

# Comparison of Dental Health Status in Schizophrenic Patients with Healthy Individuals

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## Abstract

**Background and aim:** Schizophrenia is a form of psychiatric disorder that has been shown to have negative consequences for patients' dental health. This study aimed to assess the dental health of schizophrenia patients in Iran as a case study.

**Materials and methods:** This descriptive-analytical study was performed on 76 patients (including 38 hospitalized schizophrenics and 38 healthy individuals). For this study, after obtaining demographic information, the Decayed, Missing, and Filled Teeth (DMFT) index and its related components, including D, M, and F in both study groups, were examined. The mean DMFT between patient and healthy groups was compared with SPSS-Ver. 21. The relationship between the mean of each demographic variable and the mean DMFT in schizophrenic patients was analyzed by relevant statistical tests.

**Results:** The results showed that the mean DMFT in patients with schizophrenia was significantly higher than in the healthy group. The mean DMFT, D, M, and F index in patients with schizophrenia were  $18.59 \pm 6.75$ ,  $6.52 \pm 3.32$ ,  $9.95 \pm 7.21$ , and  $2.12 \pm 1.1$ , respectively. Each variable of age, smoking rate, smoking history, length of hospital stay, and mean "negative symptom scores" had a significant relationship with the mean DMFT. In contrast, this relationship was not meaningful for the variables of "positive symptom scores" and patient gender.

**Conclusion:** Based on the present study results, it can be concluded that the health status of schizophrenia patients in the study population is unfavorable. Therefore, considering the sensitive conditions of this type of patient in terms of caring for the health status of their teeth, it is necessary to take basic measures to improve the dental health status of this type of patient.

**Keywords:** Psychiatric • Drugs • Positive symptom

## Introduction

Schizophrenia is the most severe and chronic psychiatric illness that is associated with impaired social and occupational abilities. As a result, the function of these patients in various occupational, educational, social, interpersonal, and self-care fields is impaired, and the patient needs constant care in multiple dimensions [1]. This disease causes cognitive impairment, long-term social problems, and social poverty, lack of self-care, and functional problems and disability for the patient [2].

Today, as one of the most important and debilitating mental illnesses in all psychiatric and psychological societies of the world, this disease has received particular attention to these patients' health status and social functioning and is considered one of the essential priorities in any society [3]. Research has shown that there is a strong link between mental illness and poor health care. Such research warns health care providers to be aware of such results and screen and control mentally ill patients for all health factors.

Schizophrenic patients are prone to long-term side effects of antipsychotic drugs and exercise less, and smoke more than the general population [4]. Low income, a lack of adequate housing, unemployment, lack of control over self-health, failure to report physical symptoms, cognitive deficits, social isolation, feelings of impotence and suspicion, a lack of social competencies, and shame can all prevent schizophrenia patients from

receiving medical care [5].

Studies show that due to the side effects of psychotropic drugs, significantly reduced saliva, and dysphagia, inflammation of the mouth, inflammation of the tongue, gingivitis, and edema and paleness of the tongue, as well as oral problems in patients that admitted to psychiatric wards, and the prevalence is relatively high. This indicates the main problem of care in these patients [6]. Regardless of the medications prescribed to people with schizophrenia, dry mouth and gum disease are also common due to the nature of the disease. Many of these patients' poor diets contribute to these difficulties [7,8].

Patients with schizophrenia cannot carry out daily duties and maintain personal, dental, and oral hygiene. Furthermore, they have economic and financial difficulties due to the disease's nature and long-term hospitalization, and they cannot pay for the high cost of dental treatment. On the other hand, dentists are reluctant to treat these patients and do not provide oral care. Therefore, the prevalence of oral-dental disorders among people with a mental health condition is high for the above reasons. Therefore, this aspect of patient care and therapy should give special attention [9].

Since it is essential to pay attention to oral health in schizophrenic patients in any given situation, and considering the inadequate information on the condition of schizophrenic patients in Iran, this study aims to evaluate schizophrenic patients' oral health status comparing it with healthy individuals.

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## Materials and Methods

This descriptive-analytical study was performed on 76 patients (including 38 hospitalized schizophrenic patients and 38 healthy individuals). Patients were included after a psychiatrist conducted a semi-structured clinical interview based on the DSM-5. Sampling was done by convenience sampling, and individuals were selected from an equal number of men and women, according to the inclusion and exclusion criteria. The checklist prepared for each of these individuals was completed after receiving the informed consent of the patient's guardian.

The checklist consisted of four sections containing demographic information, systemic conditions and diseases, dental examination, and intraoral examination for salivary status. Inclusion criteria for the group of patients with schizophrenia in the study included: being at least 20 years old and diagnosing schizophrenia for a minimum of 5 years. Exclusion criteria for patients with schizophrenia have a history of head and face trauma, physical and systemic diseases (such as diabetes, Sjogren's syndrome, and Behcet's syndrome), mental disability (based on clinical interview and Raven test), history of drug and alcohol use, and reluctance to cooperate. The control group was selected from healthy individuals referred to the inpatient clinics of the hospital for schizophrenia patients who were age and sex appropriate to the patient group and tended to participate in the study. The inclusion criteria of the control group were having a minimum age of 20 years, no major psychiatric disorders, and no long-term use of the drug, and its exclusion criteria were the same as the exclusion criteria of the patient group [2].

In the present study, two methods were used to collect information. First, through interviews and with the help of hospitalized patients' files, demographic information forms and information related to patients' hospitalization and medical history was completed. Then the Anderson standard questionnaire of positive and negative symptoms was met by a psychiatrist [5]. Then, the form related to the condition of the teeth of patients and healthy people selected by the dentist was completed. Decayed, Missed, and Filled Teeth (DMFT) indices were used to assess the condition of the teeth of sick and healthy individuals.

D, M, and F were determined under optimal lighting conditions using a flat mirror number 3 and a pig-tail catheter to obtain the DMFT index. A flashlight was used to provide light and visibility if necessary. The D, M, and F values were determined using the following explanations, and the DMFT index for each individual was obtained using the sum of the D, M, and F values [5,10]. Parameter "D" indicates the number of permanent teeth that have decayed. If the tooth has a restoration but also has caries, it is considered caries. The "M" parameter indicates the number of permanent teeth lost due to caries, and teeth that are severely decayed and need to be removed are also missing. Teeth extracted for orthodontic treatment, permanent teeth that have not erupted, missing teeth due to an accident, or any congenital missing teeth are not considered in this group. Parameter "F" indicates the number of permanent teeth that have been restored or veneered due to decay and currently do not decay [5,10].

T-test student and Chi-square test were used to examine the relationship between quantitative and qualitative variables, and Pearson and Spearman's tests were used to determine the correlation. SPSS software version 21 was used to analyze the obtained data statistically.

## Results and Discussion

The results showed that the mean age of patients was not significantly different from healthy individuals (Table 1). In this study, the mean DMFT in patients with schizophrenia was significantly higher than in the healthy group ( $P < 0.05$ ) (Table 2 and Figure 1), which was similar to the results of the study by Ebrahimi et al. [11]. Reduced saliva secretion due to medication in schizophrenia patients is one of the most apparent reasons for this condition. Based on the study results by Ebrahimi et al. dry mouth is directly related to the increase in mean DMFT, and patients with schizophrenia who had dry mouth also had significantly higher DMFT [11]. Decreased

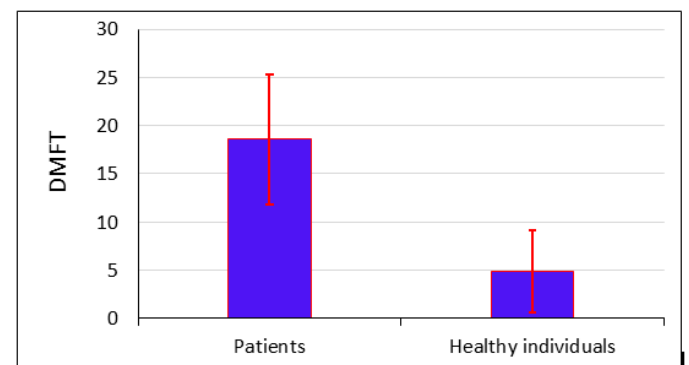
salivation and consequent dry mouth are among the most well-known side effects of psychotherapy. Saliva plays a vital role in regulating acidity and removing microorganisms from the surface of the mouth. Therefore, salivation reduces the above impact and provides the basis for caries and tooth loss [12].

**Table 1.** The age of patient and healthy groups studied.

Group	Number	SD ± Mean	Statistical Parameters
Patient	38	47.6 ± 14.2	t=0.211. df=741 P=0.72
Healthy Individuals	38	46.1 ± 14.7	

**Table 2.** The dental health of patient and healthy groups studied.

Statistical parameters	SD ± Mean	Group	Parameters
Decay teeth (D)	6.52 ± 3.32	Patients	t=3.65 df=62 P<0.001
	3.79 ± 1.11	Healthy individuals	
Missed teeth (M)	9.95 ± 7.21	Patients	t=3.21 df=52.5 P=0.004
	5.44 ± 3.48	Healthy individuals	
Filled teeth (F)	2.12 ± 1.1	Patients	t=3.75 df=62 P<0.001
	5.62 ± 2.2	Healthy individuals	
DMFT	18.59 ± 6.75	Patients	t=2.47 df=41.25 P<0.001
	4.85 ± 4.23	Healthy individuals	



**Figure 1.** The comparison of DMFT between patient and healthy groups studied.

In the present study, the mean DMFT index, mean Decayed teeth (D), Mean missed teeth (M), and mean Filled teeth (F) in patients with schizophrenia were 18.59 ± 6.75, 6.52 ± 3.32, 9.95 ± 7.21, and 2.12 ± 1.1, respectively. The results of the study show similarities with the results of some other studies. The mentioned parameters in Nikfarjam et al. study were 19.43 ± 0.71, 11.24 ± 6.97, 8.17 ± 8.30 and 1.1 ± 0.4, respectively [10] and, similarly, in Farhadmollashahi et al. study, 15.22 ± 6.62, 6.86 ± 3.60, 8.31 ± 6.89 and 0.06 ± 0.45, respectively, were obtained [13]. Ebrahimi et al. reported that the mean of these parameters is 7.35 ± 19.25, 3.20 ± 6.43, 7.66 ± 10.82, and 2.0 ± 4.12 [11]. Gurbu et al. conducted a study in Turkey that showed similar results to the present study [14]. The similarities between the results of previous studies [10,11,13,14] and the results of this study could be due to cultural, geographical, and economic similarities and similarities in the statistical community and measurement tools.

While the mean DMFT of schizophrenic patients was lower than the results of the current study, according to Bertaud-Gounot et al. in France [15] and

Chu et al. In Taiwan [16], this can be explained by the larger statistical population and better socio-economic status of Taiwan and France than Iran. Furthermore, the current study's results are incompatible with those of Arnaiz et al. In Spain and Persson et al. On Sweden in terms of the mean of DMFT [2,17]. This difference could be explained by the fact that the subjects were chosen from outpatients, and the welfare indicators in the statistical populations of both the Sweden and Spain studies are better than those in the current study's statistical population.

Different rates of MDFT have been reported in patients admitted to psychiatric clinics in other studies. For example, Vigild et al. Angelillo et al. Kenkre et al. and Rekha et al. reported 26.1, 15.5, 12.6, and 6.1, respectively, in their studies [18-21]. These variances could be due to differences in the participants' diseases, age, sex, fluoride in the water they drink, health status, diet, mental illness duration, and the drugs they use.

According to the present study results, each variable of age, smoking rate, smoking history, length of hospital stay, and mean "negative symptom scores" has a significant relationship with the mean DMFT (Table 3). In contrast, the variables of mean "positive symptom scores" and sex of patients have no meaningful relationship with the mean DMFT (Tables 3 and 4).

**Table 3.** Relationship between DMFT and demographic variables in patients with schizophrenia.

Demographic variables	SD ± Mean	Correlation coefficient	P
Age (years)	47.6 ± 14.2	0.615	0.001
Smoking per day (cigarette)	10.2 ± 5.3	0.352	0.003
Smoking history (years)	6.7 ± 4.1	0.213	0.037
The during of current hospitalized (months)	10.6 ± 7.5	0.172	0.041
Average negative symptom scores	96.7 ± 21.3	-0.151	0.049
Average positive symptom scores	77.8 ± 18.9	0.035	0.442

**Table 4.** The MDFT average for man and women in patient and healthy groups studied.

Statistical parameters	SD ± Mean	Group	Group
Patients	21.65 ± 6.45	Man	t=1.08 df=24 P=0.421
	18.75 ± 5.72	Woman	
Healthy individuals	17.15 ± 6.28	Man	t=0.64 df=35 P=0.635
	6.62 ± 5.40	Woman	

Kumar et al. found that the mean DMFT score in people with a mental health condition was 1.8 ± 0.92, which is significantly different from the results of this study. In that study, the individuals ranged from 15 to 24 years, and their hospitalization history was less than a year. Their mean DMFT was also related to their age and length of stay in the hospital. Therefore, the difference in mean DMFT between this study and Kumar et al. (2006) is due to younger age and a shorter hospital stays in Kumar et al. [22].

According to the results of this study, patients with schizophrenia have a mean number of Decayed teeth (D), Missed teeth (M), and Filled teeth (F) of 6.52 ± 3.32, 9.95 ± 7.21, and 2.12 ± 1.1, respectively. These results are

almost similar to those of Velasco et al. who found that the mean parameters D, M, and F among psychiatric patients, most of whom were schizophrenic patients, were 7.9, 17, and zero, respectively [23].

## Conclusion

Schizophrenia is a form of psychiatric disorder that has been shown to have negative consequences for patients' dental health. Based on the present study results, it can be concluded that the health status of schizophrenia patients in the study population is unfavorable. Therefore, considering the sensitive conditions of this type of patient in terms of caring for the health status of their teeth, it is necessary to take basic measures to improve the dental health status of this type of patient.

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