

DENTAL AND WHOLE-BODY HEALTH EFFECTS OF INADEQUATE ORAL CARE IN THE ELDERLY

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Abstract:

Poor oral hygiene is a growing concern among the elderly, contributing to a range of dental and systemic health issues. This paper explores how inadequate oral care—due to lifestyle habits, infections, or limited access to dental services—leads to common dental conditions such as periodontal disease, dental caries, gum recession, edentulism, xerostomia, and oral cancer. These issues not only impact oral function and quality of life but are also linked to serious systemic conditions including cardiovascular disease, diabetes, stroke, kidney disease, dementia, and aspiration pneumonia. The review highlights the critical connection between oral and general health in aging populations. It emphasizes the importance of regular dental care, early detection, and targeted public health interventions. Collaborative efforts between dental and general healthcare providers, along with routine dental checkups and hygiene education, are recommended to prevent complications and enhance overall well-being among the elderly.

Keywords: *Elderly oral health, Poor hygiene, Systemic disease, Dental complications*

Introduction

The prevalence of dental health problems is on the increase which could be due to the poor oral hygiene practices or habits. The case is even worse among elderly people particularly those who have experienced high rate of tooth loss, dental caries and periodontal disease. Hirotsu (2019), reported that the epidemiological data on periodontal disease (a chronic infectious disease that affects tooth support tissues, including gingiva and alveolar bone) have shown that the most frequent findings among the elderly are the accumulation of bacterial plaque with consequent gingivitis and mild or moderate alveolar bone loss while 1.8 per cent had no signs of periodontal disease and 3.3 per cent showed severe periodontal lesions. In a study conducted in England, Thomson (2018) stated that the prevalence of caries in tooth crowns among the dentate elderly was 22 per cent, with 20 per cent of 75–

84-year-olds showing active root decay. In general, there is high prevalence of tooth loss due to caries, reflecting the fact that the treatment offered to date has largely been extraction of the affected tooth. Similarly, Manji (2018) reported that of the causes of tooth loss, dental caries is the leading cause in all age groups and in all teeth types except for the incisors. In a number of studies done, caries had the highest prevalence of 20.8 per cent, 56.4 per cent and 32.6 per cents and the highest proportion of extraction due to caries occurs between 65 years and above as a result of poor oral hygiene (Agbor, Azodo & Tefoue, 2013). In a study done in 2012 showed that of the 62 per cent of the tooth loss among the elderly in the USA, dental caries topped as the cause of tooth loss with 37.4 followed by a combination of periodontal disease and other factors (Agbor et al, 2011).

According to National Health and Medical Research Council (2014). The mouth is an integral part of human anatomy, with oral health intimately related to the health of the rest of the body. A growing body of scientific evidence has linked poor oral health to adverse general health outcomes, with proven evidence suggesting that infections in the mouth, such as periodontal disease can increase the risk for heart disease, put pregnant women at greater risk for premature delivery, and can complicate the control of blood sugar for people living with diabetes. Additionally, dental caries in elderly, especially if not treated, can predispose elderly to significant oral and systemic problems, including eating difficulties, altered speech, loss of tooth structure, inadequate tooth function, unsightly appearance and poor self-esteem, pain, infection, tooth loss, difficulties concentrating in daily life activities and low socialization. Again, the care, hygiene, and routine dental control of prostheses are essential to avoid oral health-related impediments to well-being (Käyser, 2019).

Valenzuela (2015), postulated that our mouth is our primary connection to the world. In addition to providing us a way to take in water and nutrients to sustain life, it is our primary means of communication and the most visible sign of our mood and a major part of how we appear to others. Oral health is more than just having all your teeth and having those teeth being free from cavities, decay, or fillings. It is an essential and integral component of people's overall health throughout life. Oral health refers to your whole mouth: not just your teeth, but your gums, hard and soft palate, the linings of the mouth and throat, your tongue, lips, salivary glands, chewing muscles, and your upper and lower jaws (Käyser, 2019). Again, the author added that good oral health means being free of tooth decay and gum disease, but also being free from conditions producing chronic oral pain, oral and throat cancers, oral tissue lesions, birth defects such as cleft lip and palate, and other diseases, conditions, or disorders that affect the oral, dental and craniofacial tissues. However, Sischo and Broder (2011) were of the view that the oral, dental and craniofacial tissues are known as the craniofacial complex in which Poor oral hygiene can predispose and serve as a breeding ground for bacteria if neglected or ignored which will eventually cause periodontal disease. The authors added that bacterium associated with periodontitis can enter the bloodstream via bleeding gums which is what links the two together.

Dental Health Problems Associated with Poor Oral Hygiene among the Elderly There are several dental health problems associated with Poor Oral Hygiene in our environment. The ones very common among the elderly are discussed below.

Periodontal Disease

The mouth plays very important role in feeding in animal kingdom including mankind hence, periodontal disease is very common in our society Hiroto (2019) explained that periodontal disease is a chronic infectious disease that affects tooth support tissues, including gingiva and alveolar bone and reported that the epidemiological data on periodontal disease has shown that the most frequent findings among the elderly are the accumulation of bacterial plaque with consequent gingivitis and mild or moderate alveolar bone loss in which 1.8 per cent had no signs of periodontal disease while 3.3 per cent showed severe periodontal lesions. The author also reported that in a recent systemic review of studies from 37 countries, the incidence of severe periodontitis (greater likelihood of tooth loss) was higher with increasing age and it was low and fairly constant among the elderly. Brown, Oliver and Loe (2018) advocated that gum disease, also called periodontal disease, is a common problem caused by bacteria in plaque and tartar smoking can also play a significant role and symptoms in the later stages of gum disease include irritated, red, and bleeding gums. Gingivitis is the inflammation of the gums due to bacteria build-up where teeth meet gum tissue (Holmlund, Holm & Lind, 2016). This can develop into periodontitis, a serious gum infection that damages the gum tissue and the bone that supports the teeth. If the ability to chew and swallow is impaired, inadequate nutrition can also lead to additional gum health issues but fortunately, gum disease is both preventable and treatable through proper dental care which includes flossing and brushing daily (American Academy of Periodontology, 2011).

Dental Caries

The whitish substance deposited on the surface of the teeth is known as caries. Manji (2018) defined dental caries as a multifactorial disease that leads to the demineralization of the tooth surfaces. Caries remains a major oral health problem among the elderly for various reasons: the increase in treatment and maintenance of teeth rather than their extraction; age-related salivary changes; a poor diet; exposure of the root surface by gingival recession; and a greater likelihood of drug treatment with xerostomia as a side effect (Wyatt, Wang & Aleksejuniene, 2014). In a study conducted in England, Thomson (2018) stated that the prevalence of caries in tooth crowns among the dentate elderly was 22 per cent, with 20 per cent of 75–84-year-olds showing active root decay. In general, there is high prevalence of tooth loss due to caries, reflecting the fact that the treatment offered to date has largely been extraction of the affected tooth. Manji (2018) explained that of the causes of tooth loss, dental caries is the leading cause in all age groups and in all teeth types except for the incisors. Agbor, Azodo and Tefoue (2013) reported that in a number of studies done, caries had the highest prevalence with 20.80 per cent, 56.4 per cent and 32.6 per cent and the highest proportion of extraction due to caries occurs between 65 years and above as a result of poor oral hygiene. In a related study done in USA it was shown that, of the 62 per cent of the tooth loss among the elderly, dental caries topped as the cause of tooth loss with 37.4 per cent followed by a combination of periodontal disease and other factors (Agbor et al, 2011).

Receding Gums

Gum recession is a gradual process where gums shrink away from teeth. American Geriatric Society (2018) explained that it is commonly caused by gum diseases and poor dental hygiene, although smoking, family history and teeth grinding (bruxism) are also possible contributing factors. Teeth may become sensitive as the root of the tooth becomes exposed and teeth may appear to lengthen. If this case is not properly treated and managed, it can result in significant damage to oral tissues which can cause an increased likelihood of developing gum disease and tooth loss. The Public health education message of 'prevention' is the best cure which can be achieved through practicing good oral hygiene, quitting smoking, and avoiding sugary foods. It is advisable that older adults who show signs of receding gums should visit the dentist as soon as possible to discuss how best to address the issue. Richard (2012) affirmed that treatment options range from deep cleaning or scaling to surgical procedures such as gum grafts

Edentulism

The advanced stage of caries can result to difficulty in chewing and eating. When not treated, the final stage of caries and periodontal disease is tooth loss and eventually edentulism, which is highly frequent but represents a failure of the dental care system. Edentulism is directly related to mastication and nutritional problems. Some authorities proposed that it may be a good mortality predictor while others associated it with substantive quality of life impairment (Kassebaum, Bernabé, Dahiya, Bhandari, Murray & Marcenes, 2014). The authors added that the problem of edentulism is accentuated when mastication function is not reestablished with dental prostheses. Various studies have shown that a minimum of 20 functional teeth are necessary to guarantee good mastication, although only if they are antagonist pairs. Richard (2012) was of the view that the most prevalent conditions among individuals with prostheses are stomatitis and traumatic ulcer which can be aggravated by poor nutrition and unhealthy lifestyles such as poor oral hygiene, excessive alcohol consumption, tobacco use among others. Käyser (2019) suggested that the care, hygiene, and routine dental control of prostheses are essential to avoid oral health-related impediments to well-being.

Dry Mouth (Xerostomia)

The natural condition of the mouth does not permit it to be dried as there are glands and juice that wet the mouth always. Dry mouth which is also known as xerostomia is sometimes observed among the elderly probably due to degenerative processes very common among the elderly people. Singh et al. (2014) explained that the greater life expectancy of populations has also increased the importance of dry mouth as a health issue. A high prevalence of xerostomia and salivary gland hypofunction has been

found in vulnerable elderly people. According to Scully (2016), etiologic factors associated with xerostomia include polymedication (especially with antihypertensives, antidepressants, and antipsychotics), poor general health, female sex, and older age. There have been numerous studies on the impact of dry mouth syndrome on the oral and general quality of life of the elderly because it is one of the problems most frequently reported and treatment success rates are low (Hahnel, Schwarz, Zeman, Schäfer, & Behr, 2014). Various approaches have been studied, including products specifically indicated for dry mouth, such as artificial saliva and saliva-stimulating drugs (pilocarpine), but the outcomes have not been encouraging (Porter, Scully & Hegarty, 2017). Palliative measures to xerostomia have been suggested to include: rectification of the underlying cause of xerostomia, avoidance of dry hot environments, dry foods, drugs, alcohol consumption, and smoking, among others. All these situations and activities mentioned above can increase dryness of the mouth. Also, other palliative measures to xerostomia include, regular moistening of the mouth with small sips of water, lip balm, or olive oil.

Individuals with dry mouth require some preventive measures that will help to reduce the adverse effect of dry mouth. According to Plemons, Al-Hashimi and Marek (2014), preventive measures inhibits the consequences of the absence of saliva, including caries, periodontal disease, and candidiasis. Many people experience decreased saliva production with age and it is also a known side effect of many medications. The problem with reduced saliva production is that sugar and acids build up more readily in the mouth, resulting in an increased chance of cavities which can lead to some of the dental health problems mentioned above. It can also result in dried and cracked lips, swollen tongue thereby making it difficult to speak and swallow. As a Public Health Educator, to combat these situations adverse to health, advise your older adults to drink water regularly and avoid sugary foods and drinks. However, Gerritsen (2010) suggested the following to stimulate saliva production; chewing gum and lozenges, regular mouth rinses which can prevent acid build-up among others.

Oral Cancer

Abnormal growth in the mouth region which is known as oral cancer can result from poor oral hygiene especially among the elderly people. Oral cancer represents a major threat to the health of adults and the elderly in both high- and low-income countries. Petersen et al (2015) highlighted that it includes, cancer of the lip, oral cavity, and pharyngeal cancer and is the eighth most common cancer globally for which incidence and mortality rates are higher in men than in women. The prevalence increases with older age, and oral cancer is of particular concern among over-65-year-olds. Variations among countries are attributed to differences in risk profiles and the availability of and accessibility to health-care services. Torres-Carranza (2018), postulated that oral cancer is usually treated with surgery, radiotherapy, and/or chemotherapy for which advances have led to a reduction in the mortality rate and to an increased number of survivors. Oral cancer and its treatment can both be responsible for major anatomical changes in the oral cavity which alters the basic functions in human life such as speaking, chewing, swallowing among others hence, substantially impairing the quality of life of survivors. For possible explanations to the relationships with this chronic disease, scientists are currently exploring several mechanisms that may connect and explain why periodontal diseases are related to chronic conditions discussed above (Beck, Garcia, Heiss & Vokonas, 2016).

General Health Problems Associated with Poor Oral Hygiene among the Elderly Malnutrition

Undoubtedly, the oral cavity remains the entry point for all the food nutrients into the body systems. Therefore, any malfunctioning in the oral cavity will negatively affect the feeding pattern and the nutritional outcome of an individual especially the elderly people. Periodontal diseases and other dental health problems inhibit munching and mastication. This will to a large extent affect the type of food eaten by an individual and the consequent poor nutritional outcome and malnutrition. According to Ritchie, Joshipura, Hung and Douglass (2013), nutrition is a mediator in the relationship between oral and systemic disease and there is an associations between specific measures of adult oral health and

nutrition outcomes. So, when the elderly is not eating the required type of food and the systems starved of the food nutrients necessary for their health promotion, malnutrition will set in which is very adverse to the health of the elderly people due to their aging and degenerative processes.

Cardiovascular Disease

The heart pumps blood which circulates to other parts of the body and back to the heart again. Therefore, it is possible for the heart and the blood vessels to receive signal of any malfunctioning parts of the body. Walls and Steele (2011) reported that studies carried out about a decade ago demonstrated that both periodontal disease and total loss of teeth were associated with greater risk for cardiovascular disease. Holmlund et al (2006) carried out a study to ascertain if the severity of periodontal disease and number of remaining teeth was related to a past history of heart attack and high blood pressure or hypertension (HT). Severity of patients' periodontal problems was estimated and it was discovered that the severity of periodontal diseases was related to HT independent of age and to the prevalence of heart attack (number of patients reporting that they had a past heart attack) in middle-aged subjects only. On the other hand, the number of teeth was associated with the prevalence of heart attack independent of age. In summary, the study showed that both periodontal diseases and overall tooth loss from any cause are closely related to cardiovascular diseases.

Diabetes

It is on records that formation of new cells and tissues are slowed down in diabetic patients than among other people hence, healing of wounds is also retarded. A new Korean study has identified a relationship between total tooth loss from any cause and diabetes (Jung, Ryu & Jung, 2011). The authors were of the view that severe periodontal disease is also associated with diabetic people and are more likely to have periodontal disease than people without diabetes, probably because diabetics are more susceptible to infection anywhere in the body. Shultis et al (2017) affirmed that periodontal diseases are often considered the 'sixth complication' of diabetes. However, poorly controlled diabetics are especially at risk because they are more likely to develop periodontal disease than well-controlled diabetics. According to American Academy of Periodontology et al (2011), emerging evidence also suggests that periodontal disease predicts the development of end-stage kidney disease in diabetic patients which puts diabetic patients at increased risk for diabetic complications.

Stroke

Every parts of the body especially the brain needs blood supply to be alive and function effectively. So, when any part of the brain receives shortage of blood supply, it results to a health problem known as stroke. Beck et al (2014) highlighted that cerebrovascular ischaemic strokes are the commonest kind of stroke and occur as a result of an obstruction, usually a clot, within a blood vessel supplying blood to the brain. This underlying condition results in the development of fatty deposits lining the vessel walls, causing hardening of the arteries. After heart disease, stroke is the next most important consequence of hardening of the arteries and it remains the third leading cause of death (after heart disease and cancer) in most developed countries (Beck et al 2014). Studies have found that poor dental health is associated with stroke. Beck et al (2014) did not separate haemorrhagic (bleeding) stroke from ischaemic stroke (clot) but observed a very strong association of periodontal disease with the incidence of stroke among US veterans. The veterans are known to have higher disease experience of stroke, but combining both causes of stroke might have underestimated the true impact of periodontal diseases.

Kidney Diseases

The kidney which is also known as osmoregulator maintains fluid balance in the body. Changes in the mouth, such as periodontal disease and other signs of poor oral health are common in patients with chronic kidney disease (CKD) and may contribute to increased health complications and death rates because of consequences such as inflammation, infections, protein-energy wasting, and complications from hardening of the arteries (Beck et al (2014). Poor oral health in CKD patients may thus represent an important but often overlooked problem. However, Akar et al (2011) maintained that it is yet to be determined whether and how more successful management of poor oral health and periodontitis will

reduce the risk and complications in CKD patients. The consequences of poor oral health may be more severe in CKD patients because of advanced age, common existing additional diseases such as diabetes, concurrent medications and a state of reduced immune function. This may increase the risk for consequences of periodontitis and other oral and dental health conditions. Poor condition of teeth and other signs of poor oral health should be a good pointer and warning sign at early stages of CKD.

Dementia

Any injury, infection or disease within the head region is most likely going to affect the normal functioning of the brain which can cause partial or total memory loss. Gat (2006) explained that tooth loss from any cause has been reported to be associated with Alzheimer's disease and dementia. A new study involving more than 4,000 Japanese participants aged 65 and above who participated in a dental examination and a psychiatric assessment when compared with participants who still had many of their natural teeth, those with fewer or no teeth were much more likely to have experienced some memory loss or have early-stage Alzheimer's disease (Okamoto & Morikawa, 2010). Similarly, it is on records that periodontal diseases have been shown to have remarkable association with memory loss. Noble et al (2009) reported that impaired or delayed memory and calculation has been discovered to be associated with periodontal disease as shown by blood tests.

Adverse Pregnancy Outcomes

The health status of a pregnant woman has direct or indirect effect on the unborn baby which can lead to pregnancy complications and premature birth. Cullinan, Ford and Seymour (2017) reported that premature birth rates have not reduced significantly despite advances in antenatal care and almost 50 per cent of mothers delivering preterm babies have none of the known risk factors such as smoking, alcohol consumption, previous low birth weight baby, stress, illness, low socio-economic status or poor nutrition. However, the authors added that infections particularly maternal genito-urinary tract infections were implicated in a large number of cases for which researchers think that maternal infection and inflammation elsewhere may also play a role. Similarly, bacterial infection from periodontal diseases in the mouth may affect the health of the pregnant mother leading to low birth-weight and premature contractions of the uterus. Babies born prematurely are at a significant risk of developing serious and lasting health problems and have an increased risk of death. Cullinan, Ford and Seymour (2017) reported that there was a significant association between preterm birth and periodontal disease, pregnant women are hormonally more likely to develop or worsen existing periodontal disease and this will thus affect about three out of every four pregnant women which will in turn exposes them to increased risk of premature birth. On this note, Offenbacher (2016) explained that available findings from a number of studies strongly support the concept that maternal periodontal disease is associated with prematurity. Furthermore, hardening of the arteries for example in the legs otherwise called peripheral vascular disease (PVD) which is very common with pregnant women, may result in reduced blood flow. This can endanger the health and life of the mother and the unborn baby or worsen complications. Meurman et al (2004) in a recent review concluded that periodontal disease appears to increase the risk of PVD but, this statement needs to be confirmed by further studies.

Aspiration Pneumonia

Elderly people are more vulnerable to infections and diseases due to reduced immunity, tissue composition and other degenerative processes. Chalmers (2011) reported that a relationship has been established between poor oral health and aspiration pneumonia (inhaling bacterial infection of the lungs) among elderly people and the risk factors include, problems with swallowing, needing help with feeding, and the infective contribution of poor oral hygiene and dental decay.

Stomach Ulcers

There are naturally existing floras and faunas in the mouth since the mouth serves as a reservoir for bacteria. According to Beck et al (2018), a recent study has shown that patients with poor oral hygiene are more likely to have 'H. pylori', the bacterium that causes stomach (peptic) ulcers, both in plaque on

their teeth and in the stomach. However, this finding suggests that the mouth may be a reservoir for H. pylori, and potentially a source of transmission or reinfection.

Preventive /Control measures of Diseases Associated with Poor Oral Hygiene among the Elderly

Public health message revolves around prevention and reassurance. Therefore, prevention is the best approach to dental and general health problems associated with poor oral hygiene especially among the elderly people. However, Slade, Spencer and Roberts-Thomson (2017) suggested the following as the preventive/control measures to dental health problems: □ Brush teeth twice a day with fluoride toothpaste

- Decrease the amount of sugary foods and drinks intake.
- Drink water after each meal and gaggle thoroughly.
- Change toothbrush regularly, at least every three months.
- Switching to an electric toothbrush may be easier to use and is more effective.
- Visit the dentist regularly for dental checkup.
- Always maintain good oral hygiene
- Options like using a fluoride rinse or fillings and crowns is also suggested to combat advanced tooth decay.

Conclusion

Conclusively, poor oral hygiene among the elderly is a serious health problem and should be given adequate attention and treated thoroughly as it poses a big threat to health and the general wellbeing of the elderly people. It is associated with tooth loss, limitation to choice of food which affects their nutritional intake, poor speech articulation, lack of good social relationship, Non symmetrical of jaw and face, psychological trauma such as emotional displacement and low self-esteem. Also, poor oral hygiene among the elderly people has a strong link to some of the systemic diseases that affects the older adults such as cardiovascular diseases, Diabetes, stroke, kidney disease, dementia, adverse pregnancy outcome, aspiration pneumonia and stomach ulcer.

Recommendations

Based on this paper review, the following recommendations were made:

1. Dental and general health professionals should carry out adequate oral health sensitization as regards promoting good oral and general health of the elderly people through community-based enlightenment programmes.
2. Individuals and families should make available the services of caregivers to the elderly people in order to assist them in the maintenance of good oral hygiene and general health.
3. Government should subsidize health care services and make it available, accessible and affordable to the people especially the aged so as to ensure good health of the citizenry
4. Government should partner with the Ministry of health to ensure that more dental health professionals are trained and employed to render dental health care services to the public.
5. Individuals especially the elderly people should visit the dental clinic for professional dental cleaning for at least twice a year.

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