

# A Review Article of Oral Health and Diabetes Mellitus

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**Abstract-** It's a fact that about 5% of the world's population is affected by diabetes. The term "diabetes mellitus" is a group of certain disorders, such as fat and protein metabolism, high glucose levels, and abnormalities of carbohydrate that characterize these disorders. The number of infected patients is predicted and expected to rise by 50% by the year 2030. The review article discusses the associations between diabetes and periodontal disease and the oral health manifestation of diabetes. There is a lack of oral health awareness among health professionals and even patients infected with diabetes. There is strong evidence supporting the relationship between diabetes and oral health. Diabetes mellitus is associated with several disorders and oral diseases. Periodontitis is a risk factor in subject with diabetes for poor metabolic control. Thus, the authors reviewed the literature to identify why diabetes causes oral conditions.

Additionally, they have identified the glycemic control as a result of the modification of the literature concerning periodontitis. Statistics have shown that periodontitis is a diabetes complication, although several disorders associated with diabetes. Periodontitis is at the risk of developing other periodontal diabetes complications and also poor glycemic control. On the same breath, patients with poorly controlled diabetes and longstanding are at the risk of developing oral candidiasis. Evidence supports that the first clinical manifestation of diabetes is the periodontal changes. Thus, the disease is a significant healthcare problem. Patients with diabetes mellitus can be supported, and their general health to be positively affected by oral health care providers.

**Index Terms-** Diabetes mellitus, Periodontitis, Oral care, Dental caries, Candidiasis, Periodontal disease, Inflammation.

## I. INTRODUCTION

In modern times, there is a lack of inclusion of the soft and hard tissues of the oral health and diseases in the most curricular for medical professionals. There has been a mounting interrelationship according to the scientific evidence in the most recent couple of decades. The interrelationships are made possible by the novel technology. This aids the contemporary scientific methods and the specialists who are in a position to interrupt the abundance of data, which is unfathomable. Thus, the paper aims to discuss and summarize the interrelationship between these two associations of diabetes and oral health. The main is to introduce oral health to the medical health care professionals in managing and preventing diabetes, which contributes to the wellbeing and improving the quality of life of patients infected with diabetes. The links between diabetes and oral health are universal. Thus the review will represent the recent findings from different countries,

and it will offer examples where appropriate and applicable from a variety of countries.

## II. METHODS

Systematic literature about oral health and diabetes mellitus was conducted using some of the databases such as Pubmed, Cochrane, Medline. On the same breath, several keywords were used, such as diabetic patients, oral health, diabetes mellitus, people with diabetes, dental care, oral hygiene, awareness, dental care, knowledge, dental visit, practice, perception, and attitude. For each database, there was an inclusion of individual strategies considering the specific indexing terms for each database. Some combinations of search terms used include Medical Subject Heading, which is abbreviated as MeSH, and Boolean operators. The research was carried out in the most recent to ensure the most current literature is included in this review.

## III. PERIODONTAL DISEASE

The majority of any population around the globe are suffering from periodontal diseases. This type of infection is commonly referred to as gum disease. According to Borgnakke (2019), it manifests itself in the body through bleeding and swelling of the soft tissues around the teeth. This kind of disease affects a large population around the world, which constitutes a range of 50 to 90 percent of the adult population (Sughra & Imran, 2018). The remedy to such a disease is to maintain a home oral hygiene and regular brushing of teeth. It also recommends using interdental brushes or dental floss for interdental cleaning. Periodontitis is a disease that is characterized by periodontium chronic breakdown, irreversible, and inflammation-based. And, it also consists of soft and hard tissues surrounding the teeth. Mostly, the dentate adults are approaching 30 years, and the older tend to suffer from this form of periodontal disease.

## IV. DENTAL CARIES

Caries is another dental disease that was the most prevalent condition, and it was evaluated for the entire Global Burden of Disease. The study with the global prevalence shows that if caries fails to be treated, it leads to death of the inner soft tissue of the tooth known as "pulp," which consists of the nerves, connective tissues, and the blood vessels (Tjäderhane & Paju, 2019). This will cause toxins to the tooth, and they will exude from the root tip of the tooth, which will end up causing infection and jawbone inflammation.

## V. ORAL MUCOSAL DISEASES

The development of certain oral soft tissues is associated with diabetes. Although some of these developments are rarely reported among different diabetic population. There are also reports of oral fungal infections as well as traumatic ulcers, recurrent aphthous stomatitis, irrigation fibromyalgia, and greater prevalence of fissured tongue. The diabetic care between the healthcare providers and physicians is coordinated by these associations.

## VI. SALIVARY DYSFUNCTION

Diabetes is classified by the American Diabetes Association in two significant forms: type 1 and type 2 diabetes. Unlike type 1, type 2 combines with insulin secretory defect and insulin resistance, and it is the most common form of diabetes. On the other hand, type 1 diabetes is caused due to the autoimmune destruction of the humoral mediators and pancreatic cells (Kisely, Laloo & Ford, 2018). Periodontitis is an inflammation of the tissues that surrounds and supports the teeth, and it has been reported as the sixth complication of diabetes. Diabetic patients in both type 1 and type 2 have been reported to have salivary gland hypo function. This is characterized by a patient experiencing a feeling of oral dryness.

## VII. CONSEQUENCES IN THE ORAL CAVITY

Arguably, adults with diabetes are characterized by removable prostheses and fungal infections of oral mucosal surfaces. Zygomycosis, candidiasis, and aspergillosis are common opportunistic fungal infections in diabetes though candidiasis is the most common one. According to recent studies, diabetic patients have been showing increased oral candida carriage compared to those who are non-diabetic (Borgnakke, 2019). This could have been attributed to decreased neutrophils, candidacidal activity, increased salivary glucose levels, and reduced level of

salivary flow rate. This is the alteration of wound healing among the patients who have diabetes due to the host defense changes and collagen metabolism. The decreased solubility of the existing collagen and the excessive production of collagenase alters that healing process since there is a shift in the collagen turnover.

## VIII. CONCLUSION

From the article review, it can be conclusively argued that diabetes has adverse effects on oral health. Thus, it has been evident that patients who have diabetes have some oral complications, and therefore they require dental care as part of their primary health care. To combat some of these complications, prevent morbidity and mortality, and reduce the inflammatory burden system, it is a matter of existential importance to provide proper care to the patients who have diabetes to improve their wellbeing and the quality of their lives too.

## REFERENCES

- [1] Borgnakke, W. S. (2019). IDF Diabetes Atlas: Diabetes and oral health—a two-way relationship of clinical importance. *Diabetes research and clinical practice*, 107839.
- [2] Kisely, S., Laloo, R., & Ford, P. (2018). Oral disease contributes to illness burden and disparities. *The Medical Journal of Australia*, 208(4), 155-156.
- [3] Molina, C. A., Ojeda, L. F., Jiménez, M. S., Portillo, C. M., Olmedo, I. S., Hernández, T. M., & Moreno, G. G. (2016). Diabetes and periodontal diseases: an established two-way relationship. *Journal of Diabetes Mellitus*, 6(04), 209.
- [4] Sughra, U., & Imran, M. (2018). Co-morbid depression in individuals with type 2 diabetes mellitus. *J Pak Med Assoc*, 68(1), 109-11.
- [5] Tjäderhane, L., & Paju, S. (2019). Dentin-Pulp and Periodontal Anatomy and Physiology. *Essential Endodontontology: Prevention and Treatment of Apical Periodontitis*, 11-58.

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