

The effects of periodontal diseases on mental health and their association

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ABSTRACT

In this study, the recent and numerous researches about the relationship between periodontal diseases and mental health has been reviewed, and then subsequently it has been believed that the association and the relationship between these two matters is very wide and more important than what humans had thought up to today. This research deals with how periodontal diseases may cause or aggravate various factors such as stress, schizophrenic diseases, anxiety, psychological dysfunctions, etc. and sometimes even vice versa. Although up to today decisive association and connections between periodontal diseases and mental illnesses have been discovered so far, but with confidence it can be said that still so many questions and challenges remain unanswered in this regard. In this present study, in addition to clarifying and making out the above-mentioned causes, the necessity of conducting more research as well as deep curiosities is also pointed out and highly suggested.

Keywords: Periodontal disease, Mental health, Oral health, Stress, Anxiety, Schizophrenia

Introduction

The general health of the oral cavity matters to a large degree for both individuals health and the society, in such a way that the oral wellness affects the general health of the body and social relations from different aspects, which is directly related to psychological wellness. Unfortunately, access to dental services is not the same for all people over the world, and these inequalities need to be managed[1].

Among the above mentioned matters, the periodontium health, which is a connective tissue that includes: cementum, periodontal ligament, alveolar bone and gingiva, is closely related to the level of human mental health[2, 3]. A study which had been done by J Indian Soc Periodontol shows a strong relationship between periodontal disease and mental depression[4]. Another research which had been published very recently by J Oral Bio Craniofac res In 2023 clearly proves that periodontitis increases the the

risk of depression, anxiety, bipolar disorder, Schizophrenia, dementia and other psychoses[5]

Hence the periodontium unlike some years ago, is known as a structure or a component that is potent to impress humans mental health[6]. Although in the past studies researchers got a thought that psychological health as well as oral health effect on each other in a bidirectional way, but some recent studies have broken this belief to a significant extent and narrate that only the periodontal diseases could cause mental issues. In another word, recent studies show that the psychological abnormalities can not cause periodontal disorders and they aren't correlated[7, 8].

However, in this study, we will find out the association between periodontal diseases and mental health based on most possible recent studies.

Background

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Periodontal health is considered to be associated with mental health, and this review aims to find out the present understanding of this concept.

Materials and Methods

Type of research: Review

Sources: Articles which were published in Pubmed, Elsevier, ScienceDirect, ResearchGate and Hindawi from 2018 to 2024.

Results and Discussion

The studies that has been done so far, shows a significant relationship between periodontal diseases and mental states. Various causes, including behavioral habits, schizophrenia, anxiety, microbial imbalance, etc., play a role in this regard. However, the current studies has limitations and more researches are needed to understand the mechanisms of their feasibility.

The effect of periodontal disorders on psychological well being and their association

1. Association between bacterial growth in periodontium and Cortisol: Cortisol which is a stress marker is potent to cause growth of bacteria in the periodontium[9].

2. Association between low-grade chronic inflammation and stress:

Stress is believed to be able to induce a low-grade chronic inflammation of the periodontium[9].

3. Association between periodontal diseases and SMI (Serious mental illness): Cai v et al, in 2022 found that, people who are suffering from SMI may undergo periodontal diseases as compared to the individual who aren't suffering from that[10].

4. Association between periodontitis and behavioral mechanisms:

Improper behavioral attitude such as negligence of maintaining a good oral hygiene, increased smoking and etc, decrease the body immune system which increases the risk of periodontitis[11].

5. Association between periodontitis and Mental awareness as per educational state:

An analysis by Tiwari T et al, in 2022 found that the individuals who possess education, care about oral hygiene and health in a more appropriate frequency, hence as a result they suffer by periodontal diseases less than uneducated people[12]

6. Association between microbial dysregulation and psychological issues:

Based on a research which had been done in 2023 by Hans Erling Skallevoid et al, microbial imbalance in the oral cavity and bacterial translation could occur due to mental illness[13].

7. Association between periodontitis and hospitalized patients with mental disorders:

Periodontal disorders develop in hospitalized patients more often than others, this happens due to disability to perform an appropriate oral neatness and psychiatric drugs adverse effect[14].

8. Kalaigian A et al, in 2023 stated that all the individuals with mental issues mainly those who are confirmed to have anxiety and depression, are more susceptible to develop periodontitis, tooth loss, tooth decay and etc, therefore it's essential for the dental doctors as well as general physicians to consider both oral and mental health in order to make any kind of treatments[15].

Therapeutic solutions

1. Stress management and subsequent reduction of cortisol levels in the body. This will be achieved by acquiring mindfulness and having relaxation which is possible by undergoing psychotherapy[16, 17].

2. Aiding the patients with serious mental illness who suffer from periodontitis. It improves their symptoms and general health. More studies are needed to be sure of the accuracy of this claim[18, 19].

3. Maintaining good oral hygiene in order to improve immune system. Very recent studies proved that brushing the teeth as well as regular dental visit prevents periodontitis[20].

4. Educating the smokers to reduce it and get a healthier periodontium. The individuals who stopped smoking in the pas five years, could suffer by periodontitis and were at a higher risk as compared to non smokers[21].

5. Teaching and educating people helps to improve oral health and helps to prevent periodontitis. This claim has been proven by Walther C et al, in 2022[22].

6. Managing microbial imbalance aids such patients to possess a better state of oral health and wellness, specifically those with psychological disorders[23, 24].

7. Psychiatric dental consultation liaison is a way to improve oral and periodontal health in those who are hospitalized due to mental illness[25].

Current research limitations

1. In a study that was published in 2022, the impact of oral bacteria on brain health and its association with neuropsychiatric disorders was discussed and it had been said that it could be possible if this will be a missing part in the understanding of neuropsychiatric disorders (NPDs), and this new theory was called as Oral Microbiota-Brain Axis

(OMBA)[26, 27]. However, more research is needed to understand its therapeutic mechanisms.

2. Various researches since last three years have explained an association between oral health and anxiety, trauma related disorders, etc and mentioned that the bacteria in the oral microbiota might have a role to cause them, so this finding could help to find new treatments[28, 29]. However, the long-term effectiveness of these interventions needs more research.

3. A very recent study which had been done and published by BMJ Mental Health in 2023 revealed that there is no any associated effect between gingival disease genes and psychological issues but other factors might be the cause[30]. Therefore, more studies are needed to confidently claim this association.

4. The association between periodontitis and mental issues found to have various and different results in different studies and they don't show a similar conclusion at all[31]. Hence it is not possible to surely claim an association between them and more studies are required to be done.

5. Esthetic treatments such as orthodontics and composite veneers have been reported to effect on periodontal health, in which it might be positive and sometimes negative[32, 33]. though this therapeutic solutions are done by anatomical and physiological corrections, but they obviously have mental effects as well[34, 35]. Very rarely researchers focused on this aspect and further studies in this base, could help in a better understanding of this concept.

Preventive instructions

1. Body immune system promotion: various factors such as regular exercise, getting enough protein and etc, helps the body to produce antibodies in a more sufficient and appropriate way, which enhanced the immune system. It is also necessary to possess a normal range of vitamin A and zinc, because the deficiency of them increases the risk of infection[36, 37].

2. Smoking cessation: quitting smoking has a significant effect on the recovery of periodontitis and studies strongly confirm this. Dentists can play a significant role to focus on smoking habits and encourage the patients to quit smoking in order to improve their oral and dental health[38, 39].

3. Oral and periodontal health improvement: prevention, early diagnosis and early treatment of oral and periodontal compartments help to prevent future complications and diseases[40].

4. Public health investigation: focusing on each individual member of the society with a preventive approach, as well as stabilizing public health interventions[41].

5. Keeping oral microbiota balanced: Since one of the etiologies of periodontitis is the imbalance of oral microbiota, regular care of the teeth and oral cavity in order to keep it healthy is considered important in this regard[42].

Conclusion

Periodontal health and mental health are closely related to each other. Further studies are needed to achieve more assurance in various aspects of this regard, as well as to improve treatment strategies.

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