

Oral Health and Its Significance

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ABSTRACT

People place high importance and care on their faces and bodies. They, however, pay less attention to the care of their mouth as they do to other parts of their body. Interestingly, oral health is integral to general health of an individual. The aim of this review article was to report the significance of oral health. Oral health and its significance was categorized into components of oral health, prevalence of oral diseases, relationship of oral health to general health, the psychosocial and economic impact of oral health and level of awareness of oral health. Clearer understanding on oral health and its significance will greatly enhance the utilization of oral health facilities and services geared towards improving the quality of life of citizens.

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INTRODUCTION

Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity (WHO, 2020). The word 'oral' has to do with the mouth. In the mouth are the teeth, gingiva, tongue, mandible, maxilla and associated bones; as well as the mucosal coverings. The mouth is also very closely related to the paranasal sinuses, the ears, nose and throat, the eyes, the meninges and thus the brain (Berger, 2017; Gilbert *et al.* 2008).

Oral health therefore refers to the state of being free of mouth and facial pain, infections, sores and other diseases that limit an individual's capacity in biting, chewing, smiling, speaking and psychosocial well-being (WHO, 2012). It is the health of the teeth; gingiva and the entire orofacial system that allows us smile speak and chew (CDC, 2020).

Components of oral disease

Components of oral disease include dental caries (Figure 1), periodontal disease (Figure 2), oral tumors (Figure 3) orodental trauma (Figure 4), tooth loss (Figure 5), congenital defects such as cleft lip and palate (Figure 6) and oral manifestations of systemic conditions such as HIV, diabetes mellitus.

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Prevalence of oral diseases

The prevalence of oral diseases is variable, depending on the type of oral condition and the study group. All age groups and social strata are affected: children, teenagers, middle-aged group and the elderly (Danielson *et al* 2011; Chukwuma *et al* 2014).

Braimoh *et al.* (2011) reported dental caries prevalence of 45% with a mean decayed, missing and filled teeth (DMFT) of 1.15. The mean DMFT increases significantly with age. Okeigbemen (2003) reported dental caries prevalence of 33% with a mean DMFT of 0.65 among 12–15-year-old school children. Untreated caries revealed that the treatment needs were high with 81.4% of the school children never visited a dental clinic. Globally, it is estimated that 2.3 billion people suffer from caries of permanent teeth and more than 530 million children suffer from caries of primary teeth (WHO 2020)

Umoh and Azodo (2012) reported a prevalence of gingivitis and periodontitis among an adult male population in Benin City, Nigeria of 75.45% and 15.4% respectively. The prevalence in this study is similar to

other reports in Nigeria and other parts of Africa and the world at large (Miyazaki *et al.* 1991). The prevalence and severity of periodontal diseases seem to increase with age (Umoh and Azodo, 2012).

The real burden of oral cancer is poorly captured in Nigeria due to under-reporting and lack of population-based registries. However, in a multicentre study carried out across four centres in Southern and Western Nigeria, the highest incidence of oral cancer was found

in Benin City accounting for 47.53% of cases (Omitola *et al.* 2017).

In Nigeria, oral cancers have been estimated to account for about 1146 new cases with an estimated mortality of 764 cases annually in 2012 (Ferlay *et al.* 2012). Oral cancer is the sixth commonest cancer globally with a high incidence in South Asia and the most common head and neck cancer (Shah and Gil, 2009).



Figure 1: Dental caries



Figure 2: Chronic gingivitis with poor oral hygiene



Figure 3: Oral tumour



Figure 4: Dental trauma



Figure 5: Tooth loss



Figure 6: Cleft palate

Available from Cleft palate photo gallery/ paediatric palate and reconstructive surgery. (. <http://www.uhhospitals.org/>)

Relationship of Oral Health to General Health

Most oral diseases and conditions share modifiable risk factors with the leading non communicable diseases (Cardiovascular diseases, Cancer, Diabetes Mellitus, Respiratory dx). These risk factors include tobacco use, high alcohol consumption (alcohol abuse) and unhealthy diets high in free sugars (World Dental Federation, 2020).

Sex hormones

The sex hormone oestrogen can promote keratinization and increase the mucopolysaccharide content of the connective tissue while progesterone can increase the permeability of gingival blood vessels. These make the periodontal tissues to have an exaggerated response to plaque with clinically obvious changes at puberty, during menstruation, pregnancy and use of oral contraceptives (Guncu *et al.* 2005). Thus, small amount of plaque produces an obvious gingivitis (with gingival swelling and bleeding) at puberty, during menstruation and pregnancy.

Diabetes Mellitus (DM)

In DM, as a result of the chronic hyperglycaemia, there are elevated levels of sorbitol and fructose (reducing sugars) due to aldose reductase activity (Soory 2002). These reducing sugars form reversible products with blood and tissue proteins by non-enzymic glycation and oxidation e.g glycated haemoglobin A1. These reversible compounds undergo irreversible structural changes to become advanced glycation end products (AGEs) (Mealey and Ocampo, 2007). Accumulation of AGEs can lead to secretion of pro-inflammatory cytokines and microvascular changes including vascular permeability. The periodontal tissues therefore become severely affected in the presence of hyperglycaemia (Mealey and Ocampo, 2007). This presents as gingivitis, periodontitis, periodontal pocket as well as tooth mobility and abscesses of the periodontium.

Oral health can also negatively affect glycaemic control in DM patients. In patients with DM, there is an elevated level of interleukin-6 (IL-6), tumour necrosis factor-alpha (TNF-alpha) and C-reactive protein (CRP) which contributes to both microvascular and macrovascular complications. These elevated levels of systemic markers are also seen in periodontal diseases. These markers impair intracellular insulin signaling, in part, through serine phosphorylation of insulin receptors substrate proteins and thus potentially contributes to insulin resistance (Rehman and Akash, 2016). The systemic inflammation that is associated with periodontal disease may therefore enhance the diabetic state (Preshaw *et al.* 2012).

Haematological conditions

Haematological conditions such as anaemia, neutropenia, leukaemia all reduce the inflammatory cells response to plaque bacteria. The consequence of which is recurrent infections in the periodontium, gingival bleeding, ulcers and gingival enlargement from infiltration of leukaemic cells into the periodontium (Eley, Sorry and Mason, 2010).

Cardiovascular Vascular disease (CVD)

Patients with cardiovascular atherosclerotic disease have been shown to have increased level of serum inflammatory markers such as Interleukins -6 and C-reactive proteins (CRP). Moreover, after treating periodontal disease in patients with CVD, significant reduction in levels of inflammatory markers such as CRP is observed (Montebugnoli *et al.* 2004; D'Aiuto *et al.* 2005).

Oral bacteria including *Prevotella intermedia*, *Porphyromonas gingivalis*, *Aggregatibacter actinomycetemcomitans* have been found in atheromatous plaque (Padilla *et al.* 2006). These bacteria stimulate macrophage to form foam cells in the presence of low density lipoprotein (LDL) (Padilla *et al.* 2006).

Porphyromonas gingivalis also express the haemagglutinin genes which serves an adhesin molecule in the adherence of *Porphyromonas gingivalis* to human coronary artery endothelial cell. These cellular events lead to atheroma formation (Miyakawa *et al.* 2004). This implies a possible association between periodontitis and cardiovascular atherosclerotic disease.

Pregnancy

Periodontal disease can also be a risk factor for adverse pregnancy outcomes such as preterm low birth weight deliveries (Umoh *et al.* 2012). Plaque bacterium *Fusobacteria nucleatum* has been linked with adverse pregnancy outcome (Loe, 1965). It is suggested that this bacterium enter the mother's bloodstream through the oral cavity to the uterus (Umoh *et al.* 2012). It has been postulated that with poor oral hygiene, plaque bacterial endotoxins such as lipopolysaccharides become translocated into the maternal uterus through the bloodstream which may lead to chorioamnionitis (Haffajee and Socransky, 1994).

The action of maternally produced CRP in response to the proinflammatory cytokines IL-6 and tumor necrosis factor-alpha associated with dental plaque induced periodontal disease has also been postulated (Haffajee and Socransky, 1994). There is therefore need for treatment in pregnant mothers presenting with periodontal disease (Toygar *et al.* 2007).

Psychosocial and economic impact of oral health

One of the features of oral diseases especially arising from dental caries and its complications is pain which

can disturb patients' daily activities resulting in loss of man hours and hence reducing productivity at work (Listl *et al.* 2015). Altered taste may also be a feature of oral diseases making the patient not to enjoy their meal (Eley, Sorry and Mason, 2010).

Patients with periodontal diseases present with plaque and calculus accumulation as well as gingival bleeding and swelling which can be very unsightly. Halitosis frequently accompany oral diseases especially when oral hygiene is poor (Eley, Sorry and Mason, 2010). Halitosis in particular, negatively impacts on the individual's daily activities like communication with other persons, self-esteem, self-confidence, social and intimate relationship like dating, marriage, employability, and carrier progression. It is also a source of embarrassment for relatives and friends of the individual afflicted with the condition (Azodo *et al.* 2011).

Level of awareness of oral health

Oral health is integral to general health of an individual (CDC, 2011). People however, are unaware of its importance. Erhabor and Ikpefan (2020) reported on a number of reasons for the low level of dental awareness including cultural practices, low socioeconomic status (educational and income level), lack of enlightenment campaigns in both print and electronic media as well as few available oral health facilities, both public and private dental clinics.

Despite the fact that dental care is presently a component of primary health care, the first level of contact in the national health systems in Nigeria is the secondary health care centers, as no local government health center in Nigeria has dental unit or dental personnel. These secondary health care centers are mostly sited in state capitals and some cities in the country.

The dental clinic environment and attitude of the dental personnel may greatly affect the psyche of the individual who may never want to present to the clinic again. It has also been reported that adequate knowledge by health workers at all levels of health care will enable them to properly educate patients on good dental care and make appropriate referrals to the dentists (Amuh *et al.*, 2014).

The proposed solution to low oral health awareness include Increase enlightenment campaign and improve government policy and implementation in the area of oral health care. Good interpersonal and work relationship between the dental care practitioner and other medical colleagues on the one hand and patients on the other hand is advised to improve oral health awareness by individuals, people and community at large.

CONCLUSION

The importance of oral health to the individual cannot be over emphasized as it has been shown to greatly affect the general well-being and health of the individual. A healthy mouth in a health body is one to be sought by all.

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Conflict of Interest

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