Article

Investigating dental health status in patients with psychiatric disorders

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Abstract

Background: Oral health is a central aspect of overall health and well-being. However, people with psychiatric disorders are more vulnerable to oral health problems due to illness-related factors, limited access to dental care, and lifestyle habits.
Objectives: This study aimed to evaluate the dental health status in patients with psychiatric disorders.
Methods: This cross-sectional study included all 80 patients with psychiatric disorders hospitalized at Razi Hospital in Tabriz, Iran in 2020. Sampling was done by census method. Data were collected using a researcher-developed questionnaire covering demographics, oral health behavior, and the Decayed, Missing, and Filled Teeth Index (DMFT). Information was obtained through interviews, a review of medical records, and dental examinations. Data were analyzed using descriptive statistics, independent t-test and ANOVA in SPSS v.24 software.
Results: 52.6% of participants were male. The mean (SD) age of the participants was 39.16 (9.42) years. Over half (53.8%) had low socioeconomic status and half were married. The mean (SD) DMFT was 10.96 (9.77). The results showed significant relationships between the frequency of dental visits, smoking, and the DMFT index ($p < 0.05$).
Conclusion: The DMFT index in patients with psychiatric disorders was unfavorable. Support programs to promote self-care, oral health, smoking cessation, and regular dental visits are needed in this population.

Implications of this paper in nursing and midwifery preventive care:
- unfavorable DMFT index, highlighting the urgent need for support programs to address oral health disparities in this vulnerable population. Specific recommendations include implementing interventions to promote self-care, emphasizing the importance of oral hygiene, encouraging smoking cessation, and advocating for regular dental visits.

Introduction

Despite increasing advances in understanding the etiology of psychiatric disorders and improving access to specialists and care in this area, the prevalence and number of people suffering from psychiatric disorders remains significant. It is estimated that each person has an approximately 29% chance of experiencing one of the most common psychiatric disorders during their lifetime [1]. Overall, it is estimated that approximately 900 million people worldwide suffer from psychiatric disorders, representing 19% of the world's population. Of these, 75% live in low- and middle-income countries [2,3]. A 2020 review by Taheri Mirqaed et al. showed that the prevalence of psychiatric disorders in Iranian society ranges from 25.42% to 31.03% and is increasing [4].

Oral and dental health status is one of the most important aspects of a person's overall well-being, affecting digestion, speech, and psychosocial functions [5,6], and is a critical health problem in patients with psychiatric disorders. However, it has not received sufficient attention and further research is needed. Issues related to lack of self-care and non-compliance with personal hygiene in daily life, lack of access to oral and dental care due to poverty, and lifestyle factors make patients with psychiatric disorders vulnerable to the occurrence and spread of diseases resulting in oral

and dental problems [7,8]. In addition, studies have reported that most antipsychotic medications may have harmful effects on patients' teeth due to anticholinergic side effects such as dry mouth [9-11]. Evidence suggests that dry mouth provides a favorable environment for the proliferation and accumulation of bacteria in the oral cavity [12,13] and may increase the risk of dental caries [14]. In addition, smoking is one of the factors that affect oral and dental health [15-17]. Studies in this area show a high prevalence of smoking among people with psychiatric disorders [18,19].

In oral and dental health care and research, the DMFT index is considered the most important epidemiologic index for assessing a population's dental health. This index measures the number of existing permanent teeth that are carious (D), missing due to caries (M), filled due to caries (F), or intact (T). Studies consistently show poorer oral and dental health status in individuals with psychiatric disorders compared to healthy controls, as indicated by higher DMFT scores [8,20-22]. Denis et al (2018) found significantly elevated DMFT in patients with schizophrenia compared to the norm [23]. Abdalla-Aslan et al (2021) also reported significantly higher DMFT in individuals with psychiatric disorders compared to controls [24]. Parallel findings emerged from Karimi et al.'s (2018) study of DMFT in mentally disordered and healthy Iranians [25]. Taken together, these findings highlight the disparities in oral and dental health among individuals with psychiatric disorders. To address this problem, further research and improved integration of dental services into mental health care are needed. Therefore, the current study aimed to investigate the oral and dental health status and demographic variables in patients with psychiatric disorders in Razi Hospital in Tabriz, Iran. Therefore, the purpose of this research includes the following:

1) To determine the mean values of the DMFT index in patients with psychiatric disorders.

2) To compare the values of the DMFT index in patients with psychiatric disorders based on demographic variables.

Methods

Design and samples

This hospital-based cross-sectional study was conducted on 80 patients with various psychiatric disorders hospitalized at Razi Hospital of Tabriz. Patients with primary diagnoses of dementia, schizophrenia, anxiety, depression, and bipolar disorder were included. The sampling process began on October 1, and ended on November 30, 2020. During this period, all eligible patients on different wards were screened during early shift work under the coordination of the head nurses and included in the study until the sample size was reached**.** Taking into account DMFT with a mean = 21 and standard deviation = 9 obtained for a similar previous study [28]**,** precision (5% mean), $\alpha = 5\%$, and $\beta = 2\%$ the sample size was calculated using the G-Power software**.** The inclusion criteria were a confirmed psychiatric diagnosis by a specialist, a minimum age of 14 years and the provision of informed consent from the family. Patients with dentures were not included in the study due to the possibility of error in DMFT calculation.

Data collection and tools

In the current study, research data including personal and social characteristics, oral and dental hygiene behavior, and dental hygiene status were collected using a researcher-developed questionnaire, while asking patients, reviewing medical records of the researcher, and observing teeth by an experienced dentist. The questionnaire was developed based on a literature review in three sections [8,20-23]. In this questionnaire individual, social and clinical characteristics of patients included age, gender, marital status, self-reported economic status, medications used, and type of psychiatric disorders. The oral and dental health behavior section, includes the number of teeth brushed per day, the number of dental examinations, the amount of sweets consumed, and smoking history. Finally, to check the state of dental health, after examination of the patient's teeth and visual inspection and observation by the dentist as a trained research assistant and data collector using a mirror, probe, and explorer, the DMFT index was determined, which indicates the number of decayed teeth, missing due to caries or restored due to caries. The DMFT score can range from 0-32, with the higher scores indicating poorer dental health.

Face and content validity were used to check the validity of the questionnaire. For this purpose, the questionnaires were given to 10 professors of Tabriz University of Medical Sciences and their comments were used to amend the questionnaire.

For the reliability of the DMFT index, the test-retest method was used at a time interval of 10 days by the same trained examiner in a pilot study involving 20 patients with psychiatric disorders hospitalized in Razi Hospital of Tabriz. The correlation coefficient calculated for this questionnaire was 0.84.

Statistical analysis

Data were analyzed in the SPSS software environment version 24 (SPSS Inc., Chicago, IL, USA) using descriptive (frequency, mean and standard deviation) and inferential statistics. To compare the mean values of the DMFT index among patients based on demographic variables, the independent sample t-test and the ANOVA were used. The results of the Kolmogorov-Smirnov test showed that the distribution of the DMFT index was normal. In addition, statistical significance was considered to be less than 0.05.

Results

We studied 80 patients who participated in the study. The majority of study participants were female (51.3%) and single (62.5%). The mean age of the patients was 39.16 years with a standard deviation of 9.42 years. The highest percentage of patients who did not brush their teeth were those who reported having a poor economic status (53.8%).In terms of psychiatric health problems, the highest percentage of people suffered from bipolar disorder (33.8%) and schizophrenia (31.3%). Regarding oral and dental health behavior, the majority of people (46.3%) did not brush their teeth at all and 88.8% of them went to the dentist only when necessary. The results showed that DMFT scores were significantly lower in patients who reported visiting the dentist every six months than in patients who reported visiting the dentist only when necessary. The results also showed that DMFT scores were significantly higher in smokers (p<0/05). Tables 1 and 2 show the health behaviors of patients with psychiatric disorders according to their demographic and clinical variables.

Table 1: Relationship between DMFT index with patients' demographic characteristics

Variables		Frequency (%)	DMFT Mean (SD)	p	Statistics
Gender	Male	39 (48.8)	11.08 (10.71)	0.059	t= -1.92
	Female	41 (51.3)	9.95 (8.05)		
Marital Status	Single	50 (62.5)	10.03 (9.73)	0.394	t= 0.857
	Married	30 (37.5)	11.90 (9.86)		
Economic Status	Poor	43 (53.8)	11.60 (10.38)	0.087	F = 2.52
	Moderate	32 (40.0)	10.47 (9.34)		
	Good	5 (6.2)	9.58 (8.35)		
Diagnosis	Depression	18 (22.5)	10.11 (9.16)	0.379	F = 1.043
	Bipolar	27 (33.8)	9.68 (8.08)		
	Schizophrenia	25 (31.3)	11.90 (9.35)		
	Psychosis	10 (12.5)	10.23 (9.85)		
Drugs	Antipsychotic	43 (53.8)	11.53 (9.85)	0.191	F = 1.53
	Anti-depressant	21 (26.2)	9.05 (8.15)		
	Mood stabilizer	16 (20.8)	10.25 (9.26)		

t: independent t-test; F: ANOVA; DMFT: Decay, Missing, Filling Teeth

Table 2: Relationship between DMFT index and oral health behavior

Variables		Frequency (%)	DMFT Mean(SD)	p	Statistics
Toothbrush during the day	At all	37 (46.3)	11.15 (10.02)	0.160	F=1.77
	Once	33 (41.3)	10.69 (9.85)		
	Twice	7 (8.7)	10.09 (9.62)		
	Three times	3 (3.7)	9.87 (8.21)		
Dental Visit	Every six months	9 (11.3)	8.45 (6.02)	0.03	t=-2.17
	If needed	71 (88.7)	11.32 (10.32)		
Consuming sweets	Never	10 (88.7)	9.42 (8.27)	0.191	F=1.53
	Low	58 (88.7)	10.82 (9.65)		
	Much	12 (88.7)	11.04 (10.16)		
Smoking	Yes	52 (65.0)	11.18 (10.23)	0.02*	t=-3.48
	No	28 (35.0)	9.08 (8.12)		

t:independent t-test; F:ANNOVA; DMFT: Decay, Missing, Filling Teeth

Discussion

The results showed that participants had higher DMFT scores, indicating poor oral and dental health. Most previous studies in this area have also reported suboptimal oral and dental hygiene in patients with psychiatric disorders, which is consistent with our findings [6,21,26,27]. In particular, Torales et al. have shown that these patients have an increased risk of oral disease compared to the general population. This has been attributed primarily to medication side effects, poor self-care, barriers to care, negative attitudes of healthcare providers, and noncompliance with dental treatment [26].

However, the results of a study in Iran showed that the average DMFT index was higher in patients with psychiatric disorders [28]. Furthermore, another study reported that the average DMFT index was also high in patients with schizophrenia in Tabriz city, which was significantly higher than that of the healthy group [29]. Although the results of our study are consistent with these studies, differences in the patients' demographic and clinical characteristics as well as other background variables in the context of the studies may be the reason for the differences. Furthermore, our study relied solely on clinical examination by a dentist to diagnose caries without radiographic imaging, which may have resulted in lower DMFT values than those reported elsewhere using multimodal assessment. Nevertheless, the accumulated evidence highlights the vulnerability of this population to poor oral health outcomes.

Based on the results of the present study, The DMFT index was significantly lower in patients with psychiatric disorders who reported visiting the dentist every six months than in patients who reported visiting the dentist only when necessary. In the study by Faezi et al. (2011), a significant association was observed between dental visits and the DMFT index [30]. Also, in the study by Pakpour et al. (2010), a significant relationship was observed between the time of the last dental visit and the DMFT index [31]. These results show that people who visit the dentist regularly are more sensitive or aware of their oral health. Additionally, regular checkups can help protect healthy teeth from decay. It is recommended that regular dental visits be included in supportive programs to address oral health disparities in this vulnerable population.

It should be noted that many factors influence the frequency of dental visits. For example, the level of family income is an important factor in the decision to seek dental care and visit the dentist [32]. People with higher incomes are more likely to seek dental care [33], but people with lower incomes are more likely to forgo dental care and not visit the dentist [34]. However, no significant relationship was found between economic status and the DMFT index in this study, which is inconsistent with the results of other studies. The sampling of hospitalized patients and the nature of

the disease of the participants in our study are probably the reasons for the inconsistency of these results.

The results of the present study also showed that the DMFT index was significantly higher in smokers. The results of other studies have also shown the association between oral and dental diseases and smoking in mentally ill people [15, 17,18]. These individuals neglect their oral and dental hygiene and are at greater risk [35]. On the other hand, smoking can facilitate the growth of bacteria and cause oral and dental infections by weakening the immune system [7,36]. Therefore, it is very important to educate these patients and their families to stop smoking [37,38]

One of the limitations of this study was the coronavirus disease outbreak, which made data collection difficult. It should be noted that the patients were not examined using dental x-rays and therefore no interdental caries could be detected. The lack of cooperation from mentally ill people in participating in the study was also clarified by the researcher. Finally, this study was conducted only on patients with psychiatric disorders hospitalized in the Tabriz City Psychiatric Center with a convenience sampling method. Then it was potential for selection bias, as a result, caution should be exercised in the generalization of these results to patients at other medical centers. Therefore, we suggest further studies using rigorous sampling and measurement methods over a larger geographic area.

Conclusion

Given the high DMFT index in patients with psychiatric disorders, self-care educational programs for patients with psychiatric disorders and their family caregivers, regular dental visits, and smoking cessation, especially for male patients are recommended. If patients with severe psychiatric disorders cannot be educated, it is recommended that this education be provided to their family caregivers. It is also recommended to develop and implement a funding program to maintain oral and dental health at the health policy level and to consider special dental services for patients with psychiatric disorders. These initiatives are critical to improving the oral health and overall well-being of people with psychiatric disorders.

Ethical Consideration

This study was approved by the Ethics Committee of Tabriz University of Medical Sciences with code IR.TBZMED.REC.1395.609. Furthermore, to collect the data, after necessary coordination with the relevant authorities and providing the necessary explanations to the patients or their families, their informed consent to participate in the study was obtained. The principle of data confidentiality was respected by the researchers.

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Conflict of interest

The authors declare no conflict of interest.

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Authors' contributions

Hossein Feizollahzadeh: conception and design of the study, analysis and interpretation of data, critical revision, final approval of the study, critical revision of the article for important intellectual content. Zhila Yousefi: provision of study materials or patients, final approval of the study, administrative, technical, or logistical support. Seyyede Leila Sajjadi: analysis and interpretation of data, final approval of the study, administrative, technical or logistic support. Esmail Khodadadi: conception and design of the study, analysis and interpretation of data, provision of study materials or patients, critical revision, final approval of the study, guarantor of the integrity of the overall study, critical revision of the article for important intellectual content.

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