



## REVIEW

Matías Ríos-Erazo<sup>1</sup>.  
S. Aída Borges-Yañez<sup>2</sup>.

1. Facultad de Odontología, Universidad de Chile, Chile.

2. Facultad de Odontología, Universidad Nacional Autónoma de México, México.

**Corresponding author:** Matías Ríos-Erazo. Sergio Livingstone 943, Independencia, Santiago, Chile. Phone: (+56) 229781844. E-mail: gmrios@odontologia.uchile.cl

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## Psychological factors and his influence in the oral health of older people: A narrative review.

**Abstract:** There has been a significant growth in the elderly population of developing countries. This growth leads health systems in those countries to face an increase in consultations for oral diseases for this age group. Therefore, the biopsychosocial approach is essential for healthy aging in the elderly. The objectives of this review article are to identify the psychological factors that have a relationship with most prevalent oral diseases in elderly people (dental caries and periodontal disease), and then describe how tooth loss, the principal consequence of caries and periodontal disease, impacts the mental health of older people. Finally, some proposals for dental work in the elderly are discussed, considering the psychological factors related to oral health.

**Keywords:** *Aged, Psychological factors, Periodontal Disease, Dental Caries, Tooth Loss.*

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### INTRODUCTION.

The increasing age of the world population has an impact on public health; oral health problems have become more frequent and complex. In the older age group, oral diseases are highly prevalent, have both an individual and a social impact (such as a decrease in quality of life), and often lead to high total health expenditure (private and public)<sup>1,2</sup>.

Older people are usually the most impaired oral health group because most do not receive appropriate prevention and effective treatment for their oral health, which leads to dental caries, periodontal diseases, tooth loss and oral mucosal lesions<sup>1</sup>, and there is a cumulative effect of the oral disease in the older age group<sup>3</sup>. In addition, the oral health is an important factor that have a direct influence on the general health and quality of life of older people, and such factors are fundamental for “healthy aging”<sup>1,4</sup>.

There is evidence that oral health influences the mental health of patients, changing their self-esteem, mood and

satisfaction with health services<sup>5-7</sup> and even influencing their social life and quality of life<sup>8</sup>.

In this context, addressing the oral diseases of the older groups requires a multidimensional approach to achieve good results. For this reason, the objectives of this review article are to identify psychological factors that have a relationship with the most prevalent oral diseases in the elderly, such as dental caries and periodontal disease, and to then describe how tooth loss, the principal consequence of caries and periodontal disease, impacts the mental health of older people. Finally, some proposals for dental work in the elderly are discussed, considering the psychological aspects related to oral health.

### PSYCHOLOGICAL FACTORS AND THEIR INFLUENCE ON THE DEVELOPMENT OF ORAL DISEASES.

Globally, older adults show poor oral health, with a high prevalence of periodontal disease, coronal and

root caries, which results in tooth loss<sup>1</sup>. These oral health problems have different psychological factors that can, in turn, influence the development of these diseases.

### Periodontal Diseases

Periodontal disease is a chronic infection that affects the supporting tissues of the teeth and is quite prevalent in older people. Particularly, chronic periodontitis (with attachment loss  $\geq 3$ mm) was prevalent in 97% of Chilean adults between 65 and 74 years of age, 69% of which had severe periodontitis (with attachment loss  $\geq 6$ mm in at least one site)<sup>9</sup>. In México, a study by Borges-Yañez *et al.*<sup>10</sup> found that 28% of a sample of older people experienced moderate periodontitis (with attachment loss  $\geq 4$ mm). In Brazil, a study conducted by the Ministry of Health defined that 3.3% of the adults between 65 and 74 years old had periodontal disease (with attachment loss  $\geq 4$ mm)<sup>11</sup>. In summary, Latin America presents a high prevalence of periodontal disease, and the most complicated factor is that it tends to grow consistently through the years in this region<sup>11</sup>.

The treatment of periodontal disease is expensive at both the individual and community levels. Its manifestations as gingival recession, mobility and tooth loss can affect quality of life<sup>12</sup>. In addition, there are chronic conditions associated with periodontal disease, such as diabetes, cardiovascular disease and smoking<sup>11,13</sup>. For this reason, it is important to have a holistic approach to treating periodontal disease.

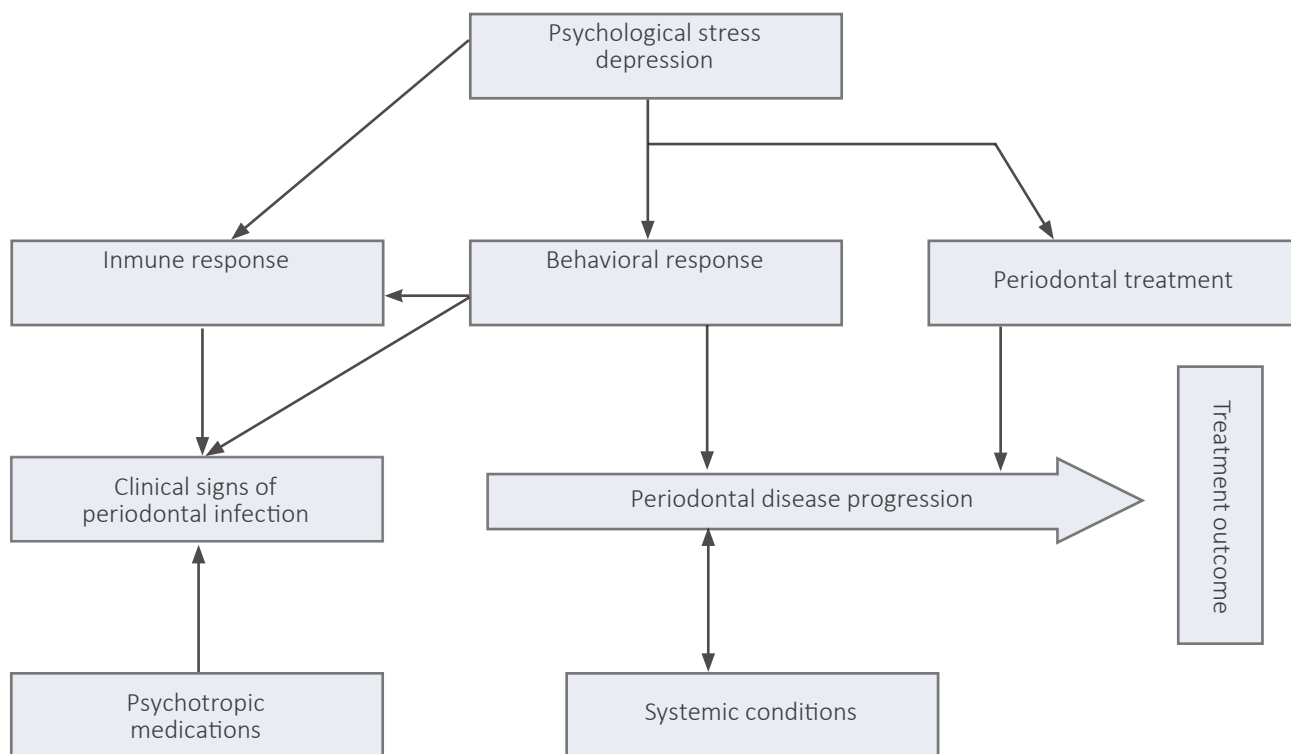
With regard to psychological factors related to periodontal disease, multiple investigations show a primary association with stress and depression. There is evidence that older adults with depression have a higher probability of having periodontal disease due to a lack of interest in personal oral hygiene<sup>14</sup>. One of the explanatory models for the link between depres-

sion and periodontal diseases says that depression influences the immune and neuroendocrine systems, which directly affects inflammatory diseases<sup>15</sup>.

Stress is another factor that influences the development of periodontal disease. Multiple studies report the influence of stress on inflammation and immune response, increasing not only the susceptibility to infectious agents but also the severity of infection and the wound recovery time<sup>16</sup>. Stress increases the secretion of catecholamines and glucocorticoids, which have a negative effect on the production and proliferation of lymphocytes, leading to a decrease in the effectiveness of the immune system and to chronic inflammation<sup>14</sup>. Rosania *et al.* identified that stress levels directly influenced the loss of attachment and probing depth, independently of the oral hygiene habits of the patient<sup>17</sup>. Meanwhile, Atri *et al.* identified that there is a high prevalence of job stress related periodontitis among industrial workers in India<sup>18</sup>.

From another standpoint, depression and stress influence oral health behavior such as tooth brushing, smoking, and diet, all of which relate to periodontal disease<sup>15</sup>. There is evidence that people under high levels of stress tend to stop brushing their teeth because of lack of time to carry out self-care<sup>19</sup>. Peruzzo *et al.* made a systematic review looking for links between periodontitis and stress and identified that 57.1% of the studies showed a significant relationship between the two variables<sup>20</sup>. Warren *et al.* showed the influence of psychological factors, biological conditions and treatment for chronic conditions in the progression of periodontal disease<sup>15</sup>. (Figure 1).

Finally, another recently studied model has linked periodontal disease with attachment theory. This model seeks to predict how individuals regulate interpersonal stress in situations considered threatening to them. Attachment theory is a psychological

**Figure 1.** Model of the effects of depression and chronic stress in periodontal disease.

model that relates to the continuous interaction between infants and their primary caregivers in the first months of life. Evidence shows that this theory is directly related to patients' health behaviors and use of dental services, indicating that individuals with chronic periodontal disease and avoidant attachment tend to begin dental treatment late and that those with anxious attachment are more likely to have an increased consumption of tobacco, a risk factor for periodontal disease<sup>8</sup>. This speculation would be an interesting line of research to pursue.

### Dental Caries

Tooth decay is currently one of the most common chronic diseases, generating an important public health problem because of its high prevalence and treatment costs<sup>1</sup>. Various studies have shown that in developed countries, the DMFT index for older adults ranges

from 22 to 35<sup>1</sup>. A study by Arteaga *et al.*<sup>21</sup> showed that 100% of a sample of seniors (aged 65 to 74 years) had a history of caries, the mean DMFT was 24.9, the main DMFT component was missing teeth, and 45.9% of the sample had untreated cavities. Meanwhile, a study by Islas-Granillo *et al.* in Mexico found root caries in 96.5% of the sample and a root caries index of 37.7%<sup>22</sup>. In Brazil, a study by Marques *et al.* showed that the prevalence of root caries in the elderly was 13.6%. The index of decayed and filled dental roots was 0.32, and most of the index represented by untreated caries<sup>23</sup>.

The causes of tooth decay in older adults tend to be multifactorial<sup>24</sup>. Holst *et al.* established a multi-causal model for dental caries, which explained the interaction among behavioral, social and environmental factors that leads to a biological process that

consistently generates tooth demineralization<sup>25</sup>. For this reason, psychological factors play an important role in dental caries development.

Depression is an important mental pathology that directly influences the evolution of untreated caries, proving to be a powerful predictor of the disease<sup>24</sup>. It is noteworthy that depression in the elderly would be of concern considering the significant increase in this segment of the population. In addition, this age group is vulnerable to more depression than younger individuals due to a combination of factors such as physiological limitations of age, chronic medical conditions, use of certain medications and stressful situations<sup>14</sup>. One symptom of this mental illness is a lack of interest in performing daily activities, which influences the deterioration of oral hygiene, and consequently causes caries. Additionally, depression generates an increasing preference for carbohydrate intake, which is generated by reducing the serotonin and cravings for sweet foods, a risk factor in the development of caries. Furthermore, the use of antidepressant medications (such as second generation, or "heterocyclics") cause hyposalivation, which increases the risk of developing cavities<sup>24</sup>.

Personality is a factor that has shown to influence the development of caries and its consequences (for example, tooth loss). Thomson *et al.* identified personality factors that differentiate people with higher and lower levels of decay. For example, people with negative emotionality that have lost at least one tooth had more tooth decay than other assessed personality factors<sup>12</sup>. Unfortunately, no studies that account for this relationship in older people were found.

The sense of coherence (SOC) is another factor that influences the progress of dental caries. Developed by Antonovsky in the 70s, SOC is a variable that could facilitate the successful coping with stressful situa-

tions and also achieving the development and subsequent maintenance of health. This is defined as "*a global orientation that expresses the extent to which the individual has a durable and dynamic sense of confidence, characterized by a high probability of predicting the internal and external environments*"<sup>26</sup>. One of the points where the SOC has relevance in oral health is in its relationship with healthy behaviors because SOC could influence both the origin and recovery from diseases through effective coping by the avoidance of unhealthy behaviors and acquisition of behaviors that promote healthy habits. Particularly, Bernabé *et al.* reported a strong relationship between SOC and the number of decayed teeth in older adults, which decreased by 0.2 teeth for each unit that increased in the SOC scale<sup>26</sup>.

Dental anxiety has been shown to be a factor that plays a significant role in the generation of caries. Armfield *et al.* identified that people who have severe dental anxiety have two more extracted teeth than those with no anxiety<sup>27</sup>. This relationship is defined as the avoidance of dental treatment due to fear of the dentist, and as a result, anxious people have more extracted teeth.

Finally, self-efficacy, defined as the belief in one's personal abilities to organize and routinely execute courses of action required to maintain oral health in good condition, also has a relationship with dental caries. However, all of these correlations are more frequently observed in healthy behaviors than in clinical variables, such as decayed teeth or periodontal pockets. Therefore, more research is recommended in this area<sup>12</sup>.

### **Tooth loss: How does it affect mental health in older adults?**

One of the fundamental consequences of caries and periodontal disease in the elderly is tooth loss<sup>12</sup>.

Edentulism is a highly prevalent condition among older people worldwide. The survey SABE (Survey on Health, Well-Being, and Aging in Latin America and the Caribbean) revealed that in cities such as Mexico City, 93.7% of adults over 60 years reported loss of teeth, while in Santiago, Chile, 99.9% were partially edentulous<sup>28</sup>. In Mexico City, a study by Castrejón-Pérez *et al.*<sup>29</sup> in older adults over 70 years identified that 23.5% were edentulous and that only 9.1% had more than 24 teeth. In 2009, in Santiago, Chile, a study showed that 13.8% of the sample were edentulous and that the mean number of lost teeth was 20.52<sup>21</sup>.

Psychologically, tooth loss causes a profound impact on people's lives, decreasing self-esteem and self-image<sup>6</sup>. These consequences modify the behavioral patterns of socialization because the subject tries to hide the loss of teeth and avoids laughing in public<sup>8</sup>. Emotional reactions associated with tooth loss were studied in different elderly populations. For example, Papadaki and Anastassiadou described that 48% of a sample of elderly Greeks did not accept tooth loss, 88% avoided going out in public, 75% avoided discussing tooth loss with friends, and a significant 77% did not discuss tooth loss with their dentist, which consequently generated social isolation<sup>5</sup>.

In other way, Roohafza *et al.* identified that there is an important relationship between tooth loss and psychological factors (depression, anxiety and stress levels)<sup>30</sup>. The degree of satisfaction with complete dentures is directly related to the psychological effects of tooth loss; however, the replacement of teeth with dental prosthesis does not compensate for such psychological effect<sup>5</sup>. The satisfaction with the prosthesis also relates to the personality type of the older adult, where people with type A personality (very impatient, sometimes hostile and living a very

stressed life) have a lower level of acceptance of total prostheses than type B personalities (more relaxed and peaceful)<sup>31</sup>.

## DISCUSSION.

Knowing the psychological aspects of the older patient allows a more appropriate treatment and avoids potential psychological consequences from dental problems.

First, one must put in context the care of older people. This age group needs more time to process the information provided by the health professional, so the dentist should consider it when communicating with the older adult. In addition, there is a decrease in sensory abilities, such as hearing, seeing, smell or touch, which need to be a priority consideration for an adequate dentist-patient relationship<sup>32</sup>.

With this view, there are important psychological factors that influence the oral health of older adults. For example, in the presence of a depressed patient, the dentist should show a cooperative, supportive and non-judgmental attitude, and be extremely clear that the information collected will be absolutely confidential and will be used only for the benefit of the patient's health<sup>14</sup>. This is central to the fluid communication with the different health professionals who treat older people because it is very difficult to achieve a successful dental treatment if there is no consideration about pathologies such as depression or stress.

Older adults have an increased risk of mood disorders and therefore suffer from poor oral health. Thus, in patients who do not respond adequately to antidepressant treatment, family and social support play an important role in motivating healthy behaviors (such as brushing teeth, flossing or basic hygiene), and the dentist must ensure that the family or the social support for the older adult fulfills such important role<sup>14</sup>.

The influence of psychological factors on caries and periodontal diseases is more frequently found in health behaviors than in clinical conditions. Under this scheme, it is important to implement changes in behaviors and habits to achieve good oral health. For example, various studies report that behavioral interventions made by the dentist to promote self-efficacy in oral health and dental care planning lead to substantial improvements in persons performing basic oral care routines<sup>33</sup>.

Furthermore, when the dentist communicates explicitly the consequences of the patient's actions, there is an improvement in both the patient's motivation for oral care and willingness to accept the information provided by the dentist<sup>34</sup>. On the other hand, the dentist needs to consider the psychological consequences of tooth loss to increase adherence of the older adult to oral health care because the ex-

pectations and self-concept directly influence such behavior. Tooth loss generates emotions similar to mourning, where the stages of denial, anger, depression, bargaining and acceptance occur. If a resolution of the duel is not achieved, the consequences can be loss of self-confidence, body image problems and social isolation<sup>32</sup>.

## CONCLUSION.

Psychological factors influence not only the development of oral diseases such as tooth decay or periodontitis, but appear as consequences from tooth loss.

To find an optimal treatment for oral diseases, the biopsychosocial concept is fundamental. Only in this way, the dentist could promote "healthy aging": by facing the oral health problems from a multidisciplinary approach.

## Factores psicológicos y su influencia en la salud oral en el adulto mayor: Una revisión narrativa.

**Resumen:** Este último tiempo, ha existido un aumento significativo de los adultos mayores en los países en desarrollo. Este aumento lleva a estas naciones a enfrentar un crecimiento en las consultas dentales para este grupo etáreo. Bajo este contexto, es que la aproximación biopsicosocial es esencial para el envejecimiento saludable en la tercera edad. El objetivo de este artículo de revisión sería, en primer lugar, identificar los factores psicoló-

gicos que tienen relación con las enfermedades más prevalentes en el adulto mayor (caries dental y enfermedad periodontal), para luego describir como la pérdida de dientes, principal consecuencia de la caries y enfermedad periodontal, impacta en la salud mental del adulto mayor. Finalmente, se discuten algunas propuestas para el trabajo dental en el adulto mayor, considerando los factores psicológicos relacionados a la salud oral.

**Palabras clave:** *Adulto mayor, Factores psicologicos, Enfermedad periodontal, Caries dental, Pérdida dental.*

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