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Oral Health Conditions in Complete and Partial Denture Wearing Nursing Home Patients

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OVERVIEW

The increasing numbers of elderly, in addition to the high prevalence of chronic conditions in the elderly equates to a rise in nursing home utilization. For example, the numbers of institutionalized elderly have doubled since 1965. In 1990, 1.8 million elderly lived in long-term care facilities. This number has increased by one-third in the year 2000 and projected to double by 2020 (Arvidson-Bufano et al, 1996).

With the advent of fluoride use of caries prevention and an increased emphasis on preventive dentistry, the number of teeth lost to decay and periodontal disease has decreased. The potential risk for developing caries later in life is increased, however, by the fact that more adults are retaining their teeth throughout life. In an Australian study of non-institutionalized persons aged 60 years and older, it was found that roughly one-half were dentate and one-half were edentulous. Of those with remaining teeth, the prevalence of root decay (27%) was slightly higher than the prevalence of coronal decay (23%) (Slade et al, 1993). The increased prevalence of root caries over coronal caries is supported by other studies and can be explained in part by the gingival recession that is common with advancing age and the decrease in the buffering effects of saliva due to medication induced xerostomia (Katz et al, 1996; Fejerskov et al, 1991). Although complete edentulism is decreasing, 56% of those aged 65-74 and 80% of those aged 75 and over had no natural teeth in 1988 (Merelie and Heyman, 1992). The perceived need for seeking dental care is often very low in

edentulous patients, and complete denture wearers often only seek treatment for broken or severely ill-fitting dentures. Generally, studies report that about two-thirds of elderly patients have clinically deficient dentures, yet only about one third complain of oral pain or discomfort (Budtz-Jorgensen, 2000). Many elderly people still view tooth loss and problems related to denture wear as a part of the natural aging process and will tolerate inconvenience and discomfort without complaint. The elderly may not identify denture and oral discomfort and difficulties with speech, chewing, and appearance as causes for complaint (Marcus et al, 1996). The elderly are also the least likely group to seek annual denture care (Bloom et al, 1992). The condition of the denture supporting mucosa is associated with general health, medication usage, condition and age of the denture, and oral hygiene (Peltola et al, 1997). Since many chronic conditions affect oral health parameters, and since oral health greatly impacts a person's quality of life in relation to the enjoyment of food, capacity for speech and mastication, and appearance, the quality of oral health care provided for the edentulous and partially dentate elderly in nursing homes should be examined.

ORAL HEALTH CONDITIONS IN COMPLETE DENTURE WEARERS

The oral health and condition of the oral mucosa of elderly denture wearers is dependent on multiple factors. The factors that are related to the dentures are the frequency of denture usage, denture hygiene, denture age, and denture condition. Other factors that are related to the patient are systemic diseases, diseases that have oral manifestations, drug/medication relaxed xerostomia, immunosuppressive disorders, age, sex, oral habits, and smoking habits. Denture associated mucosal lesions have been classified according to past studies as acute or chronic. Acute lesions can be classified as traumatic ulcers, allergic reactions to the denture material(s), and acute infections. Chronic conditions associated with denture wear (partial or complete) are denture stomatitis, denture irritation hyperplasia (fibrous hyperplasia), denture induced papillary hyperplasia, flabby residual ridges, and oral carcinomas. Of all the lesions, chronic lesions are the most prevalent, with denture stomatitis being the lesion most commonly encountered (Mikkonen et al, 1984). Current epidemiological research literature shows a definite difference between the prevalences of denture-related oral mucosal lesions, especially denture stomatitis (DS) with prevalences varying from 9-97% (Cummings et al, 1990). The disparity is most likely the result of

variation in examination methods and inter-examiner variability. Also relevant is that the prevalences of denture-related lesions in some of the reports are calculated based on the total elderly population, while in others they are based only on the population at risk (i.e. denture wearers) (Vigild, 1987). Since denture stomatitis is linked to poor denture hygiene and continuous wear of the denture, denture habits may also play a role in the wide variance in DS (Budtz-Jorgensen, 1975).

Accompanying the current trend of decreased edentulism is the subsequent decrease in complete denture wearers and the corresponding rise in those wearing removable partial dentures (RPDs) of those with extensive fixed bridges. The degree to which tooth loss has been restored by fixed or removable appliances depends upon the topography and extent of tooth loss (Budtz-Jorgensen, 2000). With regards to oral lesions, much research has been done evaluating the condition of the oral mucosa supporting complete dentures, but there is little epidemiological data on lesions associated with removable partial dentures. Studies have shown, however, that removable partial dentures (RPDs) do increase the risk of caries and periodontal disease of the abutment teeth if plaque control is not adequate (Budtz-Jorgensen, 2000). Mojon et al (1995) studied 122 hospitalized dentate elderly, and studied the prosthodontic status of their fixed and removable partial dentures. Of the patients studied, 52% were RPDs and, of these, 30% were unstable and 42% were unretentive. Root caries and periodontal disease adjacent to the abutments were more frequently seen when the restoration was defective. In a similar study, Mojon et al (1995) reviewed the prosthetic needs of 216 aged patients in Hospital de Geriatrie de Geneva. Of those studied, 44.4% were completely edentulous. Patients with remaining teeth, on average had 11 teeth, of which 24% showed active carious lesions. Active root caries was observed in 54% of those with natural teeth. Removable appliances were observed in 81% of the patients. Of the complete dentures, 19% were poorly adapted and 31% of the removable partials were unstable. Denture stomatitis was found in 20.5% of the removable partial denture wearers (Mojon et al, 1995).

ORAL HEALTH CONDITIONS IN PARTIAL DENTURE WEARERS

There are relatively few epidemiological studies regarding the presence and prevalence of mucosal lesions associated with removable partial dentures alone, especially in the institutionalized elderly. The frequency of partially dentate elderly persons living in nursing homes that have RPDs is relatively low. Most studies often grouped partial denture wearers under the broad term "denture wearers." For example, a study of 488 subjects in a long-term care facility in Singapore showed that 43.8% were partially dentate with an average of 7.5 teeth present per subject. 94% of these dentate subjects that could have benefited from having partials did not have them (Soh et al, 1992).

There is a general agreement that denture stomatitis is the most common oral mucosal lesion of clinic importance in an elderly population (Vigild, 1987). In a study of institutionalized elderly in Denmark, the prevalence of oral mucosal lesions was high. Approximately half (45%) of the elderly had one or more pathological conditions of the oral mucosa. Denture stomatitis (DS) was the most prevalent finding. About one-third of all the elderly exhibited manifestations of DS. Other common findings related to denture wear included: denture irritation hyperplasia (9.0%), angular cheilitis (6.3%), traumatic ulcer (3.9%), frictional keratosis (3.4%), and atrophy of the alveolar ridge (2.7%). Lesions not related to denture wear that were also found and included: leukoplakia (2.5%), lipoma/fibroma/hemangioma (1.2%), chronic candidiasis (1.9%), and geographic tongue (0.4%). The prevalence of denture stomatitis decreased significantly from 46% in those less than 75 years old to 22% among those over 85 years old. Stratification by sex showed that the odds ratio of experiencing a decrease with age was twice as high among women (odds ratio=3.02) than among men (odds ratio=1.41). Denture hygiene and wearing habits were also evaluated and was found to be closely related to the prevalence of denture stomatitis. More than 50% of the elderly with poor denture hygiene exhibited some signs of denture stomatitis as compared to only 10% of those with good denture hygiene. Nursing home residents who used their dentures at night showed a significantly higher prevalence of denture stomatitis than those who did not continuously wear their dentures (Vigild, 1987).

Other epidemiological studies have found similar prevalences. For example, a study in Great Britain examined oral health and oral/denture hygiene in residents in numerous residential care homes. Roughly one third of the denture-wearing patients examined showed

some oral pathology. The most common finding was again reported to be denture stomatitis, which occurred in nearly one fifth of the subjects. Denture hyperplasia, angular cheilitis, and traumatic ulcerations were also identified with prevalences similar to those previously reported (Merelie and Heyman, 1992). Similarly, a Finnish study from 1983 also showed that in institutionalized elderly, about half of the subjects had oral mucosal lesions associated with denture wear. Of these lesions, 81% were denture stomatitis, 14% were denture hyperplasia, and 3% were other hyperplasias. The rest of the lesions identified were papillomas, traumatic ulcers, and combinations of the aforementioned lesions (Mikkonen et al, 1984). A recent study by Budtz-Jorgensen, carried out on 237 residents in a long-term care facility in Denmark, also found oral lesions with similar prevalence. Denture stomatitis was the most common lesion and was found in close to 50% of the subjects. Other identified lesions included: glossitis (9.9%), diffuse mucositis (8.3%) and angular cheilitis (6.6%) (Budtz-Jorgensen et al, 2000).

In a study of institutionalized elderly in Japan, hygiene status of both teeth and dentures was found to be influenced by the subjects' general health; that is, persons having poorer health showed higher values in plaque scores. Even in elderly patients with good general health, oral hygiene status was poor (Miyazaki et al, 1992). Denture condition and treatment needs were also evaluated in the study. The general health condition was also found to correlate with the need for denture treatment. A greater need for denture treatment was associated with poorer health. The percentage of persons not requiring treatment was 34%, 19% and 10% in the elderly with generally good, fair, and poor health, respectively (Miyazaki et al, 1992). In a study of denture cleansing habits of institutionalized elderly in Scotland, it was found that 45.6% of the subjects never soaked their dentures. Less than one-third of the subjects reported that they soaked their dentures every night. With regards to soaking and/or brushing habits, it was found that 14% only soak their denture and 38% only brush their denture. Of the subjects that did clean their dentures, a little less than one-half reported that they both brush and soak their dentures (Schou et al, 1987).

In general, many studies have found a relationship between denture cleanliness and denture stomatitis (Budtz-Jorgensen et al, 1970; Palmqvist et al, 1984; Love et al, 1967). Many patients fail to clean their dentures, and many patients who attempt denture hygiene are inadequate at cleaning the dentures thoroughly. A natural assumption would be that nursing

home staff should undertake more of the responsibility for denture cleaning and denture-related problems (Vigild, 1987), especially since manual dexterity and vision may be poor (Merelie and Heyman, 1992). However, a study by Merelie and Heyman showed that dentures cleansed by caretakers were no cleaner than those cleaned by the patients. In their study, only 9% of the residents of the nursing homes could remember having received instructions on denture cleaning, and only 8% of the caregivers had ever received such instructions (Merelie and Heyman, 1992). In the same study, 96% of the residents reported that they would only seek dental care if they were having trouble and only 34% reported having seen a dentist in a 3-year period. Low dental utilization was not related to living in the nursing home since 93% reported that before moving into the home their only visits to the dentists were when they were having trouble with their teeth or dentures. Only 9% of denture wearing residents felt they needed regular exams although 50% of the residents with teeth felt that they should be examined regularly (Merelie and Heyman, 1992).

Overall, elderly patients in nursing homes have low expectations for dental care. Many of the studies reviewed found that dental utilization by the elderly was low. This may be due to the fact that nursing home patients place dental care low on their list of priorities when compared to the other debilitating chronic diseases and disorders that they may have. Elderly may also view denture-related problems and discomfort as a natural part of aging. When oral hygiene and denture care is studied, it is a common finding that denture care/cleanliness is low priority also. Nursing home staff and residents in nursing homes frequently reported that there is a lack of instruction about the importance of oral hygiene. Recommendations for improvement of oral health care include instructing the caregivers on the importance of oral hygiene and its effects on the quality of life in relation to enjoyment of food, capacity of speech and chewing, and esthetics. Both residents and caretakers should be instructed on how to improve oral hygiene. A systematic approach to oral exams should be instituted that enables the inspection of dentures and oral mucosa at least annually. Treatment for ill-fitting dentures and dentures in need of repair/replacement must be actively offered to patients in need of such care.

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