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Repercussions of Periodontal Disease and Systemic Conditions on Quality of Life in Elderly Population: A Review

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Abstract:

Quality of life is a diverse term that is largely based on people's perspectives as different people have their parameters to describe the quality of life. However, health and well-being are among the most significant features that determine the quality of life. This review is about aretrospective analysis of pre-existing literature comprised of studies on systemic diseases and their association with periodontal conditions specifically in elderly patients. The retrospective analysis of already published data from 2015 till 2020 in a specific area of interest. Data will be taken from authentic sources published in a peer-reviewed journal with a good impact factor. The overall findings obtained from existing literature reveal the fact that it is important to consider thematic analysis for finding the relationship of quality of life in older with periodontal conditions. After reviewing the literature almost 10 studies were included. The study executes great changes with ageing. Dental professionals must improve their skills and knowledge regarding the relevant systemic conditions to interact and related meaningful results. The studies have concluded that periodontitis and systemic health consequences may be occurred due to some inadequate risk factors amongst which smoking is one of that.

Keywords: Diabetes;GingivitisSystemic conditions; Hypertension;Periodontal disease;Periodontal index;Pulmonary diseases; Quality of life (QoL).

Introduction

Periodontal diseases are usually caused by chronic inflammatory conditions. As it may gradually lead towards the destruction of supporting tissues around the teeth along with progressive loss of the connective tissues surrounded with gum causing bone resorption[1]. Although, periodontal diseases have complex pathogenesis as it includes microorganisms found in dental biofilm and other immuno-inflammatory responses of the host. Moreover, it may cause because genetic or environmental factors. Other than that, there are some the acquired condition causing periodontal problems like smoking and some other systemic diseases[2]. More specifically, periodontal

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diseases may usually enable to modify some factors affecting the systemic health of an individually specifically elderly. Periodontal diseases usually diagnose by evaluating the patient's medical as well as dental history along with a radiological examination to know about the status of bone resorption. Furthermore, periodontal diseases can also be measure by quantifying the impact of the quality of life related or oral hygiene maintenance specifically in the elderly[3]. As it has been noticed that there may be a greater degree of finding the clinical loss of periodontal attachment in elderly patients. This study enables us to find subjective evaluation regarding the impact of ageing and quality of life on the periodontal conditions of an individual. All previous literature regarding periodontal diseases and the quality of life of an individual will be useful in improving periodontal health[4].

Quality of life among elderly

According to World Health Organization (WHO), quality of life (QoL) is defined as "individuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns[5][6]. While clinical measures are useful for assessing oral health and treatment needs, their shortcomings must be addressed. The clinical and subjective measures that are correlated with them describe a multidimensional evaluation of the oral health condition.[7].

It is important to consider how people view their oral health and the emphasis they impose on it, as these aspects underpin the willingness to pursue appropriate care, which may reduce negative effects on QoL. [8]. Periodontitis-related factors such as tooth mobility and gingival recession may change smile esthetics and thus adversely affect self-esteem and social interactions, reducing QoL. [9]. Information on patient beliefs and attitudes can be useful in developing successful treatments for oral health, which is directly related to general health and therefore impacts individuals' QoL[10], [11].

Disease-specific QoL interventions have been applied to standardized measures over the years to classify patterns most applicable to QoL in patients with different health-related conditions. Periodontal disease is one of the leading causes of poor health-related quality of life in terms of physical, psychological, and community well-being, especially in the elderly population. [12]. Most prominent examples of QOL impacts include limited food intake due to weakened chewing function, the occurrence of gastrointestinal conditions and dietary imbalances, and the failure to converse and engage socially comfortably. Periodontal disease pain may also cause absenteeism from work and sleep disturbances, resulting in financial losses. [13].

Aging and periodontal disease

Many people regard ageing as a mere chronological phenomenon; it is an unavoidable reality that we all age. The body will mount compensatory responses at a younger age, and life is stable. The body's ability to sustain homeostasis decreases during middle age, culminating in chronic diseases that intensify the progressive loss of life quality, resulting in extreme detriments, weakness, and, inevitably, death[14].Increased healthcare and medication awareness have resulted in the eradication of numerous infants, viral, and preventable diseases; but, as the lifetime grows, we are now seeing the effects of ageing disorders. Periodontal disease is one of the most common chronic age-related infectious diseases that affect humans. Pathologic forms are distinguished by soft tissue degenerationand alveolar bone loss around the teeth[5]. According to alarming epidemiological data, about 70% of senior patients over the age of 65

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have some form of periodontal disease, compared to 40% of the young and middle-aged population [15].
The periodontal disorder becomes more common and severe as people become older. Periodontal disease susceptibility may be increased by degenerative changes associated with the ageing phase. The loss of attachment and resorption of alveolar bone occurs as a result of proximity to other risk factors on a regular basis[16].Changes associated with the ageing process, such as drug utilization, reduced immune system, and altered nutritional status, as well as other risk factors, improve one's vulnerability to periodontal disease[17].

Systemic conditions among elderly

The elderly population is growing more than other parts of the global population. Many chronic conditions and disabilities, comorbidities, geriatric syndromes, and diminished capacity to recover from injuries or illnesses are all predicted by age[18].Ageing is a multifaceted biological phenomenon characterized by weakening physiological functions that increase vulnerability to ageing-related chronic diseases such as cancer, metabolic, cardiovascular, musculoskeletal, and neurodegenerative diseases[19].The concept “age-related diseases” (ARDs) has been proposed to identify a continuum of chronic conditions that typically present in the elderly, ignoring the fact that its onset can be accelerated by events arising in adulthood or even adolescence, and is often linked with poor eating habits and a sedentary lifestyle[20].For decades, ageing science has investigated the possibility of encouraging healthy and longer lives by researching the conditions that accelerate or delay the ageing process. While ageing is imminent, the concept of healthy ageing emphasizes that the rate of decline varies between individuals and is modifiable by measures recommended by health policies[21, 22].Modern populations must cope with an ageing population, which is a significant challenge on public health services due to the large number of related comorbidities associated with older adults[23].Prevention of age-related diseases is becoming a more prominent priority of health policy, with the goal that early action on deterioration mechanisms can encourage healthy and longer lives. With new areas such as customized nutrition, new opportunities to delay the ageing process are developing and still a lot of research is required in this field.

Methodology

The PECO question for this research will be as follows: Population: elderly dentate person (Age: more than 65 years), Exposure to risk: periodontal diseases with the presence of other systemic conditions, Comparison: none and Outcome: maintenance of the quality of life.This complete narrative review was conducted in compliance with previous studies done on periodontal conditions followed by other systemic health-related issues in elderly individuation. The rationale of the study is to evaluate literature based on periodontal diseases and their impact on the quality of life of an elderly individual. The electronic searching method has been used to identify all the relevant literature. The electronic search was conducted through PubMed, EBSCO, and Cochrane databases. The searches were included from the year 2015 to 2020. The search strategies that were used in the databases are (Periodontal Diseases) OR (Quality of life) OR (Elderly Periodontal Problems) OR (Systemic conditions associated with Dental Problems and the combination of all were used in the mentioned search databases.

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Results

The overall findings obtained from existing literature reveal the fact that it is important to consider thematic analysis for finding the relationship of quality of life in older with periodontal condition. The previous literature in which authors have discussed the problem faced by older people related to periodontal issues revealed that elderly people usually have a complaint of forgetfulness or dementia. After a certain age, they were not able to take care of dentition and oral hygiene. Research have shown that with the presence of older age as well as with compliant of dementia people have presented gingival inflammation and bleeding. As per the study of Chu et al (2015)have found gingival pocketing in elderly more than 3mm and the incidence of developing periodontal conditions were high and commonly present in communities (74.0%) than with normal individuals[24]. Delwel et al (2019) concluded from their study that elderly patients have increased periodontal pockets that is more than 4mm. Moreover, 18.8% of participants have shown greater teeth mobility secondary to periodontal infection and 5.8% have developed grade 3 mobility in one or more teeth[25]. Other than that,Zenthofer et al (2017) worked on evaluating the gingival bleeding index in a community-based study. They concluded that due to lack of care of oral hygiene 48.8% elderly required treatment for their severe periodontal conditions[26].

[27]also linked the association of periodontal diseases contributing factor to develop the quality of life maintaining oral hygiene. Takahiro et al (2018) study has been included in this systemic study which focuses on identifying the association between the degree of periodontal disease and another number of teeth present in the oral cavity that helps in maintaining the quality of life[28]. The study concluded that periodontitis or poor oral hygiene does not show a direct association with poor quality health relation nonetheless, there has been a direct link between the number of teeth present and quality of life. In addition to this, Ya-Hong et al, (2019) also conducted a study in which addressing the government policies require in maintaining the quality of life in older adults[27]. The study revealed that elderly individuals have belonged to an affluent community, at which periodontal diseases one of the independent risk factorsare directly impacting the oral health-related quality of life. Similarly, Özge GÖKTÜRK and Fatma (2018), assess the impact of oral health-related quality of life in an older patient with periodontal diseases. The study revealed that the severity of periodontal diseases enhanced with the poor oral health-related quality of life[29]. It has been evident that the adverse effect of periodontal issues on the daily life of elderly patient will assist the understanding of the relationship between general and oral health. Bahruddin et al, (2020) also find that there is a strong relationship between dental and oral health status on the quality of life of the elderly living alone or with their families[30].

Almost three studies have been found from the literature that has been revealing the relationship between periodontal disease and other complications of systemic diseases. As Winning and Linden G (2015) in their study, they have mentioned that the general public has to be aware of the association of periodontal diseases and other systemic diseases in the United Kingdom[31]. In various previous literature, it has been evident that there have been links between systemic diseases and developing periodontal conditions the major areas of interest in systemic diseases are diabetes, adverse outcomes on periodontal condition after pregnancy, atherosclerotic cardiovascular diseases. Furthermore, the other connections between periodontitis and many other diseases have been reported that comprises chronic kidney diseases, respiratory conditions, obesity, and cognitive impairment.

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Fig 1: Association of Chronic Systemic Disease and Periodontitis.

In that studies, there isa lack of evidence in identifying proper mechanism between periodontitis and systemic diseases although to prevent that members of the dental association must adopt a pragmatic approach that promotes oral good health that will benefit general health. Another study conducted by Fiona et al, 2019, identified that the periodontal pathogens and their possible metabolic end products present in the mouth may modulate the immune response beyond the oral cavity hence promoting the development of systemic conditions[32]. Such as cardiovascular diseases, gastrointestinal problems, insulin resistance and Alzheimer's diseases along with developing respiratory tract infections. Although, the cause and effect of relationship have not been completely developed yet for most of the diseases. Whereas the literature showed the direct and indirect impact of periodontal pathogens on the entire health of an individual. Thus, the relationship showed bacteremia inflammation because of periodontal diseases and systemic disease. The third study was conducted by Hani H et al (2015), which have also suggested that the infections and other inflammatory reactions linked with periodontal disease directly or indirectly contributing to systemic diseases[33].

Discussion

All the studies have been proved that there is a strong relationship between chronic periodontitis and other systemic health issues. These all worsen with age although the clear phenomenon has not been about the pathogens and research are still ongoing to evaluate and identify the accurate phenomenon amongst them. Whereas some of the studies showed that periodontitis results in ahigher systemic level of C-reactive protein, interleukins (IL)-6 and neutrophils. All such elevated inflammatory consequences raise the inflammatory activity in a lesion that may already present such as atherosclerotic lesion thus, it hasthe potential to initiate the risk of developing cerebrovascular events. Other than that, the systemic markers of inflammation also serve as the predictors of any present and future cardiovascular events and diseases. Moreover, the oral bacteria that may present in carotid atheromas reported that some of the oral bacteria have also associated with platelet aggregation which considered as one of the important factors for

thrombosis[34]. Although, it has been evident that the proper association between long-term oral infections and myocardial infarction the major disease grows with ageing.

In the previous era, the oral cavity has been considered as a separate part from the rest of the body. Hence, in recent times, significant effort has been made to identify oral health issues and made theman integral part of entire health. The systemic review also revealed that periodontal diseases have exerted a negative impact on OHRQoL. It has been noticed that an older individual that may be affected by periodontal disease does not easily perceive or explain their problem related to gums or oral cavity as it often appears as asymptomatic[4]. In addition to this, any chronic problem such as clinical attachment loss has been gradual and slow that permit affected individual to accept and adapt to progressive health conditions. In that regards, awareness and knowledge has played an important role to identify, diagnose, manage, and prevent that disease at the proper time.

Conclusion

All in all, oral health specifically periodontal conditions have a direct or indirect impact on the general health including the quality of life of an individual. It shows great changes with ageing. Dental professionals must improve their skills and knowledge regarding the relevant systemic conditions to interact and related meaningful results. The studies have concluded that periodontitis and systemic health consequences may be occurred due to some inadequate risk factors amongst which smoking is one of that. Furthermore, the results of studies included showed that periodontal diseases usually exert a negative impact on the oral health-related quality of life of the elderly. With developing more severe condition, the overall health status may get affected.

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