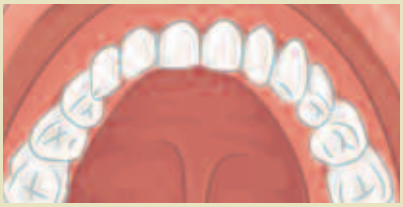
abstract



Due to the increase in the older population, the management of individuals with dementia in long-term care settings will continue to present a challenge to the health care team. Many individuals with dementia will have some or all of their teeth upon admission due to improved dental care throughout their lives. Oral hygiene and oral care for individuals with dementia is generally poor in long-term care; however, the continuance of good oral health is essential both to maintain the demented individual's quality of life and to prevent infections that may affect his/her general health. The maintenance of good oral health has the potential to reduce the incidence of long-term care–acquired pneumonia. This article presents an overview of the relationship between oral and general health in the demented patient and then provides an overview regarding oral assessment, treatment, and prevention of dental disease.

Key words: *dementia, dental caries, dental plaque, aspiration pneumonia, oral hygiene*

Dental Considerations for Persons with Dementia

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Introduction

Dementia as characterized by a severe loss of intellectual function and cognitive capacity in the aging individual, leading to increased dependency, will be an ever-growing concern for all health care professionals.[1,2] The proportion of older people is growing faster than any other age group. There are approximately 600 million people over the age of 60 years, and this number is expected to double in the next 20 years.[3] The prevalence of dementia in this population has been estimated to be 1% of those aged 60 years, with a doubling every five years thereafter to reach 30–50 % by the age of 85 years.[1,4] As dementia advances, the individual becomes totally dependent on others. It is common for such individuals to demonstrate behavioural problems including aggression, depression, anxiety, disorientation, and apathy.[1,5] Once this stage is reached, the individual loses the ability to perform oral self-care and may also lose the ability to identify and report oral problems.

Unlike older adults in past generations, the current population of older individuals in the industrialized world are retaining more of their natural dentition due to the exposure to fluoride and advances in preventive and restorative dental care; as a result, there is less use of dentures. In the early 1980s only 54% of persons aged 65 years or greater retained some natural teeth, as compared to 70% in 2002.[11,12] However, dental caries, especially root surface caries and periodontal disease, are both very common in the older population, especially among those who are residing in long-term care (LTC) facilities.[6,7,8] In 2002, the National Institute of Dental and Craniofacial Research in the United States stated that frail and functionally dependent individuals who reside in LTC are a group with significant health disparities in the area of oral health.[9,10] A possible explanation of this observation could be that individuals in LTC are more dependent on others for all activities of daily living, which would include oral care, when compared to their peers in the community and as a result present with more oral problems. Older adults' poor oral health will affect their general health and at the same time their declining general health will have an impact on their oral health.[10] These common dental conditions will pre-exist the demented individual's admission to a LTC facility.

Poor oral health and possible dental pain can negatively affect the older adult's quality of life and well-being. In addition, poor oral health may be associated with altered eating habits and nutritional state, speech problems, issues regarding appearance and self-esteem/self image, bad breath, and worsening social interactions.[13,14] Unfortunately, oral health concerns in the older adult, and especially in the older adult with dementia, are often misunderstood and neglected because the demented individual may be unable to communicate dental pain or problems to others. Behavioral problems frequently observed in the demented, such as lack of interest in eating, lip chewing or smacking, tongue chewing, self-

abuse (e.g., head slapping), aggressive behaviour, altered sleeping patterns, crying, and screaming, could be a result of oral pain and the patient's frustration over the inability to communicate that problem to caregivers.[13]

It is recommended that all individuals with dementia who are admitted to a long-term care facility have a comprehensive oral assessment performed, preferably by a dental professional. Physicians who perform oral health assessments as part of the admission evaluation do not detect all of the acute and chronic dental problems. In one study, geriatricians only detected oral pain or disease in 30% of demented residents admitted to LTC as compared to a 60% occurrence as determined by examinations performed by dental professionals on the same patients.[15] The purpose of this paper will be to provide an overview of the issues regarding oral health as it pertains to general health and to provide an approach to oral care for the patient with dementia.

Relationship of Oral Health to General Health

With an increase in age there is a concomitant increase in chronic diseases such as cardiovascular disease, hypertension, diabetes, and cancer, which are leading causes of disability and mortality in the older adult.[3] Poor oral hygiene leading to chronic oral infection is now a recognized risk factor for diabetes mellitus, cardiovascular and cerebrovascular disease, systemic infections, and respiratory disorders. The treatment of periodontal

Table 1: Initial Oral Health Assessment Criteria for the Demented Patient

Assessment Item	Criteria Considered
Number of teeth present, including residual roots	Note the condition of teeth (intact versus fractured); also note location and occlusion (Are the teeth biting together?).
Presence of fixed or removable dentures, including implants	Are the dentures broken or intact? Is it partial or complete? Does it form the upper arch, lower arch, or both? Is it retentive or loose? Is it functional?
Oral hygiene level	Note any debris on teeth or dentures. Use a four-point scale: no plaque or 25%, 50%, or 100% tooth coverage. Is the overall hygene good, fair, poor, or bad?
Oral mucosal status in all areas (gingiva, palate, tongue, and floor of mouth)	Look for any increase or decrease in mucosal colour change. Note any erythema, inflammation, stomatitis, white plaque, or candida. Also look for any abscess, fistula, wound, ulcer, or blister, as well as palatal or gingival hyperplasia.
Dental caries (cavities)	Note the presence of open, cavitated lesions. Record the number of teeth affected, including broken or missing restorations.
Gingival health	Use a four-point scale to describe gingival health: no inflammation, mild erythema, moderate redness, or bleeds on touching. More generally, note gingival health as good, fair, poor, or bad.
Periodontal health	Again, use a four-point scale based on tooth mobility by palpation: not mobile or slight, moderate, or high mobility.
Dry mouth (xerostomia)	Rub the mucosal surface with a smooth dental mirror or spoon. Use the three-point mucosal friction index: no friction, some friction, or sticking.
Alveolar ridge morphology	Note the degree of resorption: mild, moderate, or severe. Record resorption on upper and lower alveolar ridge.
Oral neuromuscular control coordination	Note if swallowing and speech are adequate, or impaired to a mild, moderate, or severe degree. Also check for the presence of tardive dyskinesia (involuntary rolling of the tongue and twitching of the face or trunk or limbs).
Ability to perform oral care	Can the individual perform oral care, or is assistance required with any aspects?
Understands need for dental care	Does the patient have a good understanding or no understanding of the need for dental care?
Cooperation with oral care	Is the patient cooperative, or does s/he resist oral care?

Modified from Abe et al.,[27] Isaksson et al.,[32] and Knabe & Kram.[33]

disease may help improve glycemic control by reducing the magnitude of pro-inflammatory proteins such as interleukin-1 and tumour necrosis factor alpha, which are released into the systemic circulation via the inflamed periodontal tissues.[16] In a similar fashion, inflammatory products associated with periodontal disease may be linked to the development of atherosclerosis, cardiovascular disease, and stroke.[17] Recent data have been presented that demonstrate a direct relationship between periodontal microbiology and subclinical atherosclerosis as determined by measuring the carotid intima–media thickness. This finding supports the view that bacteria associated with periodontal disease can be a factor in the development of cardiovascular disease and stroke.[18] In addition, bacteremia due to oral pathogens found in the dental plaque are known to be linked to the development of bacterial endocarditis, as well as other systemic infections.[19]

The symptoms of dementia such as depression, delusions, hallucinations, agitation, anxiety, and insomnia are treated and managed pharmacologically with antidepressants, anxiolytics, and antipsychotics. In addition, older patients may also be on antihypertensives, diuretics, and antihistamines, all of which are associated with a decrease in salivary production (usually due to the agent's anticholinergic effect). The administration of one agent with anticholinergic activity can reduce salivary flow by 40%, and multiple agents may have a cumulative effect. This will result in dry mouth (xerostomia), which will increase the risk for dental caries, periodontal diseases, and oral pain.[20] However, it should be noted that decreased salivary production is not a part of normal aging.[20,21]

Finally, LTC–acquired pneumonia is a leading cause of death in this population, especially the nonambulatory demented individual.[22,23] The risk for developing aspiration pneumonia is the greatest in the presence of poor oral hygiene with abundant dental plaque deposits, which become a reservoir for known respiratory pathogens. The undisturbed dental plaque biofilm will adhere to the surfaces of teeth and oral appliances and accumulate, thus creating a larger bolus of respiratory pathogens which, if aspirated, will increase the likelihood that pneumonia will develop.[24–26] Investigators have demonstrated that improved and aggressive daily oral hygiene regimes can reduce the development of pneumonia in LTC populations.[27–29]

Oral State, Function, and Nutrition

Oral function, including mastication and swallowing, in older adults with dementia will be affected by the number and location of teeth and the quality and quantity of saliva. Even with the decrease in edentulism there still are many individuals who rely on partial or full dentures for oral function. Oral function is very similar between both the dentate and edentate group prior to the onset of dementia. However, with the onset of dementia oral function will decrease due in part to medication-induced dry mouth and its effect on chewing, swallowing, oral pain, and denture retention. Digestion does not appreciably change with the loss of teeth and masticatory function, but food choices do change, which may lead to an altered nutritional state. The individual may avoid fibre-rich foods,

Table 2: Levels of Dental Treatment for the Demented Patient

Level of Care	Clinical Examples	Treatment Aim and Methods
Urgent or emergency care	Toothache, dental abscess, or fractured tooth Oral mucosal infection—stomatitis, or candida, oral ulcer—possible cancer	The aim is to relieve pain or eliminate infection with definitive treatment as soon as possible (e.g., extraction, restoration, medication). For an ulcer, consultation and biopsy are performed.
Palliative care	Chronic dental problems, long-standing caries, retained roots, denture irritation, or gingival inflammation	Based on the patient's medical condition, a decision is made to control pain or infections if they develop No aggressive treatment is required.
Disease control / limited care	Gingival inflammation, dental caries, retained roots, or denture problems	The aim is to maintain oral condition in a state of health and eliminate or control oral sources of pain and infection. Oral hygiene care, dental restorations, and extractions are performed as needed.
Comprehensive care	As above, plus missing teeth	The aim is to restore oral function, maintain oral hygiene, and provide preventive care, restorative care, and prosthetic care (including crowns, bridges, implants, or dentures) as appropriate for progressive dementia.

Modified from Lindquist & Ettinger,[34] Isaksson et al.[32]

Table 3: Preventive Oral Care Options for the Demented Patient

Oral hygiene	Brushing with a toothbrush (soft only, electric acceptable)	Daily 2–3 times (at least before bed); electric may be easier in uncooperative patient
Topical fluoride	Toothpaste with each brushing	1000 ppm regular on the shelf ADA or CDA approved; 5000 ppm by prescription from dentist
	Rinse	Neutral sodium fluoride by prescription only; should be done daily or weekly, and patient must be able to spit
	Gel	Neutral sodium fluoride by prescription only; applied with a brush or swab with suction
Chlorhexidine gluconate	0.12% rinse (contains alcohol) or 0.2 % rinse / gel (alcohol free)	By prescription only; Avoid alcohol product if stomatitis is present; use rinse if patient can spit 1–2 times per day apply with brush or swab with suction available if patient cannot rinse
Professional recall and cleaning	2–4 times per year	Based on risk assessment
Dentures full and partial	Clean daily	Leave out of mouth at night; label with patient's name
Oral swabs	Not acceptable for oral hygene	Use only to apply agents such as chlorhexidine or topical fluoride
Dry mouth	Sugar free gum or candy	Hydration and frequent sips of water; salivary substitutes by prescription only

Modified from Chalmers,[13] and Ghezzi & Ship.[1]

which are difficult to chew, or overcook foods in order to create a softer texture that requires less chewing but may remove nutrients.[30]

Since it is possible to maintain the nutritional status of patients with dementia even if they are missing some or all of their teeth, it is not necessary to replace extant teeth with either fixed or removable partial dentures. The patient with dementia must be able to physically insert and replace the appliance without assistance and be able to maintain an adequate level of oral hygiene before replacement teeth are even considered. A dental prosthesis is capable of becoming dislodged and swallowed or aspirated, in which case the airway will become obstructed.[31,32] Complete dentures in either arch do not have significant mechanical retention. The patient learns how to use the dentures by subtle muscular adjustments made by the tongue and muscles of mastication at a subconscious level. Once this motor control is lost, the edentulous demented patient will not be able to utilize full dentures. An appliance placed in the mouth makes it more difficult to perform oral hygiene, and if pre-insertion oral hygiene is inadequate the patient will develop extensive dental caries or periodontal disease, resulting in additional tooth loss. For these reasons it is not advisable to insert prosthetic teeth into the mouth of the demented individual to restore esthetics or function.

Admission Protocol and Subsequent Management

All new patients with dementia who are admitted to a LTC facility should have an oral assessment performed shortly after admission. It is preferable that this be done by a dental professional; however, other health care professionals are capable of providing an oral screening after receiving adequate in-service educational sessions.[13] The screening examinations can be performed in the patient's room or medical examination room with a gloved hand, dental mirror, and good light source. The investigator should initially enquire whether the patient has a chief oral complaint of pain, sore mouth, or toothache either as reported by the patient or caregivers. Behavioral changes could indicate an oral problem. The criteria that should be examined and recorded on the initial assessment are provided in Table 1. Any mucosal ulcerations or discolorations that cannot be explained by self-mutilation, denture irritation, or broken restorations should be referred for a consultation and biopsy to rule out possible oral carcinoma.

Upon completion of the oral assessment, the health care professional will be able to determine the need for dental treatment and urgency to provide the required treatment. The levels of dental care that can be considered for the older patient with dementia are outlined in Table 2. If the long-term care facility does not have on-site dental care, then arrangements must be made to have the

patient seen in a dental clinic in the community or local hospital, or have a mobile dental team come to the facility. Many mobile dental teams perform oral assessments and preventive care but are not able to provide restorations or extractions on site; the administration of the facility should confirm that this is not the case before they enter into an agreement with a mobile dental care provider. Providing annual oral assessments without the ability to provide the required care is another form of monitored dental neglect of the institutionalized demented adult.

When considering dental treatment options for the demented individual one must keep in mind that their condition is progressive. The primary goal should be to eliminate oral sources of pain and infection and to maintain a good level of oral hygiene, which will reduce the risk for developing an oral focus of systemic bacterial infection or illness. Preventive care options for the demented patient are outlined in Table 3.

The greatest barrier to providing both daily preventive oral care and required dental treatment to the demented individual is lack of cooperation and difficulties with communication as the dementia progresses.[1,2,10,13] In order to address this, one can try to be flexible and provide the care when the patient is more cooperative or having a good day. However, this may be impractical in the LTC setting. Staff members responsible for daily oral care have reported that they are overworked, and if they are unable to complete their shift duties oral care is one of the first activities that they will forego since its omission is not readily detectable.[10,36] Other strategies that can be utilized are shorter appointments or oral care sessions, oral sedation, and the use of minor physical restraints with consent such as rubber door jams used as mouth props.[2]

It is interesting to note that the maintenance of good oral health is dependent on daily oral care provided by either the least educated members of the facility's staff or family members.[2,10] It is a universal finding that the level of oral hygiene for demented individuals is poor.[1,2,3,6,7] The staff responsible for daily oral care have reported that they have limited knowledge regarding oral conditions and how to provide adequate oral care.[37] In addition, it has been reported that many staff are reluctant to perform oral care due to the feeling of infringing upon the patient's personal space or they feel repulsed by the care activity.[10,38] It appears that in-service training sessions to the LTC staff responsible for daily oral care by professional dental staff can improve and maintain the oral health of the demented individual; if these sessions are not available they should be developed.[10,13]

Summary

Oral heath need not decline with advancing dementia. The maintenance of oral health is essential to the maintenance of general health and one's quality of life as related to social interactions, self-image, eating, speech, and the right to freedom from oral pain and infection. Poor oral hygiene, the development of root caries, gum disease, dental abscess and finally tooth loss leading to edentulism are not part of the normal aging process but are conditions that that can be controlled and prevented by the provision of good daily oral care. This can only be done once risk factors are identified to allow the implementation of treatment strategies that involve all members of the health care team and family.

A recent survey of executive directors of long-term care facilities revealed that over half rated the level of oral health and care as fair to poor in their institutions, but that they were satisfied with the level of oral care that they were providing.[39] In order to correct this problem, LTC administrators will have to recognize that the maintenance of oral health must be made a priority for their residents, and thus adequately supported. The development and maintenance of improved oral health care for demented individuals will have an associated cost both in time and money; however it has been shown that good oral care can reduce the incidence of pneumonia in this patient population, thus alleviating the medical costs associated with the patient's medical care, which may in turn result in a net cost saving for the facility.[27–29] Furthermore, it is a contradiction within the practices of care that the development of a bed sore triggers a care audit but that the development of dental disease with pain and infection is oftentimes ignored. Our goal should be to sustain good oral health for demented adults (who, for the most part, tried to maintain good oral health throughout their lives) in order to ensure that they are free from oral pain and infection during the final phase of their lives.

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