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Review

Methods and Challenges in Preventive Dental Care of the Elderly

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Abstract

As individuals age, physiologic alterations take place in the oral cavity, and are thought to be a regular component of the ageing process. However, pathological developments that are not harmless, and that need professional care, are frequently encountered. The line between physiological ageing and actual pathological changes is not clear in all cases. The wellbeing of the oral cavity can be compromised with the initiation of tooth loss, soft tissue lesions such as oral carcinoma, neglected grossly carious teeth, neglected severe periodontitis, and orofacial neuralgia. For adequate oral health to be retained in older ages, oral diseases must be prevented and/or treated with emphasis in younger ages. Proper self-management measures—like brushing of teeth with a fluoridated toothpaste, dental flossing, and consuming nutrient-dense and balanced meals which have less refined carbohydrate are crucial preventive practices to be incorporated in daily life by people of all ages which includes the elderly. Dentalcare professionals can play a major role in prevention of dental problems and avoidance of more damage of oral tissues in older people. Professional activities comprise head, neck, and intraoral assessment of teeth and surrounding tissues for presence of oral manifestations of systemic illnesses, oral neoplasms, carious teeth, periodontitis, and impaired function and esthetics. Other measures for prevention comprise prophylaxis, dental care guidance, fluoride varnish provision, and proper therapy via restorations and reconstructions. Since the effects of dental conditions accrue as time passes, the necessity for sooner establishment of a preventive routine in life is vital for healthy ageing intraorally. Further, dentalcare for the geriatric population initiates in the younger ages through a stress on management of oral health issues early on, and from that point through an elaborate preventive plan moving ahead.

Keywords: geriatric dentistry, preventive dentistry, dental education

Introduction

Across the globe, the demographics of populations are undergoing a revolution. The proportion of elderly individuals is spiking more than any other age groups. It is projected that by the year 2050, there will be over two billion individuals of ages 60 and above, out of which only 20% will belong to developed nations (1). As individuals age, physiologic alterations take place in the oral cavity, and are thought to be a regular component of the ageing process. However, pathological developments that are not harmless, and that need professional care, are frequently encountered. The line between physiological ageing and actual pathological changes is not clear in all cases. Wasting of the oral mucosa, depletion of masticatory muscle mass, tooth abrasion and enamel erosion, and slight attachment loss are few instances of physiological oral decline. In contrast, tooth caries, severe attachment loss, tooth movement and/or reduction and deterioration in masticatory competence are pathological alterations that usually need medical attention to halt advancement, eradicate functional difficulties, and reestablish comfort (2). The wellbeing of the oral cavity can be compromised with the initiation of tooth loss, soft tissue lesions such as oral carcinoma, neglected grossly carious teeth, neglected severe periodontitis, and orofacial neuralgia. Moreover, speech, taste, deglutition, and mastication need the orofacial complex to perform appropriately. These functions rely on the soundness of the dentition, periodontal tissues, and other intraoral and extraoral components. It is evident that changes presenting with discomfort or dysfunction need to be attended to for maintenance of the functional and esthetic wellbeing.

The number of individuals impacted by oral and dental problems rises steadily as the majority members of populations age, with a greater prevalence in the most at-risk categories, thereby creating a major source of social disparity (3). Inadequate oral health and wellbeing influences the capability to consume a nutritional diet and reduces self-confidence and quality of life (4). The older population is more highly predisposed to oral disease as longer life spans have led to more medically compromising conditions or systemic disorders with oral manifestations. For adequate oral health to be retained in older ages, oral diseases must be prevented and/or treated with emphasis in younger ages. This posits enormous difficulties to health and social policymakers, especially since disease patterns shift every few decades (4). A great example of oral preventive care is through community water fluoridation and fluoride application in the early years (5). Due to the greater accessibility to fluoride, alterations in patient expectations as well as care management patterns, at present, individuals are retaining their natural dentition into later years to a higher extent. The United Kingdom (UK) Adult Dental Health Survey conducted in 2009 found that 53% of individuals ≥85 years old had preserved their original teeth to a certain extent, with a mean of 14 natural teeth observed in the sample population (5). Consequently, extractions and dentures insertion are not a popular treatment option anymore with individuals today being more capable and desiring to preserve their teeth for a greater period by receiving elaborate and expensive restorative therapy. This has, in turn, led to the creation of a section of elderly population which can take advantage of preventive care for conserving their oral health (6).

Methodology

This study is based on a comprehensive literature search conducted on September 19, 2022, in the Medline and Cochrane databases, utilizing the medical topic headings (MeSH) and a combination of all available related terms, according to the database. To prevent missing any possible research, a manual search for publications was conducted through Google Scholar, using the reference lists of the previously listed papers as a starting point. We looked for valuable information in papers that discussed the information about preventive dental care in the elderly. There were no restrictions on date, language, participant age, or type of publication.

Discussion

Proper self-management measures—like brushing of teeth with a fluoridated toothpaste, dental flossing, and consuming nutrient-dense and balanced meals which have less refined carbohydrates are crucial preventive practices to be incorporated in daily life by people of all ages which includes the elderly (7). Further, older individuals having actively carious lesions can take advantage of self-applied fluoride gels and fluoride mouthwashes (8). Additionally, prevention of gingival inflammation in older adults can be achieved through the use of antibacterial mouth rinses and via toothbrushing and flossing to get rid of plaque (9). In case of some older individuals, self-care may be adversely impacted by physical restrictions and reduced manual dexterity; such

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people may be aided by electric toothbrushes and other oral hygiene aids. Nevertheless, when efficiently performed, dental hygiene measures in older people can aid in the prevention of dental cavities and periodontitis (10). Further, other oral problems may be avoided or decreased in intensity through the adoption of changes in personal habits like intake of alcohol or tobacco consumption. Dentalcare professionals can play a major role in prevention of dental problems and avoidance of more damage of oral tissues in older people. Professional activities comprise head, neck, and intraoral assessment of teeth and surrounding tissues for presence of oral manifestations of systemic illnesses, oral neoplasms, carious teeth, periodontitis, and impaired function and esthetics. Other measures for prevention comprise prophylaxis, dental care guidance, fluoride varnish provision, and proper therapy via restorations and reconstructions. In any case, several hindrances are present for older individuals seeking to avail treatment from dental practitioners. Though the rise in dental services usage by the geriatric population has been observed in the current times, a section of older individuals have been noted to use fewer dental services in comparison to others their age and younger generations (11). These subgroups include older adults falling in lower income range, low level of education, higher prevalence of chronic conditions, issues with transport, and medical status rated as poor. Researchers believe that reasons for inaccessibility to dental care for the older people may comprise lack of dentalcare provider availability, economic considerations, and the requirement for assistance in everyday life (12). Other main reason implicated is the absence of insurance for dentalcare, the inability of several insurance plans to provide reimbursement for preventive care, and the issues with accessing professional care for those who are bound to home, institutions or financially incapable.

Since the effects of dental conditions accrue as time passes, the necessity for sooner establishment of a preventive routine in life is vital for healthy ageing intraorally. Further, dentalcare for the geriatric population initiates in the younger ages through a stress on management of oral health issues early on, and from that point through an elaborate preventive plan moving ahead. Dentistry needs to undergo a transition of professional dental education and care from concentration on interventive management of existing illness to preventive care of dental health problems at the community level. In turn, this would move the age versus dental disease prevalence curve leftwards and yield a better state that points to lesser prevalence and/or intensity) (13). Due the present patterns of dentalcare use and the widespread or frequently occurring predisposing factors causing oral and longstanding systemic conditions, it is essential to shift to interprofessional education and interdisciplinary practice. The latter is described as students of two or more professions seeking education with, from, and about each other to enhance cooperation and the quality of treatment (14). The goal of this type of education is not only to teach medical and dental practitioners about other disciplines, but to facilitate interprofessional delivery of care and produce better results. Though there is only little proof at present, few researchers have shown that such education and practice are potentially capable of improving patient satisfaction, improving team members attitudes, and decrease medical error incidences in emergency cases (15-17). Interdisciplinary learning and reforms would aid a novel generation of dental professionals to tackle more problems as more elderly require preventive, interventive, and aesthetic dentalcare. Further, the increasing occurrence of noncommunicable chronic conditions needs dentalcare providers to be accustomed to the pathogenesis, complications, and management of these conditions, be cognizant of the relation between oral and systemic health, and dispensing care which will improve both oral and systemic health (18-20). Due to this, upcoming dentalcare providers need to take into consideration a host of measures which impact the way in which the selection, customization and prioritization of oral health services is carried out: the degree and intensity of oral disease, general wellbeing, and health education, timeline, and resources at hand. Moreover, certain individuals may need alternate settings for the provision of dental services, and care choices would need modifications depending on the overall health status and independence and mobility. In case of geriatric patients, dental care cannot be restricted to dental offices, rather it requires home visits, preventive care provided by other professionals based in nursing home settings or hospital-based dentistry department. The can cause such patients to be unable to undergo rehabilitation procedures including extraction and implant therapy, and a greater frequency of minimally invasive treatment like overdentures which prioritizes function, pain alleviation and halting of illness advancement. Creating more geriatric dentistry training programs is also a way for training more dentalcare providers to address the dental needs of the geriatric population, though the difficulty in taking up paid education for comprehensive dentistry might lead to discouragement of dental professionals to

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specialize in managing both medical and dental complexities that are common in the elderly. Non-dental health professionals need to join as stakeholders by providing emphasis on prevention in non-dental environments. Furthermore, the idea of long-term preventive actions will gain interest once oral wellbeing is recognized as a concern for all medical practitioners, and not just dental practitioners. In contrast, dental practitioners have the capability to contribute to enhancing the overall healthcare of the elderly, improving the quality of life and aid them age healthily. This can be achieved by expansion of purview of conventional dentistry appointments to include assessment for noncommunicable chronic illnesses, enhancing awareness, and providing information regarding prevalent factors which impact dental and general wellbeing (like unhealthy diet and cigarette smoking), and referral to other dental and other specialties where necessary (21).

The Seattle care pathway for enhancing dental health for the elderly has a unique approach to tackle the diversity in the characteristics of geriatric dental health requirements and necessities. (3, 19, 22). It does so through classification of the elderly based on by degree of dependency, the need for preventive services, the kind and timeline of dentalcare, as well as customization of the treatment. This pathway is designed particularly for the elderly. Additionally, the Seattle care pathway underlines the significance of interaction within the team as vital to promote dental wellness as a component of overall wellbeing. Conversations regarding the delivery of oral health services in non-dentalcare environments by non-dental professionals are oftentimes had in the domain of pediatrics but taking into consideration the diverse set of restrictions, physically and financially; lack of self-dependence; and systemic health constraints, this choice must be widened to involve the geriatric section of the population. Therefore, the emphasis on preventing pathologic oral conditions will not be constrained to the conventional clinic environment; instead, it will take advantage of general practitioner visits for the elderly. Nonetheless, logistic hindrances may affect the feasibility of such measures. In case of the majority of self-reliant geriatric individuals who are capable of accessing dentalcare, dental wellbeing conversations ought to focus on the necessity of useful self-management/dental hygiene, over the counter chemotherapeutics (for instance, fluoridated toothpaste and/or antibacterial mouth rinse) to reduce susceptibility to radicular decay. Further, interactions with geriatric individuals need to include discussion of the medical history/medicines which may negatively impact salivation (23). The delivery of oral health services in non-dental environments is a important topic for geriatric individuals who are physically or cognitively disabled, who are not living independently or those with medically-complex illnesses. Other environments comprise nursing homes, at home, and at general medical practices. Dentistry related to prevention and treatment dental care in an alternative environment may provide several benefits: getting over the problems related to care access which the geriatric population faces when unable to visit private dental offices, timely treatment which tackles dental disease manifestations as they appear to eradicate the risk of disease flares, stop advancement of the problem, and preserve function. General practitioners, nursing professionals, community healthcare professionals, and other care providers are oftentimes well positioned to detect the initial signs of periodontitis and may possibly help in preventing pathologic dental conditions and in maintaining dental wellbeing (23, 24). For this reason, there is a massive need to provide dental health knowledge to medical and nursing students.

Quantitative and qualitative measures of dental health generally mirror the aggregative character of the related conditions, that may begin much earlier than when one reaches an older age. Nevertheless, researchers note that oral health problems peak in older ages due to different physiological and pathological reasons (2, 25). Therefore, preventing oral health issues is ideally more beneficial at younger ages, and may decrease both the occurrence and progression of dental problems in individuals as they get older. Evidence from studies (26, 27) favors the hypothesis that attitude at an earlier age impacts the dental wellbeing as a person matures. Particularly, study outcomes found that favorable use of dentalcare by (for examination as opposed to symptom resolution) by adolescents between the ages of 15 and 18 was related with improved dental health at 32 years of age (22, 26). In a similar manner, data from samples across Europe show that recent dental visits (within the preceding one year) in addition to socioeconomic status as a child substantially raise the frequency of preserved natural teeth and masticatory capacity in individuals ≥50 years (28, 29). Initial focus on preventing dental diseases is further championed by the applying of a life course approach to dental problems, according to which the interaction of a host of measures impacts dental wellbeing in individuals, such as malnourishment during initial development, caries presence as a child,

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psychosocial mechanisms, dental health-related demeanors, and accessibility to oral health services (30, 31). This method not only proposes preventing pathologic dental conditions before adulthood, but rather throughout life, endeavoring to decrease the effect of dental problems when people are more susceptible in older ages.

Older individuals are not a homogeneous subset of the overall population and, therefore, strategies to dental management of these individuals must account for the predisposition to particular conditions (like periodontitis, root caries, and oral cancer), care access, and the dependency of the geriatric patient. The susceptibility to carious lesions differs between this population, depending upon the comorbid conditions present, salivation, and the use of removable/fixed dentures and many other factors; therefore, reappointments need to be scheduled on a person-to-person basis, addressing the individual degree of risk, and must not be perfunctorily scheduled biannually or annually. The Seattle care pathway renders pragmatic guidelines to tailor the dental health prevention approach for the geriatric population while considering the individual degree of susceptibility and dependence (22).

New research findings back the potential of controlling plaque in geriatric individuals in decreasing occurrence of gingivitis (32). Clinical prevention methods which help in preventing dental diseases in geriatric individuals involve those which may be delivered by dentalcare providers additionally to those services which non-dental practitioners can provide, such as reinforcement of effective dental hygiene, the utilization of prescription-strength fluoridated toothpastes, and the administration of chlorhexidine fluoride varnishes and desensitizing agents for prevention and/or cessation of carious lesions till it is possible to avail more specialized treatment services (33, 34). Of recent, silver diamine fluoride has proven to be a long-lasting and useful way to arrest radicular carious lesions in geriatric individuals in long-term care environments in addition to the independently living elderly (35). Further, personalized prevention approaches need to assess the competence of the elderly to appropriately practice dental hygiene through brushing and flossing. Older people who face challenges in carrying out dental selfcare may supplement incorporate antibacterial mouthwashes in their regimen (36). Further, electrically powered toothbrushes can be a suitable substitution to conventional toothbrushes for achieving plaque control where manual dexterity is diminished (37-39). Inaccessibility to care and dependence raise predisposition to pathologic dental conditions in geriatric population that is bound to their residence, either personal or institutional. Consequently, this subset of the elderly will require augmented prevention strategies which include nondental practitioners such as nursing practitioners. The support and dedication of nondental professionals is indispensable for successfully preventing dental pathologies in housebound and institutionalized elderly, and research so far advocates that educating care providers regarding dental care deserves greater recognition (40, 41).

Conclusion

Dental medicine is tackling significant difficulties which should take into consideration the people catered to, treatment financing, and the maturing role of oral health professionals in the holistic outlook to providing dentalcare. Periodontal disease and radicular decay are dental pathologies which mirror the aggregated susceptibility of the person instead of the time-specific illnesses, and they are best dealt with via preventive care. Preventing dental pathologies is at the heart of a lifelong endeavor for sustaining dental health, since this hones the trajectory of dental health for people much earlier in life before their susceptibility to dental pathologies increases. Dentalcare providers need to redesign dental health education to underscore prevention methods and the significance of pursuing routine preventive dental practices. The ultimate aim of healthful ageing involves reinforcing the independence of the elderly, delaying institutionalization and related social and financial repercussions.

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Conflict of interest

There is no conflict of interest

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Data availability

Data that support the findings of this study are embedded within the manuscript.

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Author contribution

All authors contributed to conceptualizing, data drafting, collection and final writing of the manuscript.

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