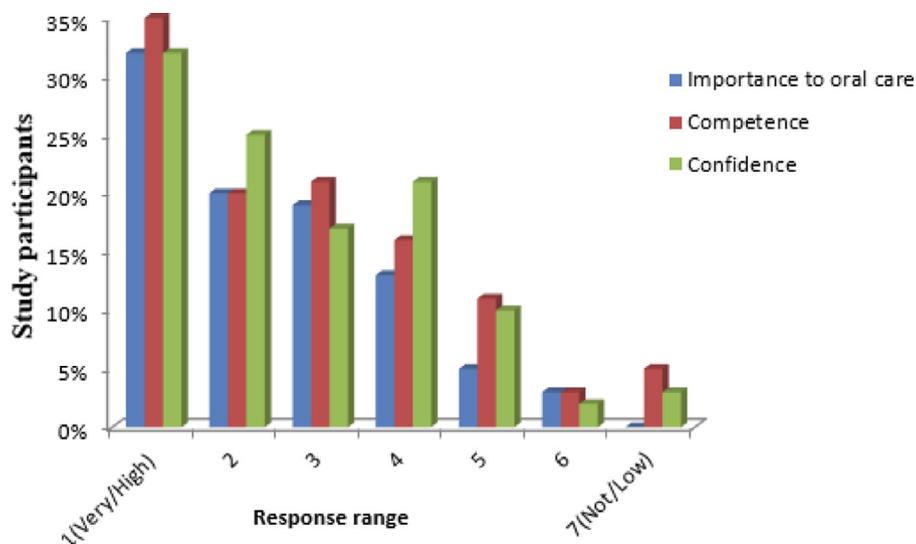


Fig. 2. Self-reported oral care importance, competence, and confidence by nurses and ANS.

“... Sometimes it is difficult to feed them and in this instance oral care is less of a priority. For a patient who is in pain or suffering, you may not want to push the patient to open the mouth for care. Thus, even with the good intention to provide oral care, if the patient is not in a receptive mood, it will be difficult or not necessary to provide such care...”

Participants mentioned that the high workload and limited time ANS have to complete care for each resident constrained oral care. Allied nursing staff could not accord extra time for oral care of residents who did not cooperate or who needed extra time for the procedure, such as when additional time was required to take out and wash a prosthesis.

A few participants expressed personal dislike to work in the mouth of a patient. According to one head nurse with 15 years experience:

“... To become a dentist is not something I would have liked to do; to look into the mouth of someone! If I put myself in the place of ANS, I try to understand why. It is similar to looking after the feet. Oral care and care of the feet are two areas that I do not find interesting to do. These are areas where we still have difficulties...”

Approximately 10% of the participants who completed the questionnaire reported very low pleasure regarding the provision of oral care (Fig. 3).

Suggestions to improve oral care

Participants suggested several strategies to enhance daily oral care for residents:

(i) Communication: According to the participants, improving communication between the nursing staff, residents, and family members of residents, was one way to advance oral care. For more effective communication, staff should share, with colleagues and family members, their experiences on successful oral care approaches for residents with resistive behaviors. Participants mentioned that although sharing successful tips

could be useful, there was no guarantee that a particular approach would always produce the expected results. Participants further discussed the importance to document oral care procedures. They felt that proper documentation would highlight oral care challenges encountered during the work shift and ensure appropriate follow-up by relay staff and/or supervisors. The need to inform family members when residents required specific oral care materials was stated as well. It was also suggested that nursing staff should constantly remind themselves about the importance of good oral care for the residents.

(ii) Skills to handle ‘difficult patients’: Acquiring skills and tips to provide oral care for residents with resistive behavior was important to participants. Participants invited the research team to observe, in real time, the challenges posed by residents with resistive behaviors in order to find appropriate solutions.

(iii) Availability of innovative products and materials: According to the participants, the availability of oral care materials and products adapted for older adults could improve oral care. Examples of such materials and products discussed included mouthwash solutions with minimal adverse effects if accidentally swallowed, toothbrushes with suction, and toothpaste with analgesic effect. Although electric toothbrushes had previously been used in this LTC facility, participants mentioned that the noise generated by the electric toothbrushes and the need to always recharge them rendered the electric toothbrush unpopular among some residents.

(iv) Improved working relationship with dentists: Participants stated that they would appreciate if dentists were more flexible to accommodate challenges older adults may encounter during a treatment appointment. They explained that unforeseen circumstances could cause residents to run late or miss an appointment. Older adults could be denied timely professional care if these factors were not taken into account when scheduling a dental appointment. Following a dental appointment, it was suggested that dentists could provide older adults with printed post-operative instructions. This information would enable nurses and ANS to customize oral care for residents after dental treatment.

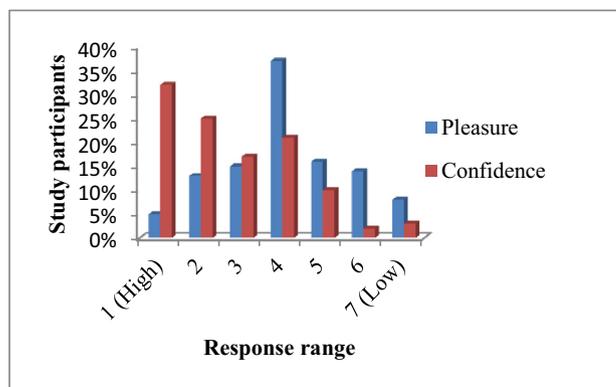


Fig. 3. Self-reported pleasure and confidence in providing oral care by nurses and ANS.

(v) **Oral health champion:** Participants suggested the appointment of an ANS as “oral health champion” to coordinate oral care activities in the LTC facility.

(vi) **Use of checklist:** The use of a checklist to assist staff when providing oral care was explored. One head nurse with over 10 years experience stated: “... Let me confirm with you that a checklist will receive a strong negative reaction from the personal assistants. They will argue that they are professionals and not gardeners who need to use checklists...”

An ANS with two years experience echoed this view in a separate group discussion: “... It has been done for several procedures but this will meet with resistance and is likely not to be adopted...”

Implemented strategies to improve oral care

We held two follow-up meetings with participants to discuss these results. Participants ranked the proposed measures to improve oral care, and the following three strategies were then designed by our team and implemented:

(i) **The appointment of an ANS as oral health champion:** An ANS was appointed “oral health champion”, (volunteer position), following consultations with the head nurses, ANS, and a member of the research team. Moving forward, the oral health champion will serve as liaison between the LTC facility and the McGill Faculty of Dentistry and oversee strategies implemented to improve oral care. The mandate of the oral health champion includes: attending relevant oral care seminars and workshops organized at the McGill Faculty of Dentistry; working with McGill undergraduate dental students to identify, plan and implement oral health initiatives aimed at promoting oral health for residents, family members and staff of the LTC facility; and listening to oral care concerns of colleagues and consulting with the McGill team to find solutions.

(ii) **A workshop on working with residents with resistive behaviors:** Two workshops focused on practical tips for oral care were organized. Participants were introduced to the following: techniques to remove and replace complex removable dentures; personal precautions when providing oral care for residents with resistive behaviors; increasing older adult’s acceptance of oral

care; review of materials and products for oral care; and minimal oral care where appropriate oral care is not feasible. Participants were advised to refer the resident to the dentist where they could not remove a partial denture using the learned techniques. The external surfaces of the dentures and teeth were to be cleaned with antiseptic mouth rinse pending the dental consultation.

(iii) **Posters on the importance of good oral health:** The oral health champion worked with a head nurse and the research team to develop posters that included images of the oral health champion, the president of the residents, and a short message highlighting the importance of daily oral care. Sample posters were presented to the focus group participants who then selected three posters that best addressed the intended purpose. The selected posters were reproduced, laminated, and displayed in visible locations on all 14 units of the LTC facility. The posters serve as visual reminders, for oral care, to nursing staff, residents and their families.

Discussion

This study explored oral care and strategies to enhance daily oral care of nurses and ANS at an LTC facility in Montreal, Canada. Our collaborative study design enabled us to explore the research objectives through a process that engaged nurses and ANS at various stages of the project. The high response rate of returned questionnaire was likely because of the enthusiasm of the nursing superintendent involved in conceptualization of the project. Lewis and colleagues (2016) found the participatory approach was effective in raising oral health for residents and staff in a LTC facility in Australia.⁴³ Our approach culminated in customized implementation of strategies to enhance oral care for older adults.²⁹ Such results support the framework for action on interprofessional education and collaborative practice that posits the creation of “optimal health services” when different healthcare professionals work towards a common objective.³⁹

Results from the quantitative and qualitative arms of the study underscore the importance participants attached to oral care of residents. Other studies have recorded similar priorities; for example, the Registered Nurses Association in Ontario, Canada has developed an oral care Best Practice Guideline for LTC facilities in that province.⁴⁴ The oral care awareness of participants in the current study contrasts with previous studies that found nursing staff lacked the knowledge and training to provide oral care.^{45,46} In a study on oral care in LTC facilities, Chami and colleagues (2012) concluded that nursing staff did not recognize that the oral health status of older adults could impact their general health.⁴⁷

Although participants in our study were confident they possessed both cognitive knowledge and skills to provide oral care, the dislike of some nursing staff to perform the task could explain the results of Shah’s study.³⁶ Changing the attitudes of staff that hold a strong opinion against oral care is not an easy task.^{30,48} Nonetheless, recognizing that current oral care practices can be ameliorated could be interpreted as positive sign for change.

Extant literature suggests the tendency of nursing staff in LTC facilities to skip oral care when they are time-pressed.³¹ Concerns about workload and limited time expressed by participants corroborate the results of the Shah study, where less than half a minute was allocated to providing oral care when offered.³⁶ In another Canadian study, more than half of the nursing staff surveyed felt limited by time when providing daily oral care.²³ A similar trend of rushed or missed oral care for older residents was found in studies in the United

States,²⁵ Norway,^{24,26} and Australia.²² Sonde and colleagues (2011) suggested that although older adults with mental health issues present a particular challenge for nursing staff, approaches used to provide general care could be extended to oral care.⁴⁹

In our study, recommendations to enhance oral care for older adults are similar to approaches adopted in previous studies.^{1,35} For example, collaboration between nursing staff and a dental hygienist as oral health champion was effective in improving oral care for older adults in LTC facilities in Arkansas.^{50,51} The designation of “champion” and potential roles of the individual are supported by the conceptual framework of this study. Such collaboration between nursing staff and dental professionals has been shown to improve oral care for critically ill older adults.⁵² The oral health champion in our study is unique in the sense that the role was assigned to an ANS and not a dental hygienist. We anticipate greater cooperation from ANS as they are at the frontline of providing daily care to residents. In the setting of our study, nurses and ANS already approach oral care as a collective responsibility and have a cordial working relationship. The supportive work environment should facilitate measures to render communication on oral care more effective. Proper documentation of oral care for every resident would require staff commitment and few additional resources.

The desire of participants to acquire additional skills for oral care in difficult situations can be interpreted in context of expressed cognitive knowledge and confidence. This finding supports the need to enhance nursing staff capabilities in oral care provision.^{29,34,51,53} Although educational interventions are useful to increase oral care knowledge,^{54–56} such approaches are limited in achieving optimal oral care for residents.³⁴ A combination of oral care skills and products adapted for the older adults can facilitate oral care in LTC facilities. An example is the use of electric toothbrushes. Fjeld and colleagues (2014) found ANS and nurses preferred using electric tooth brushes over manual toothbrushes as they were less-time consuming.⁵⁷ Furthermore, electric toothbrushes are better than manual toothbrushes in removing plaque from teeth surfaces.⁵⁸ Nonetheless, the noise and vibrations of electric tooth brushes is not always well accepted by persons with dementia. Therefore, nursing staff need to assess the pros and cons of new oral care products for individual residents. Brushing the teeth of older adults with high-fluoride toothpaste, compared to regular toothpaste, confers better protection against root caries⁵⁹ a common disease in older adults.⁶⁰ Specifically, dentifrices containing 5000 ppm F are recommended as the standard for regular oral care in older adults.^{61,62} For professional applications, CHX or Silver Diamine Fluoride varnishes have the potential to prevent initialization and progression of root caries.⁶¹

Moving forwards, the impacts of the implemented strategies will be evaluated. Further research will explore the oral care perspectives of residents and family members, an important aspect beyond the scope of this study. The results of the study should be interpreted with caution as other public facilities and private institutions may have unique challenges and solutions. While our study took place in only one institution, many of our findings will resonate with other LTC facilities in Canada and other western countries, given the consonance of our findings with the literature more broadly.

Conclusion

Although nursing staff of the LTC facility are knowledgeable and confident to provide oral care for residents, they identified opportunities for practice improvements. Continued collaboration between nursing staff of the LTC facility, dental students, dentists, and researchers has the potential to help nursing staff overcome barriers to optimal oral care and increases dentistry's knowledge of nursing practice.

Declaration of conflicting interests

The authors declare that there is no conflict of interest.

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