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Review Article

Prevalence, incidence and outcome of periodontal diseases among the elderly

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ABSTRACT

When compared to adults, older persons have a higher prevalence and incidence of periodontal diseases. The prevalence of periodontitis is substantially greater in the geriatrics group, which is 75 years old on average, compared to those who are 60 years old on average. Periodontitis can lead to tooth loss if natural periodontal therapies are not used. Periodontitis is the sixth most frequent incurable illness in the world, characterized by bacterial-induced and host-mediated deterioration of both soft and hard structures around the teeth. A severe type of periodontitis affects around 10% of the world's population. Periodontitis is more frequent in adults because of its chronic and debilitating nature, with around 66% of the 65-year-old age group in the United States afflicted by chronic periodontitis. A critical component of a successful disease prevention and health promotion trajectory is having up-to-date information on demographics, clinical symptoms, and illness burden on individuals, particularly in underrepresented regions where preventive programs are targeted and executed. As a result, the purpose of this paper is to evaluate the existing research on the prevalence, incidence, and consequences of periodontal diseases in the older population.

Keywords: Periodontics, Elderly, Geriatrics, Prevalence, Incidence

INTRODUCTION

Periodontal disease is a term for those oral diseases that affect the gingiva and periodontal tissue, like gingivitis and periodontitis. Periodontal diseases are infectious and affect the supporting tissue for the gum.[1] The clinical presentation of gingivitis includes swollen edematous gum, irritant pain. In cases in which the inflammation was not treated early, the disease will affect the periodontal attachment and the supporting bone of the gum.[2] In 2016, a study published by the global burden of disease collaboration, periodontal diseases were ranked as the 11th most common prevalent diseases globally.[3] The average prevalence of periodontal diseases is about 35%.[4] Periodontal diseases are considered to be among the most common causes of tooth loss. Which directly affects the

ability to chew (mastication), quality of life, and self-confidence, especially in the elderly.[5,6] In 2016, periodontal diseases were estimated to be responsible for 3.5 million years lived with disability. Between 1990 and 2010, there was an increase in the global prevalence of periodontal diseases. The increase was estimated to be 57.3% which is a significant rise.[3,7] In 2010, severe periodontal diseases were estimated to cause an overall loss of 54 billion dollars per year. Unfortunately, the prevalence and incidence of periodontal diseases are expected to increase in the coming years due to the growth of the population and neglecting the importance of dental hygiene. Therefore, it is predicted to increase tooth loss generally significantly in the elderly, and geriatrics, especially.[7]

Masticatory (chewing) complications caused by periodontal diseases can interfere with diet and quality of life, thus adversely affecting nutrition and general health. It is not uncommon to see people who have periodontal diseases suffering from malnutrition.[5] In addition to that, periodontal diseases are linked with other systemic diseases such as immunological disorders, autoimmune diseases, diabetes mellitus, and cardiovascular disorders such as rheumatic heart fever.[8,9] The spread of bacteria and their toxins from the mediators (histamine, bradykinins, prostaglandins, and endothelial) from the affected periodontal tissue to other body systems organs is believed to account for the link between periodontal diseases and systemic diseases.[9,10] Different classes of people are equally affected by the periodontal disease.[11] Evidence has suggested a negative correlation between the high income and prevalence and incidence of periodontal diseases.[12] It was reported that people who live in low socioeconomic countries have higher risk of developing severe periodontal disease by the double compared to those who are living in a high socioeconomic area.[11] A study has found that the highest incidence of chronic periodontists was in the elderly, and the lowest incidence was in adults,[13] which denotes that the geriatrics are more prone for the dental complications compared to the adults. Fortunately, the oral diseases including the periodontitis are preventable in different ways. However, patients with periodontal disease often seek good dental hygiene when the disease develops into an advanced stage. Usually, in the early stages, the diseases are asymptomatic, which is one of the primary reasons most people do not notice it.[14] Therefore, early diagnosis by routine checkups at dental clinics and treatment are essential in periodontal health care. Therefore, this review article aims to review the evidence about periodontal diseases among the elderly since they are the most vulnerable group of periodontal diseases.

LITERATURE REVIEW

This literature review is based on an extensive literature search in Medline, Cochrane, and EMBASE databases on which was performed 3rd October 2021 using the medical subject headings (MeSH) or a combination of all possible related terms, according to the database. To avoid missing poetential studies, a further manual search for papers was done through Google Scholar, while the reference lists of the initially included papers. Studies discussing prevalence, incidence and outcome of periodontal diseases among the elderly were screened for useful information, with no limitations posed on date, language, age of participants, or publication type.

DISCUSSION

Prevalence and incidence

Older people have a higher prevalence and incidence of periodontal diseases compared to adults.[15] The prevalence of periodontitis is significantly higher in the geriatrics group aged at the average of 75 years old compared with those at the average of 60 years old.[16] In the absence of available trajectories and treatments for dental health issues including periodontal disease, periodontitis can easily indicate teeth loss.[17] Periodontitis is degeneration of both the gingival tissue around the teeth and is the eleventh common incurable condition globally, according to the study that was published by the global burden of disease at 2016.[18,19] In the current global manner, the estimation of people who suffer from periodontitis (chronic and acute) is about 10%.[19] Among the literature, it was found that periodontitis was most common in about 66% of the 65-year-olds group being affected by chronic periodontitis in the United States.[20] An essential part of proper disease prevention and health promotion trajectory is to have up-to-date information on the demographic, clinical symptoms, and the burden of disease on people, especially in the underrepresented areas.

In contrast, prevention programs are being targeted and implemented. Since 2009, there has been significant progress in improving the diagnosis of periodontitis in the United States, especially in the clinical trial agreements used in the national health and nutrition examination survey (NHANES) and the use of definitions for typical cases of periodontitis diagnosis.[21,22] Before 2009, the diagnosis of periodontitis in NHANES was based on data collected using various oral screening protocols.[23,24] Since 2009, the NHANES database has implemented a complex and comprehensive oral and oral diagnostic protocol, which makes precautionary measures to allow for the most accurate classification of periodontitis.[25] Using data from the NHANES database for 2009-2012 and using these descriptions of the proposed cases, in the United States of American the appearance of periodontal diseases was more liable to be after the age of 40 and above.[20,26] Therefore, this predicts that the prevalence and incidence of periodontal diseases in the elderly will significantly increase as the adults do not have healthy dental care.

In the NHANES 2009-2012 database, 35-year-old adults with at least one healthy tooth who did not have a medical condition requiring antibiotic prophylaxis before periodontal examination should have been tested. A total

of 9,402 adults were more than 30 years old and, of those, 1,983 were more than 65 years old. Data from 472 patients were excluded from the analysis. They did not undergo periodic health checks because they were competent (edentate, extracted teeth) or had exclusionary medical reasons or incomplete oral tests, or because our analysis was too restrictive for respondents who did not have missing co-variate values.[20]

The current evidence reports that the prevalence and incidence of periodontal disease increase by age. In the national survey of adult oral health (NSAOH), between the years 2004 to 2006. The NSAHO reported that about a quarter (25%) of the people who at an average of 55 and above had periodontitis.[27] Furthermore, by the age of 75, the prevalence increased by an additional 50%. However, the risk factors for periodontal diseases in adults were different from those in the elderly population.[27]

Correlations and outcomes

The correlation between periodontal diseases and systemic body diseases is possible. At first, by spreading bacterial organisms and the inflammatory mediators in the blood.[28] Secondly, the affection of the oral cavity by the nature of associated systemic diseases. Systemic diseases, inflammatory reactions, and inflammatory mediators can reach all systemic vascular systems, affecting oral cavity health.[29]

Diabetes mellitus

Unfortunately, some diabetes foundations predicted that there would be an elevation of the number who have diabetes with oral diseases in the future. The increase is estimated to be an average of 50%.[30] One of the major causes for this significant increase is the sedentary lifestyle. The Asian people appear to be at greater risk.[31] By that time, it is predicted to become a significant health problem with significant illness and death. The estimated misdiagnosed population who have diabetes can be as high as 25% in elderly and geriatrics age groups, compared to the adult groups.[32] There is a positive correlation relationship between diabetes mellitus and periodontal diseases. People with diabetes have poor oral health, especially when they have diabetes.[33,34] A study examined the diabetes status of more than 600 periodontal diseases patients from different regions and found that about five percent were undiagnosed or misdiagnosed, and 33% were pre-diabetic.[35] There is a much higher risk of diabetes in patients with periodontal disease than in healthy dental care.[35] However, the risk of diabetes increases with age. In a group of patients with acute periodontitis, more than 10% were undiagnosed or misdiagnosed with diabetes, and more than 60% were pre-diabetic.[36] Diabetes and pre-diabetic cases management may be required to enhance periodontal treatment results. Furthermore, insufficient glycemic control has been linked to progression of the disease and dental problems.[37] In addition to that, this interprets the importance of primary screening for all individuals, especially those who live in underrepresented areas.

Overweight and obesity

Overweight and obesity are among the expected associations between periodontal diseases and systemic diseases. Overweight is defined to have BMI which is over 25. In contrast, obesity is defined as a BMI of 30 or more. Both overweight and obesity are associated with periodontal diseases and systematic diseases such as cardiovascular diseases and cerebrovascular strokes.[38] The effect on dental health is both direct and indirect. The lifestyle of overweight and obese people is usually unhealthy by eating high sugar and fats, which directly affects the health of the oral cavity. The indirect relationship between the systemic effects of overweight and obesity is considered about the vascular changes, including atherosclerosis, chronic inflammatory disorders, and releasing of abnormal inflammatory mediators which affect the teeth health.[39]

Osteoporosis

Osteoporosis is a clinical syndrome that causes a reduction in bone and minerals density. It affects all bones and increases the risk of fractures, especially the hip. The United States of America NHANES III data indicates that an average of 15% of women and 4.5% of men have osteoporosis.[40] In addition, many others have osteopenia, 45% women and 35% men in a systematic review.[40] It has been demonstrated that osteoporosis is companied with elevated tooth loss and may be linked to dental problems. However, the data is less credible. However, data will show that many older people may have dental problems due to osteoporosis, especially older women.

Management of periodontal diseases in elderly

Non-invasive treatment of periodontal diseases has been described by Darby et al.[41] It has been showing its efficacy, especially if regular dental care and hygiene follow it. On the other hand, controlling periodontal disease, becomes a hardship for elderly individuals who do not have accessibility to dental treatment or who live in care homes. People in care homes frequently have trouble getting dental treatment. Especially by moving to a dental facility, with only ten percent visiting the practice in the last ten months.[42] It is also noteworthy that many dentists do not provide treatment in nursing homes, limiting residents' access to essential care.

Oral cleanliness is critical to maintaining good oral health. Adequate oral hygiene greatly reduces the incidence of dental problems and tooth cavities. The elderly may need to depend on someone to brush their teeth if they have a mental or motor disability. Optimized toothbrushes give the highest dirt removal and are simple for use.[43] To maintain and enhance periodontal health, toothpaste should be used.[44] The addition of chemicals such as

stannous fluoride provides a more significant reduction in plaque than softening the fluoride toothpaste alone. For most people brushing teeth should be supplemented with moderate cleaning. With age and a decrease in dexterity flossing, it becomes more difficult. Wood sticks and block brushes work well than floss in general, are better in large contact areas, and are easy to use.

People who live in care homes have a difficult time maintaining excellent dental hygiene. According to research presented in their dental health study in care homes, less than a third of participants wash their one up to two times a day, although more than half of them brush twice a day.[42] Around 33.3% of the population need assistance, and those with a mental impairment, such as dementia, require support. Only 30% of those who need assistance got their teeth cleaned once or twice a week. The answer is to teach the elderly and geriatric groups, although they may struggle with the appropriate practical brushing technique. Large brush handles or power brushes, on the other hand, might be useful. Furthermore, individuals with mental retardation who do not recall the instructions and, regardless of age, all dental hygiene guidance require regular repetition. The solution is to educate caregivers, but there seems to be a need for proper education, and most of the information comes from journals, books, or training within other staff.[45] Terezakis et al also discussed the high number of migrant workers seeking proper dental care instruction. The use of family members' help seems to be neglected.[46] However, they may not be interested in looking after the person living too far away or may not afford oral hygiene products.

CONCLUSION

The prevalence and incidence of dental care diseases have increased making it a major cause of the increased prevalence and incidence of periodontal diseases. Primary dental care is necessary for underrepresented areas such as low-income and middle-income countries. The elderly and geriatric age groups were at the highest risk of periodontal diseases. Most geriatrics worldwide do not have enough support from their families, which creates an additional burden for them to take care of their body health. Therefore, offering better services for geriatrics to screen and detect diseases at early stages is crucial to prevent periodontal diseases.

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