

Oral Health and Schizophrenia in Advanced Age

Subjects: Dentistry, Oral Surgery & Medicine

Contributor: Sanjana Santhosh Kumar, Raquel Cantillo, Dongxia Ye

Schizophrenia is a psychiatric disorder that makes patients incompetent to perform day-to-day activities due to their progressing mental illness. In addition to disturbances with thoughts, behavioral changes, and impaired cognitive functions, oro-systemic health also becomes compromised.

Keywords: schizophrenia ; elderly ; geriatric ; antipsychotics ; oral health

1. Introduction

Schizophrenia is a chronic heterogeneous psychological disorder whose symptoms include, but are not limited to, delusion and hallucination (positive symptoms), apathy, social withdrawal, anhedonia (negative symptoms), and cognitive deficits [1]. The description of schizophrenia has evolved through the years. The definition and boundaries have changed; however, its etiology and pathophysiology remain elusive. The International Classification of Diseases-11 (ICD-11) describes schizophrenia and other primary psychotic disorders by characteristics, such as significant impairments testing and alterations in behavior manifest in positive symptoms, such as persistent delusions, persistent hallucinations, disorganized thinking (typically manifest as disorganized speech), grossly disorganized behavior, and experiences of passivity and control, negative symptoms, such as blunted or flat affect and avolition, and psychomotor disturbances. The symptoms occur with sufficient frequency and intensity to deviate from expected cultural or subcultural norms. They do not arise as a feature of another mental and behavioral disorder (e.g., a mood disorder, delirium, or a disorder due to substance use). The categories in this grouping should not be used to classify the expression of ideas or beliefs, or be culturally sanctioned [2]. Most of the patient population continues to face challenges concerning occupational and social functioning [3]. Even though the population with schizophrenia is primarily made up of older people, little is known about this group's oral health treatment. According to several authors, patients with schizophrenia do not always receive the best oral health treatment [4][5][6][7]. They are believed to be more vulnerable to developing dental diseases due to their decreased capacity for planning, lack of motivation, difficulty performing oral hygiene tasks, challenges they encounter by being refused treatment on the grounds of inability to maintain oral hygiene, and their increased propensity to experience adverse orofacial effects, such as xerostomia, sialorrhea, and oral dyskinesia brought on by psychotropic medications. Aside from age, one study found that gender, education, and minority status were not connected with dental care in older persons and were not relevant in schizophrenia [8]. On the other hand, due to the lengthy wait times and feelings of stigma, patients do not seek dental care with Medicaid, the public healthcare system in the United States [9].

2. Oral Health and Schizophrenia in Advanced Age

2.1. Relationship between Etiology of Schizophrenia and Oral Health

Understanding and maintaining good dental health might be difficult for those with schizophrenia. There is evidence that mental health is connected to oral health and that they share a bidirectional relationship [9]. Dental problems frequently observed among psychiatric patients include periodontal disease and dental caries [10]. This is primarily because oral health is not emphasized in the setting of mental illness [11]. Periodontal disease and its progression may be negatively impacted by changes in inflammatory-related genes, genetic polymorphism of cytokines, and proinflammatory cytokine dysregulation in schizophrenia patients, which includes an elevation in levels of IL-1, IL-6, IL-9, TNF α , TNF β , PGE2, and CRP [12][13]. Mental disorders may also cause dysregulation of the hypothalamic–pituitary–adrenal and sympathoadrenal medullary axes. When these axes are dysregulated, a cascade of inflammatory, neurotransmitter, and hormonal mediators occurs [14]. As a result, an imbalance in the oral microbiome is created, causing decreased immunological function, altered salivary phenotype, and bruxism, all of which increase the likelihood of developing a variety of oral disorders, including dental caries, periodontal diseases, and tooth wear [15][16]. On the other hand, neuroinflammation in schizophrenic patients can also occur at advanced stages of periodontal diseases or oral abscesses when oral bacteria and/or their toxins invade the blood and/or cranial nerves [17].

2.2. Oral Manifestations

The aging process is linked to physical and sensory impairments causing inadequate oral health care. Adding the devastating effects of this psychiatric disorder has the potential to deteriorate their oral health further. Schizophrenia is characterized by impairing the subject's capacity to carry out oral hygiene effectively, leading to a greater likelihood of experiencing poor oral health [6][18]. Research findings indicate that a significant proportion, ranging from 61% to 83% of individuals diagnosed with schizophrenia, experience dental disease [19]. The severity of the diagnosis, sex, social history, medications, and whether the patient is institutionalized or not play a role in oral health outcomes [6][18][20][21][22].

2.2.1. Dental Caries

Most studies assess caries experience by utilizing DMFT scores. However, a limitation of this scoring system is that it not only reflects the impact of the disease but also considers the individual's lifetime history of caries. Nevertheless, patients with schizophrenia have been associated with higher scores when compared to patients with other mental disorders [23]. A study conducted on 1108 institutionalized residents with schizophrenia concluded that age was a significant factor related to a high level of dental caries [24]. Other studies on this population have revealed that males tend to exhibit higher DMFT scores than females. This is attributed to factors, such as a history of smoking, being first-time visitors to a dental clinic, or negligence of dental care [20][21][22].

2.2.2. Deficient Oral Hygiene

Individuals with schizophrenia often struggle with a lack of motivation, which can hinder their ability to maintain regular oral hygiene practices. These characteristics have been demonstrated in patients with severe negative symptoms and certain personality disorders [22][25]. Additionally, anxiety surrounding dental treatment may cause hesitation in seeking timely dental care. Consequently, this delay in seeking treatment can lead to the need for more complex and costly dental interventions or even losing dentition, further contributing to the individual's anxiety. As previously mentioned, antipsychotic medications can impact fine motor skills. Tremors, in particular, can make it challenging for individuals to hold a toothbrush and properly perform flossing effectively. It has been found that a greater degree of tremor has been associated with a greater DMFT [25].

2.2.3. Xerostomia

The use of antipsychotics and anticholinergics causes salivary gland hypofunction and xerostomia, which increases the incidence of dental caries. Due to experiencing dry mouth, individuals tend to consume sugary drinks more frequently, thereby exacerbating the chance of tooth decay [18][22][26][27]. The decrease in salivary flow among patients with schizophrenia results in a diminished buffering capacity, increasing the likelihood of an acidic oral environment promoting the demineralization of tooth enamel and increasing the rapid progression of decay [18][22][26][27].

2.2.4. Effects of Tobacco

According to Winterer, individuals diagnosed with schizophrenia have a higher prevalence of smoking than patients with other mental disorders, with rates ranging from approximately 70% to 80%. It has been observed that smoking can have potential benefits for patients with schizophrenia, particularly in alleviating negative and cognitive symptoms [6][28]. This positive impact is believed to occur through the release of dopamine and stimulation of its activity, as well as the inhibition of its degradation [6][28]. Nevertheless, smoking has been positively associated with higher DMFT in several studies [18][22][26][27]. This fact has been consistent across samples in the literature. It is widely recognized that smoking not only contributes to an increase in pocket depths, loss of attachment, and loss of teeth affecting overall health, but it also increases the risk of developing oral cancer [25]. It is vital to promote smoking cessation programs in the dental office and perform oral cancer screenings routinely.

2.2.5. Temporomandibular Disorders

Recent studies show that temporomandibular disorders are more prevalent after childbearing age (45–64) and gradually decrease as age advances. In older adults, TMD is self-limiting and can be treated [29]. Interestingly, in older patients with schizophrenia, these orofacial disorders are frequently observed due to the long-term use of antipsychotic medications and the comorbid conditions associated with the disease. These individuals may exhibit reduced sensitivity to somatic pain, resulting in delayed consultation and further joint deterioration [30]. The combination of masticatory muscle tension, clenching, grinding, and emotional distress places them at a heightened risk of developing temporomandibular disorders (TMD).

2.2.6. Tardive Dyskinesia

This adverse effect of antipsychotics causes involuntary movements of the extremities, trunk, and orofacial movements manifested as lip smacking, tongue protrusion, grinding mandibular movements, and puckering. These involuntary mandible movements can affect teeth and occlusion ^{[18][31]}. Individuals aged 60 and above are particularly vulnerable to the effects of medications. The progression of the disease is influenced by factors, such as the dosage and potency of the antipsychotics ^[31].

2.3. Dental Management

Dental treatment becomes difficult in this population due to several factors. There needs to be more communication between the dental provider and the patient. Cognitive impairments and disorganized thinking might hinder effective communication during dental visits, making understanding and addressing patients' needs challenging. Having a caregiver present during dental visits can indeed be beneficial in managing the challenges associated with treating individuals with schizophrenia. Caregivers can provide support, help with communication, and assist in addressing the specific needs and concerns of the patient. They can also help promote oral hygiene practices and ensure adherence to dental care recommendations outside the dental office. The presence of a caregiver can enhance the whole dental experience for the patient and facilitate effective communication and cooperation between the dentist, patient, and caregiver.

Dental anxiety, agitation, or aggression is frequent in these patients. In some cases, dental procedures must be performed under nitrous oxide or sedation, which require special training, making the procedure more expensive for the patient. This limits the availability of specialized dental services for these individuals or a dentist willing to see them.

The incorporation of fluoride applications during routine dental visits and prescriptions of high-fluoride toothpaste aid in countering the heightened susceptibility to dental caries often observed in this population. Complementing this, the utilization of specialized oral hygiene devices, tailored to accommodate potential motor and cognitive limitations ^[23], can facilitate effective plaque removal and maintenance of oral hygiene. Regular and frequent dental cleanings serve as a cornerstone of preventive care ^[23], enabling timely identification and management of dental issues. In addition, imparting nutrition education that emphasizes a reduction in sugar consumption ^[23] contributes significantly to oral health improvement ^[23].

3. Conclusions

Schizophrenia is a chronic heterogeneous psychological disorder that affects older adults. Findings underscore the need for targeted dental interventions to address the dental health challenges this vulnerable population faces. They highlight the importance of integrating dental health into the overall medical management of elderly individuals with schizophrenia. In terms of addressing the burden of oral diseases in elderly patients with schizophrenia, current dental research has been unable to develop efficient specific therapies. However, there is an emphasis on prioritizing preventive dentistry to minimize the occurrence and progression of dental conditions in this population.

References

1. Zhang, T.; Fang, Y.; Wang, L.; Gu, L.; Tang, J. Exosome and exosomal contents in schizophrenia. *J. Psychiatr. Res.* 2023, 163, 365–371.
2. World Health Organization. *International Classification of Diseases for Mortality and Morbidity Statistics*, 11th ed.; WHO: Geneva, Switzerland, 2018.
3. Mueser, K.T.; McGurk, S.R. Schizophrenia. *Lancet* 2004, 363, 2063–2072.
4. Kilbourne, A.M.; Horvitz-Lennon, M.; Post, E.P.; McCarthy, J.F.; Cruz, M.; Welsh, D.; Blow, F.C. Oral health in Veterans Affairs patients diagnosed with serious mental illness. *J. Public Health Dent.* 2007, 67, 42–48.
5. Kiyak, H.A.; Reichmuth, M. Barriers to and Enablers of Older Adults' Use of Dental Services. *J. Dent. Educ.* 2005, 69, 975–986.
6. Gupta, S.; Pk, P.; Gupta, R. Necessity of oral health intervention in schizophrenic patients—A review. *Nepal J. Epidemiol.* 2016, 6, 605–612.
7. Dickerson, F.B.; McNary, S.W.; Brown, C.H.; Kreyenbuhl, J.; Goldberg, R.W.; Dixon, L.B. Somatic Healthcare Utilization Among Adults With Serious Mental Illness Who Are Receiving Community Psychiatric Services. *Med. Care* 2003, 41, 560–570.

8. Janardhanan, T.; Cohen, C.I.; Kim, S.; Rizvi, B.F. Dental Care and Associated Factors Among Older Adults With Schizophrenia. *J. Am. Dent. Assoc.* 2011, 142, 57–65.
9. Joury, E.; Kisely, S.; Watt, R.; Ahmed, N.; Morris, A.; Fortune, F.; Bhui, K. Mental Disorders and Oral Diseases: Future Research Directions. *J. Dent. Res.* 2023, 102, 5–12.
10. Choi, J.; Price, J.; Ryder, S.; Siskind, D.; Solmi, M.; Kisely, S. Prevalence of dental disorders among people with mental illness: An umbrella review. *Aust. New Zealand J. Psychiatry* 2022, 56, 949–963.
11. Albahli, B.F.; Alrasheed, N.M.; Alabdulrazzaq, R.S.; Alasmari, D.S.; Ahmed, M.M. Association between schizophrenia and periodontal disease in relation to cortisol levels: An ELISA-based descriptive analysis. *Egypt. J. Neurol. Psychiatry Neurosurg.* 2021, 57, 1–7.
12. Meyer, U.; Schwarz, M.J.; Müller, N. Inflammatory processes in schizophrenia: A promising neuroimmunological target for the treatment of negative/cognitive symptoms and beyond. *Pharmacol. Ther.* 2011, 132, 96–110.
13. Saetre, P.; Emilsson, L.; Axelsson, E.; Kreuger, J.; Lindholm, E.; Jazin, E. Inflammation-related genes up-regulated in schizophrenia brains. *BMC Psychiatry* 2007, 7, 46.
14. Stein, D.J.; Benjet, C.; Gureje, O.; Lund, C.; Scott, K.M.; Poznyak, V.; van Ommeren, M. Integrating mental health with other non-communicable diseases. *BMJ* 2019, 364, l295.
15. Senusi, A.; Higgins, S.; Fortune, F. The influence of oral health and psycho-social well-being on clinical outcomes in Behçet's disease. *Rheumatol. Int.* 2018, 38, 1873–1883.
16. Gomaa, N.; Tenenbaum, H.; Glogauer, M.; Quiñonez, C. The Biology of Social Adversity Applied to Oral Health. *J. Dent. Res.* 2019, 98, 1442–1449.
17. Hashioka, S.; Inoue, K.; Miyaoka, T.; Hayashida, M.; Wake, R.; Oh-Nishi, A.; Inagaki, M. The Possible Causal Link of Periodontitis to Neuropsychiatric Disorders: More Than Psychosocial Mechanisms. *Int. J. Mol. Sci.* 2019, 20, 3723.
18. Grinshpoon, A.; Zusman, S.P.; Weizman, A.; Ponizovsky, A.M. Dental Health and the Type of Antipsychotic Treatment in Inpatients with Schizophrenia. *Isr. J. Psychiatry Relat. Sci.* 2015, 52, 114–118.
19. Matevosyan, N.R. Oral Health of Adults with Serious Mental Illnesses: A Review. *Community Ment. Health J.* 2009, 46, 553–562.
20. Kurokawa, Y.; Watanabe, S.; Miyabe, S.; Ishibashi, K.; Yamamoto, S.; Goto, M.; Hasegawa, S.; Miyachi, H.; Fujita, K.; Nagao, T. Oral hygiene status and factors related to oral health in hospitalized patients with schizophrenia. *Int. J. Dent. Hyg.* 2022, 20, 658–663.
21. Ngo, D.Y.J.; Thomson, W.M.; Subramaniam, M.; Abidin, E.; Ang, K.-Y. The oral health of long-term psychiatric inpatients in Singapore. *Psychiatry Res.* 2018, 266, 206–211.
22. Velasco-Ortega, E.; Segura-Egea, J.; Cordoba-Arenas, S.; Jimenez-Guerra, A.; Monsalve-Guil, L.; Lopez-Lopez, J. A comparison of the dental status and treatment needs of older adults with and without chronic mental illness in Sevilla, Spain. *Med. Oral Patol. Oral Cirugía Bucal* 2013, 18, e71–e75.
23. Zusman, S.P.; Ponizovsky, A.M.; Dekel, D.; Masarwa, A.-E.; Ramon, T.; Natapov, L.; Grinshpoon, A. An assessment of the dental health of chronic institutionalized patients with psychiatric disease in Israel. *Spéc. Care Dent.* 2010, 30, 18–22.
24. Chu, K.-Y.; Yang, N.-P.; Chou, P.; Chiu, H.-J.; Chi, L.-Y. Factors associated with dental caries among institutionalized residents with schizophrenia in Taiwan: A cross-sectional study. *BMC Public Health* 2010, 10, 482.
25. Tani, H.; Uchida, H.; Suzuki, T.; Shibuya, Y.; Shimanuki, H.; Watanabe, K.; Den, R.; Nishimoto, M.; Hirano, J.; Takeuchi, H.; et al. Dental conditions in inpatients with schizophrenia: A large-scale multi-site survey. *BMC Oral Health* 2012, 12, 32.
26. Keepers, G.A.; Fochtmann, L.J.; Anzia, J.M.; Benjamin, S.; Lyness, J.M.; Mojtabai, R.; Servis, M.; Walaszek, A.; Buckley, P.; Lenzenweger, M.F.; et al. The American Psychiatric Association Practice Guideline for the Treatment of Patients with Schizophrenia. *Am. J. Psychiatry* 2020, 33, 63–66.
27. Stroup, T.S.; Gray, N. Management of common adverse effects of antipsychotic medications. *World Psychiatry* 2018, 17, 341–356.
28. Winterer, G. Why do patients with schizophrenia smoke? *Curr. Opin. Psychiatry* 2010, 23, 112–119.
29. Yadav, S.; Yang, Y.; Dutra, E.H.; Robinson, J.L.; Wadhwa, S. Temporomandibular Joint Disorders in Older Adults. *J. Am. Geriatr. Soc.* 2018, 66, 1213–1217.
30. Gurbuz, O.; Alatas, G.; Kurt, E. Prevalence of temporomandibular disorder signs in patients with schizophrenia. *J. Oral Rehabil.* 2009, 36, 864–871.

31. Sadowsky, J.M.; Thomas, E.; Simmons, R.K.; Edwards, L.P.; Johnson, C.D. 4 case reports: Dental management of patients with drug induced Tardive Dyskinesia (TD). *J. Dent. Health Oral Disord. Ther.* 2014, *1*, 18–21.
-

Retrieved from <https://encyclopedia.pub/entry/history/show/116808>