ORAL HEALTH OF INDIVIDUALS WITH MENTAL HEALTH DISORDERS

Tamara Latif, Alexandre R. Vieira

1 Department of Oral Biology, School of Dental Medicine, University of Pittsburgh


RESUMO

Objetivo: Analisar o estado de saúde oral e dentária de uma população de pacientes com história de problemas de saúde mental. Conhecimento Prévio: Indivíduos com problemas de saúde mental só mais suscetíveis a doença oral relacionada a higiene oral deficiente, mudanças de comportamento, efeitos de medicinações, e doenças sistêmicas. Saúde mental e oral afetam reciprocamente uma à outra. Problemas de saúde mental foram associados com falta de cuidado pessoal, boca seca, chance aumentada de uso de substâncias ilícitas, e risco aumentado de infecção oral. De forma semelhante, problemas de saúde oral afetam negativamente saúde mental. Halitose, cáríe, perda de dentes, e problemas de fala podem agravar o estado de saúde mental relacionado com auto-estima e ansiedade. Métodos: The Dental Registry and DNA Repository (DRDR) da Faculdade de Medicina Dental da Universidade de Pittsburgh foi analisado na avaliação de pacientes com história de doenças mentais. Um total de 6.015 fichas de pacientes estava disponível. DRDR, 1.068 eram fichas de pacientes com um problema mental. Prevalência de cárie, periodontite, atrição, edentulismo parcial e total, xerostomia, erosão, gengivite, disordem da articulação temporomandibular (TMD), e úlceras foram determinadas e comparadas com o restante do registro (N=4.947). Sexo e etnia foram também analisados. O teste qui-quadrado com significância de 5% foi usado. Resultados: Dos 6.015 pacientes, 1.068 relataram história de problema de saúde mental. 59.2% reportou ter depressão, 16.7% ansiedade, 13.3% doença bipolar, 3.6% esquizofrenia, 2.3% transtorno de estresse pós-traumático (PTSD), e 2.3% problemas de alimentação. Doença mental estava significativamente associada com edentulismo parcial e total, cáríe, atrição, xerostomia, erosão, TMD, ulceração, e gengivite. Doença mental também foi significativamente associada com o sexo feminino e etnia branca. Conclusões: Problemas mentais significativamente afetam a saúde oral. Pessoas com problemas de saúde mental parecem ter risco aumentado à cáríe, atrição, erosão, edentulismo, xerostomia, inflamação das gengivas, e TMD. Esses resultados poderão ajudar a direcionar medidas de prevenção e tratamento dessas pessoas.

Submitted: May 4, 2018
Modification: July 6, 2018
Accepted: July 10, 2018

*Correspondence to:
Dr. Alexandre R. Vieira
Address: University of Pittsburgh 335
412 Salk Pavilion
Sutherland - Dr. Pittsburgh, PA 15261
Telephone number: (412) 383-8972
FAX(412) 624-3080
E-mail: arv11@pitt.edu

Original Article

ORAL HEALTH OF INDIVIDUALS WITH MENTAL HEALTH DISORDERS

Keywords: Depression. Dental Caries. Mental Health. Periodontal Diseases. Smoking.
INTRODUCTION

Individuals with mental health disorders are increasingly susceptible to oral and dental disease related to oral hygiene, self-care, and systemic disease. The association between mental health and oral health is reciprocating, each with effects on the other. Poor mental health has been associated with dental caries, periodontal disease, dry mouth, behavioral changes, comorbid physical disease, smoking, alcohol and substance abuse, and susceptibility to oral infection. Additionally, poor oral health, including missing teeth, halitosis, and dental caries, can exacerbate the negative consequences of poor mental health.1-6

Kisely (2016) noted that individuals with common psychological disorders had greater rates of dental caries. Individuals with psychological disorders also had greater tooth loss than those without psychological disorders.1,6 The association between periodontal status and psychiatric status has been debated. Although some studies suggest an association between periodontal status and psychiatric status,7-9 others do not.4-6 Increased rates of dental caries and tooth loss can be explained by drug-induced xerostomia associated with antipsychotics, antidepressants, and mood stabilizers.

The association between mental health and erosion is most clearly established in cases of self-induced vomiting, characterized by chemical erosion of the palatal surfaces of teeth.4 Salivary dysfunction related to eating disorders can further potentiate dental caries. Furthermore, erosion can manifest in cases of high tobacco and alcohol use through gastroesophageal reflux.6

Piccoli et al. (2014) concluded that chronic neuroleptic drug use can lead to bruxism. It has been suggested that medications, disturbances in dopaminergic systems, and a psychological stress component are linked to bruxism in patients with psychological disorders. Tooth wear is more likely to be associated with bruxism than temporomandibular joint disorders (TMD). Nonetheless, symptoms of bruxism may include temporomandibular joint pain and myofascial pain.10

Smoking, alcohol, and substance abuse further exacerbate oral health issues of individuals directly through physiologic changes as well as indirect behavioral and motivational changes. Physiological effects include xerostomia, an urge for snacking, clenching and grinding, and erosion from application of substances, such as cocaine, directly onto the teeth. Indirect effects are related to lifestyle changes, such as a reduced interest in dental hygiene, access to care, poor nutrition, and infrequent and irregular dental visits.12

This study examines the prevalence of various dental conditions in a population of patients reporting a mental health disorder, as well as the distribution of disorders and some demographic variables. Mental health disorders included in this study are depression, anxiety, schizophrenia, bipolar disorder, post-traumatic stress disorder (PTSD), and eating disorders. Oral and dental health was assessed by dental caries, periodontal disease, gingivitis, tooth wear, complete and partial edentulism, xerostomia, coated tongue, gingivitis, oral ulceration, periapical lesions, and TMD. The prevalence of smoking, alcohol abuse, and substance abuse was also determined. Sex and ethnicity were also examined. Understanding the association between mental and dental health can help direct prevention and treatment in a multidisciplinary setting.

MATERIALS AND METHODS

The Dental Registry and DNA Repository (DRDR) at the University of Pittsburgh [University of Pittsburgh Institutional Review Board (IRB) approval # 0606091] was used. All patients reporting a history of mental health illness were included in the study. The database included a total of 6,015 patient records. 1,068 patients reported a history of mental health illness and were included in the study. The population included 428 males and 640 females, which included 844 Whites, 190 Blacks, eight Hispanics, five Indians, and 13 that reported “other.” The remaining 4,947 subjects in the registry were used as comparison.

Patients meeting inclusion criteria were analyzed for complete and partial edentulism, dental caries, periodontal disease, tooth wear, xerostomia, coated tongue, erosion, TMD, periapical lesions, oral ulceration, and gingivitis. The distribution of mental health conditions was determined. Prevalence values were compared between patients with and without mental health illness. Determination of prevalence was based on patients’ self-reported answers during the medical history survey recorded in the electronic health record. Sex, ethnicity, smoking, alcohol use, and other substance abuse were also analyzed and compared to the total DRDR population. Alcohol abuse was defined as having more than 15 drinks per week for males and more than 8...
drinks per week for females. We defined substance abuse as the excessive use of psychoactive substances and illicit drugs. The chi-squared test was used to determine significance. P-values and 95% confidence intervals were determined for prevalence differences among patients reporting a history of mental health disorder and those that did not within the DRDR population.

**RESULTS**

The distribution of mental health disorders among the DRDR population was determined and shown in Figure 1. 59.2% reported having depression, 16.7% reported anxiety, 13.3% reported bipolar disorder, 3.6% reported schizophrenia, 2.3% reported PTSD, and 2.3% reported an eating disorder. Among 1,068 patients reporting a mental health disorder, 60% of patients reported as female and 40% reported male. Distribution of ethnicity among the population reporting a mental health disorder is shown in Figure 2. 80% reported as White, 18% as Black, and 2% as either Asian, Hispanic, or other. This frequency in Whites was higher than the expected frequency based on our DRDR data (65% Whites; \( p < 0.000001 \)).

Prevalence values for complete edentulism, partial edentulism, dental caries, periodontitis, bruxism, attrition, xerostomia, a coated tongue, erosion, TMD, periapical lesions, oral ulceration, and gingivitis were determined for patients reporting a history of mental health disorder. Prevalence differences in complete edentulism, partial edentulism, dental caries, attrition, xerostomia, coted tongue, erosion, TMD, oral ulceration, and gingivitis were statistically significant higher in individuals reporting mental disorders (\( p < 0.05 \)). Prevalence differences in periodontal disease, bruxism, and periapical lesions were not statistically significant (\( p > 0.05 \)) between the two comparison groups.

Figure 3 demonstrates the prevalence differences in dental and oral health conditions between patients with mental health disorder and patients without mental health disorder. 10.8% of patients with a history of mental health illness presented with complete edentulism compared to 5.6% of patients without mental health illness (\( p < 0.0001; 95\% \) confidence intervals 3.28, 7.31). 31.2% of patients with a history of mental health illness were partially edentulous compared to 26.2% of patients without a history of mental illness (\( p = 0.0009; 95\% \) confidence intervals 1.96, 8.12). Dental caries prevalence among patients with mental health disorder was 53.6% compared to 47.9% in patients without mental health disorder (\( p = 0.0007; 95\% \) confidence intervals 2.35, 9.03). 16.2% of patients with mental health disorder showed attrition compared to 9.8% in the remaining DRDR population (\( p = 0.0001; 95\% \) confidence intervals 4.07, 8.89). Of patients with mental health disorder, 24% reported xerostomia compared to 8.5% of patients without mental health disorder (\( p = 0.0001; 95\% \) confidence intervals 12.84, 18.28). 42.3% of patients with mental health disorder displayed a coated tongue upon oral examination compared to 37.4% of patients without mental health disorder (\( p = 0.003; 95\% \) confidence intervals 1.62, 8.21). Erosion was noted in 1.6% of patients with mental health illness compared to 0.7% of patients without mental health illness (\( p = 0.004; 95\% \) confidence intervals 0.18, 1.87). TMD was noted in 35.5% of patients with mental health illness compared to 30.2% of patients without mental health illness (\( p = 0.0007; 95\% \) confidence intervals 2.14, 8.52). 5.4% of patients with mental health illness presented with oral ulcers compared to 3.4% of patients without mental health illness (\( p = 0.002; 95\% \) confidence intervals 0.61, 3.6). Gingivitis was noted in 28.2% of patients with mental health disorder compared to 23% of patients without mental health illness (\( p = 0.0003; 95\% \) confidence intervals 2.26, 8.24).

Patients with a history of mental health disorder were also more likely to smoke, use alcohol excessively, and abuse substances. Figure 4 demonstrates prevalence differences in smoking, alcohol abuse, and substance abuse between patients with mental health disorder and patients without mental health disorder. Smoking was prevalent in 36.7% of patients with a history of mental health disorder compared to 23.3% in patients without mental health disorder (\( p < 0.0001; 95\% \) confidence intervals 10.26, 16.59). Prevalence differences in alcohol abuse, defined as greater than 15 drinks per week for males and greater than 8 drinks per week for females, was also statistically significant. 14.1% of patients with mental health disorder reported alcohol abuse compared to 10.1% of patients without a mental health disorder (\( p = 0.0001; 95\% \) confidence intervals 1.79, 6.37). Substance abuse was prevalent in 17.8% of patients with a mental health disorder compared to 11.6% of patients without a mental health disorder (\( p < 0.0001; 95\% \) confidence intervals 3.77, 8.78).
Figure 1: Distribution of mental health conditions in patients reporting a mental health disorder (N=1,068) at the University of Pittsburgh School of Dental Medicine.

Figure 2: Race Distribution of Patients reporting a mental health disorder at the University of Pittsburgh School of Dental Medicine.
Figure 3: Prevalence differences of dental and oral conditions between patients with mental health disorder and patients without mental health disorder. Standard error bars are shown. p-value <0.05 for complete edentulism, partial edentulism, dental caries, attrition, xerostomia, coated tongue, erosion, TMD, oral ulceration,

Figure 4: Prevalence differences in smoking, alcohol abuse, and substance abuse between patients with mental health disorder and patients without mental health disorder. Standard error bars are shown. There was a statistical significant difference (p-values <0.05) with individuals with underlying mental illness smoking, alcohol abusing, and substance abusing more often than individuals without a mental health disorder.
DISCUSSION

Individuals with mental health disorders are more likely to have dental and oral health concerns. Individuals with mental health disorders were more likely to show edentulism, dental caries, attrition, xerostomia, coated tongue, erosion, gingivitis, oral ulcers, and TMD. Periodontitis, bruxism, and periapical lesions were not significantly associated with mental health disorders in this study. The most frequent mental health disorder was depression, followed by anxiety. Individuals reporting a mental health disorder were more likely to be female and White.

Edentulism and tooth loss were significantly more prevalent in individuals reporting mental health disorders. Depression, specifically, has been associated with tooth loss linked to reduced self-care, number of medications being taken, and oral and systemic interplay. Individuals with depression may be more likely to neglect esthetics and visit the dental professional less regularly. Furthermore, increased number of medications are directly related to xerostomia leading to dental caries and compromised oral hygiene. Similarly, dental caries was also more prevalent in individuals reporting a mental health disorder. Untreated dental caries is complicated by concurrent dental anxiety and phobia often exhibited by patients with psychological disorders.

The association between mental health and periodontitis has been debated in the literature. In the present study, mental health disorders were not significantly related to periodontal disease. Similar studies did not find a significant association between mental health and periodontitis. In other studies, depression has been considered an important risk factor for periodontitis. Major depressive disorders may affect motivation and interest, as well as neuroendocrinological factors related to an impaired immune response.

Erosion was noted more frequently in individuals reporting mental health conditions. Eating disorders and associated habits may be responsible for the increased incidence of erosion. However, Javadi and Shafikhani (2017) found that mental factors, specifically anxiety and depression, play important roles in the development of gastroesophageal reflux disorder (GERD). Kamolz and Velanovich (2002) found that 60% of patients reported exacerbation of GERD. Kamolz and Velanovich (2002) found that mental factors, specifically anxiety and depression, play important roles in the development of gastroesophageal reflux disorder (GERD). Similar studies did not find a significant association between mental health and periodontitis. In the present study, mental health disorders were not significantly related to periodontal disease. Similar studies did not find a significant association between mental health and periodontitis. In other studies, depression has been considered an important risk factor for periodontitis. Major depressive disorders may affect motivation and interest, as well as neuroendocrinological factors related to an impaired immune response.

The demonstration that the presence of an underlying mental health disorder leads to higher frequencies of a number of oral health outcomes is noteworthy and should be enough to provide evidence that individuals with mental health disorders require personalized attention and likely different treatment approaches and preventive strategies to help stop worsening of oral health status.

Limitations of the study include small sample size and incomplete representation. A larger sample size encompassing a broader range of demographics and disorders would be more representative of the national population. It is also important to note that individuals often suffer from multiple mental disorders concurrently rather than just one. Future studies should investigate the specific behavioral changes affecting these individuals and their effect on dental health. It is important to understand the physical and physiological changes affecting patients with mental health disorders to deliver multidisciplinary treatment that meets their dental, oral, and psychological needs.

ACKNOWLEDGEMENTS

Data for this project was obtained from the University of Pittsburgh School of Dental Medicine Dental Registry and DNA Repository project, which is supported by the University of Pittsburgh School of Dental Medicine.
REFERENCES


