

DETERMINING PERIODONTAL AND DMFT IN MENTAL DISORDER PATIENTS IN 3 TRAINING CENTER IN TEHRAN AND RELATED FACTORS IN THE YEAR 2016-17

Karimi M,¹ Ghasemi M,² Sadr SS³

1. Undergraduate Student Department of Dentistry, Islamic Azad University, Dental Branch, Tehran, Iran.

2. Associate Professor, Department of Periodontics, Islamic Azad University, Dental Branch, Tehran, Iran.

3. Assistant Professor, Department of Psychiatry, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

ABSTRACT

Aim: There is close relation between mental disorders and poor healthcare. these kind of research give warning for health care providers that they will be aware of these kind of findings and mental patients for screening and control from the health aspect, from the other hand the mental patients are prone to be more suspected from the side effect of anti-psychotic medications and they exercise less in comparison to the rest of the population and they smoke more. Study with the purpose of examining the oral and dental health of the patient's condition with the psychological consideration in 3 different medical educational and training center of mental patients in Tehran city has occurred.

Materials & Method: In this study 530 people were selected. Then oral examination with the use of mouth mirror, WHO probe, explorer, under sufficient light, with the help of plaque disclosing tablet was done by a trained dental student, studied DMFT, CPI, Plaque Index indicators for all the examined patients under the ANOVA and Tukey test was shown by statistics.

Results: Among 530 examined patients 262 were men and 268 were women with the average age was 37.0. 30.5 % of patients had the history of smoking. 69.6 % had xerostomia. The average number of examined teeth were 25.8 ± 8.1 , the plaque index level was $86.6\% \pm 12.2\%$, the DMFT level was 14.77 ± 10.1 , the total CPI level in patients were 2.79 ± 1.60 and among the effective factors which were examined DMFT and CPI was related to the age of the patient and smoking and only DMFT was related to all the factors except sex of the patient and CPI was related with the age, sex, smoking (p value < 0.05).

Conclusion: Base on the result of the research mental patients had more tendency to have oral and dental diseases so these people have the priority for the prevention and treatment.

Key words: Psychological Consideration, Oral Health, Periodontal Diseases.

Introduction

One of the concerns and worries about psychotic patients are the oral and dental health status.¹ Patient's performance in different aspects of occupational, educational, social and self-care is disrupted and patient requires permanent care,^{1,2} this disease can cause demolition of cognitive abilities, long term social problem, social poverty, defect in self-care and functional problems and cause disability of the patient. in the mean time the community health objectives to improve the sanitary status and social activity of these patients.^{3,4} The researchers shown that there is close relation between mental disorders and poor healthcare. these kind of research give warning for health care providers that they will be aware of these kind of findings and mental patients for screening and control from the health aspect, from the other hand the mental patients are prone to be more suspected from the side effect of anti-psychotic medications and they exercise less in comparison to the rest of the population and they smoke more. The factors that can prevent mental patients to get better health care are extreme economic poverty, lack of housing, unemployment, lack of control on their health, failure to report physical symptoms, cognitive impairment, social isolation, suspicion and lack of social skills.⁵ Effect of anti-psychotic medications such as xerostomia, dysphagia, oral cavity inflammation, glossitis, gingival inflammation, edema, pale tongue, oral and dental difficulties in hospitalized patient in psychiatric department are more common that can prove the health care problems in these patients.³ Except the medications which were used by these

patients due to nature of disease, xerostomia and gingival diseases are more common.⁶ As these patients are unable to do their personal affairs and observation and maintenance of personal oral and dental health and due to nature of disease and being hospitalized for long time have economical and financial problems on the other hand dentist don't show any interest in treating these kind of patients the prevalence of oral – dental disorders among these patients are more and bring up the requirement of treatment in these group of people.⁶ To oral and dental diseases and poor oral hygiene can cause other diseases such as respiratory problems and gastrointestinal problems (like bacterial pneumonia) and oral and dental diseases are the secondary cause for morbidity and mortality in schizophrenic patients.⁷ Though there is less studies on oral health in Asia specially in Iran⁸ and environmental, cultural and social differences bring up more attention to oral health in mental patients. so this study has been done to check the condition and oral status of mental patients and the related factors in 3 health care centers for mental patients in Tehran was done in the year of 2016-2017.

Materials & Method

The present method of research was done by descriptive method. In this research 530 patients were selected⁹ and examined. To select patients for this study, patients who had 5 types mental diseases and disorders referred to 3 training and treating center: Imam hossein, Rouzbeh, Taleghani and were examined base on the previous files. [Table 1]

	Groups
1	Mood disorders
2	Anxiety disorder
3	Adjustment disorder
4	Psychotic disorder
5	Attention deficit hyperactivity disorder

Table 1: Mental disorder was categorized in 5 groups

First to participate in this study, volunteers were asked for letter of satisfaction and then oral examination with help of mouth mirror, sufficient light, WHO probe, explorer, detector tablet (Hanger & Werken GmbH & CO KG, Duisburg Germany) was done by well-trained dental student as follows and DMFT index, CPI index and Plaque index were examined in all patients¹⁰ DMFT index is for permanent dentition and include: D(decayed), F(filled), M(missed). Decayed refers to area which there is catch on probe and discoloration. Missed refers to missing teeth, extracted due to cavities. Filled refers to restored teeth due to decay, at the end of calculation all decayed, missed, filled are added up together according to form number 3 (adjustment disorder).^{11,12}

PI (Plaque Index Calculation)

According to form number 4 individual plaque index was done by O'leary index, in this index detector tablet (Hanger & Werken GmbH & CO KG, Duisburg Germany) was used to determine presence or absence of plaque. Presence of plaque in 4 surfaces of each tooth (mesial, buccal, distal and lingual) was evaluated and recorded.

Plaque index in each individual calculated by adding up all colored surfaces and divided by total number of surfaces (number of teeth x 4) into 100 and it shows percentage.¹³

CPI Index Calculation (Community Periodontal Index)

According to form Table 2 CPI is criteria for measuring periodontal status in patients. examination was done by WHO probe, mouth mirror and sufficient light and examination was done by the help of WHO probe based on following parameters.¹³

Level	Community periodontal index (CPI)	Probe examination
0	Healthy and no sign of bleeding	All color part of probe is visible
1	Bleeding on probing	All color part of probe is visible
2	Presence of supra gingival and sub gingival calculus	All color part of probe is visible
3	Shallow pocket (4 to 5 mm)	Color part or small part of it is visible up to marginal gingiva
4	Deep pocket (6mm and more)	Color part is not visible clinically
X	Unrecognizable	
9	Absence of desired tooth	

Table 2: CPI index calculation

Evaluation by WHO probe was done in 6 parts (mesiobuccal, midbuccal, distobuccal, mesiolingual, midlingual, distolingual) in first and second molar in all 4 quadrants and maxillary right central incisor and mandibular left central incisor, highest score in each point in the examined surfaces, the score would be sextant and for each person 6 scores related to 6 sextant are examined and registered. [Table 2]

At the end the highest obtained score of each part determined as patients oral CPI. At the end, after gathering all the data, gathered information by the purpose of analysis log into SPSS software, descriptive commitment indicators like average, standard deviation are used for description PI and DMFT level and for description of CPI index the frequency of ranking has been used. significance level determined in regression test was $p=0.1$ and in k2 $p=0.05$. For evaluation the difference between groups, Anova test was done by significance level of 0.05. According to nature of consumed medications in mental patients with or without systemic disorders T-test was done by significant level of 0.05 for evaluation of the relation between variable studies with mental disorder linear regressive test was done p value < 0.1 , for evaluation of xerostomia logistic regressive test by significant level of 0.1 was used.

Results

In this research 530 patients in 3 training, treatment center from mental patients in Tehran city were examined 262 were men and 268 were women with the average age was 37.0 ± 6.1 . Among examined patient 162 patient had history of smoking (30.5%). Smoking patients smoked average of 15.6 cigarette per day. 228 people (43.0%) of the patients didn't have the habit of brushing and 302 patients (57%) used to brush for maintenance of oral and dental health. Majority of patients (69.6%) had xerostomia and (45.7%) in addition to mental disorder suffered from systemic disease too.

The average of examined teeth was 25.8 ± 8.1 (by considering wisdom teeth). Plaque index level was $86.6\% \pm 12.2\%$. Decayed teeth had high occurrence among patient and average of decayed teeth were 7.6 ± 5.6 and only 16 patients had no decayed teeth. The average of extracted teeth was 3.8 ± 2.8 . Average of filled teeth was 3.4 ± 1.2 . The average of DMFT level was 14.77 ± 10.1 and only 3 patients had 0 DMFT. The total CPI level in patients were 2.79 ± 1.60 .

Intact gingiva was not seen in any of the patients, CPI = 0, bleeding was seen in 3 patients (CPI = 1) (0.56%) calculus detected or overhanded (CPI =2) in 175 patients (33.0%), shallow pocket (CPI =3) in 282 patients (53.2%) and deep pocket was seen (CPI = 4) in 70 patients (13.2%). Shallow pockets and then calculus in order had direct relation with periodontal diseases.

In psychotic and ADHD patients the hygiene is less in compared to other groups and significantly these patients brush less and in these 2 mental disorder groups number of teeth are less in compare to other groups ($p<0.05$).

According to Table 3, in between examined patients, DMFT in anxiety disorders, moody, and adjustment were in a similar range between 14.3 till 14.8. in two other group (psychotic disorder had highest DMFT level 17.7 and ADHD patient had least DMFT level (7.6 teeth) highest and lowest decayed, extracted teeth, restored teeth, oral CPI and plaque index like DMFT index in order belongs to psychotic group of patient and ADHD patient, DMFT level in all 5 group of mental disorders is very high.

Smoking		Systemic disease		Xerostomia		Daily tooth brush		Duration of disease (month)	Average age of patients	Number of patients		Individual index
No	Yes	Had not	had	Had not	Had	No	Yes			F	M	
61.3%	38.7%	57.9%	42.1%	31.5%	68.5%	37%	63%	86.2-86.7	35.3±12.3	111	124	Mood dis
88.5%	11.5%	51.0%	49.0%	41.3%	58.7%	32.7%	67.3%	70.2-78.6	40.7±14.9	65	41	Anxiety dis
75.5%	24.5%	45.7%	54.3%	26.6%	73.4%	42.0%	57.8%	82.2-88.6	40.9±13.8	61	51	Adjustment dis
58.8%	41.2%	53.8%	46.2%	33.8%	66.3%	71.3%	28.7%	129.1-185.3	36.9±10.6	22	58	Psychotic dis
82.4%	17.6%	76.5%	23.5%	47.1%	52.9%	58.8%	41.2%	50.3-47.1	17.1±6.4	5	14	ADHD
0.010		0.098		0.001		0.010		—	—	0.010		p Value

Table 3: distribution of patients according to their individual indicators

Table 4, explains about dental parameters in all 5 group of mental disorder. Nova test showed that difference between all groups and all parameters except number of teeth ($p=0.119$).

Indicators	DMFT Mean±SD	Decay mean±SD	missed mean±SD	filling mean±SD	Number of teeth mean±SD	CPI mean ±SD	plaque index mean ±SD
mood dis	14.4±6.6	7.5±4.8	3.7±5.1	3.2±3.8	25.8±5.7	2.8±0.6	85.2±16.2
anxiety dis	14.3±5.3	6.7±4.0	3.2±4.6	4.3±3.8	26.3±5.3	2.7±0.7	82.6±17.1
adjustment dis	14.8±6.0	6.9±3.8	3.9±4.6	3.9±4.3	25.6±5.3	2.8±0.6	88.0±15.0
psychotic dis	17.7±6.4	10.0±6.0	5.1±5.7	2.6±3.8	24.7±6.4	2.9±0.6	96.4±7.4
ADHD	7.6±4.5	6.1±4.3	0.3±0.86	1.0±2.27	28.3±1.3	2.3±0.5	81.6±19.0
p Value	0.001>	0.001>	0.005	0.002	0.119	0.002	0.001>

Table 4: Distribution of examined people based on indicators to be evaluated

Charts 1,2,3 DMFT, plaque index and CPI of the people are divided based on the group of psychological disorder.

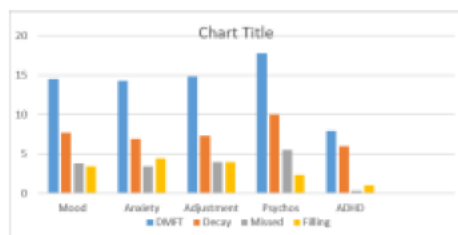


Chart1: DMFT average in decayed, extracted, restored teeth in each mental disorder group

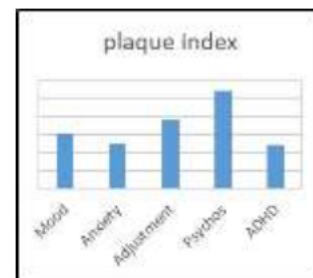


Chart 2: Plaque index average in each group of patients with mental disorders

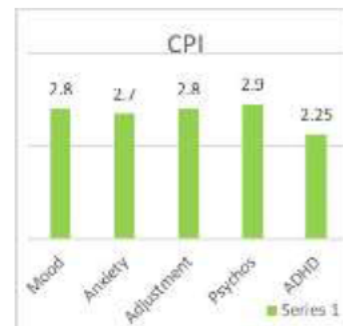


Chart 3. CPI index average in each group of patients with mental disorders

The xerostomia is the most important condition among mental patients that is mainly affected by smoking, age increasing, longer duration of disease, use of anti-depressant medications, anti-anxiety, hypotonic and anti-psychotic medication ($p<0.1$).

About xerostomia in addition to its relation with age, smoking cigarette and duration of disease. Regression logistic test about the consumable medication groups shows that xerostomia by 3 groups of medication like anti-psychotic, anti-depressant, anxiolytics /hypnotics had meaningful relation but didn't have relation with other 3 groups. [Table 5]

Xerostomia			
Variable factors causing xerostomia	Regression p value	Variable factors not causing xerostomia	Regression p value
Age	0.001	Sex	0.643
Daily smoked cigarette	0.007	Type of Disease	0.129
Anti-psychotic medication	0.001	Systemic Disease	0.943
Anti-depressant medication	0.061	Stimulating Medication	0.129
Anxiolytics/Hypnotics	0.008	Opioids	0.669
		Mood Stabilizers/Anticonvulsants	0.334

Table 5: Relation of xerostomia with parameters in regression logistic analysis

Oral hygiene of patients was related with the plaque and DMFT level but didn't have meaningful relation with CPI level ($p=0.945$) but as you saw there is meaningful relation between CPI and smoking ($p=0.019$). Xerostomia showed that there is meaningful relation with DMFT, index component, also with PI and number of teeth. [Table6]

Index Variant	DMFT	CPI	Plaque Index	Decay	Missed	Filled	N. of teeth
Age	*0.001<	*0.001<	*0.001<	*0.018	*0.001<	*0.001<	*0.001<
Sex	0.843	*0.001	0.854	0.845	0.911	*0.017	0.906
Daily smoking	*0.013	*0.019	*0.025	*0.005	0.888	0.894	0.884
Oral hygiene (daily brushing)	*0.016	0.845	*0.001<	*0.001<	*0.005	*0.001<	*0.030
Xerostomia	*0.001<	0.894	*0.001<	*0.001<	*0.001<	0.907	*0.001<
Duration of the disease (Months)	*0.001	0.757	0.717	0.737	*0.008	0.777	*0.001
Systemic Disease	*0.001<	0.225	*0.001	0.763	*0.001<	0.823	*0.001<

Table6: Relation of general personal information with dental parameters in regression logistic analysis

Patients with periodontal and dental parameters have shown that only anti-depressive medicine had no relation with any of these parameters, other groups of medicines with one or some had relation. The most related medicine was anti-psychotic medicines which except missed and number of teeth with other parameters had relation and the least related was anxiolytics/ hypnotics medicine which had relation with DMFT and mood stabilizers/anticonvulsants, PI, missed teeth and number of teeth. stimulants medicines also had relation with number of teeth. Opioids also had relation with DMFT and Decay. [Table 7]

Index Variant	DMFT	CPI	Plaque Index	Decay	Missed	Filled	No. of Teeth
Anti-depressant Medications	0.722	0.888	0.765	0.868	0.771	0.886	0.876
Anti-psychotic Medications	*0.037	*0.047	*0.001<	*0.001	0.898	*0.016	0.876
Anxiolytics / Hypnotics	*0.048	0.975	0.908	0.957	0.918	0.980	0.898
Mood stabilizers / Anticonvulsants	0.793	0.874	*0.003	0.864	*0.040	0.898	*0.078
Opioids	*0.035	0.911	0.910	*0.005	0.954	0.941	0.950
Stimulants	0.873	0.902	0.897	0.903	0.920	0.905	*0.031

Table 7: Relation of regression analysis with taken medicine with under study dental parameters

Discussion

This study was done to evaluate oral and dental health of patients with mental disorders in Tehran. This study proved the signs of dental negligence and poor hygiene.^{9,11,14} In this study dental health was evaluated with DMFT index and periodontal condition with CPI index. DMFT average in examined patient was 14.7 ± 10.1 that this range was less in some studies.^{12,13,15} and was more in some other studies.¹⁶⁻¹⁸ This differences can be due to age differences, type of consumed medications and duration of disease in different studies. This study was also done in Iran. Nikfarjam and his co-workers¹⁹ reported DMFT level in

schizophrenic patients in charmahal and bakhtiyari province 19.43 ± 7.71 and Farhad Mollashahi and his coworkers¹¹ reported DMFT average index 13.78 ± 7.8 in Sistan and Balouchestan and also Ghafarinezhad and his co-workers reported 19.77 ± 7.88 .

The average of decayed teeth in this study 7.6 ± 5.6 was little more in compare to Farhad Mollashahi and his co-workers¹³ and was much lesser of the findings by Nikfarjam and his co-workers 11.24 ± 6.97 .¹⁹ In comparison to average age in examined patients 37.0 ± 6.1 with average DMFT level 14.7 ± 10.1 , have shown differences with other studies that can affect age factor.

Bertaud-Gounat and his co-workers²⁰ reported DMFT level 15.8 ± 8.8 in mental disorder patients in France with average age of 47.3 ± 5 . In Serbia with the average age 46 years (DMFT = 24.4)¹² and in Turkey (DMFT=19.25) with average age of 52.3 years²¹ and lesser numbers in Taiwan (DMFT=13.9) and reported average age was 51 years.¹⁷ Average of extracted teeth (Missed) in present study 3.8 ± 2.8 was much lesser in compare to other studies. In study which was done in Iran in schizophrenic patients in charmahal and bakhtiyari reported 8.17 ± 8.3 and in Sistan and Baluchestan 7.4 was reported. This average in Kebede and his coworkers¹⁴ was 0.51 ± 1.19 and age average was 29.9 years and in France was 7.3 ± 9.4 with average age of 46.9 ¹⁷ and in Serbia 19.0 was reported. The average of decayed teeth in present study have shown 7.6 ± 5.6 which was more than Farhad Mollashahi and his co-workers study in Sistan and Baluchestan 6.1 ¹¹ Ramon study and his co-workers was 6.2 ²² and in Kebede and his co-workers 1.28 ²² and Jovanovic and his coworkers 3.4 .¹² In present study filled teeth was little more than Jovanovic and his co-workers 2.0 ¹² and was much more in Kebede and his co-workers report 0.14 ¹⁴ but we have to mention the point that Kebede and his co-workers study was lesser than present study and it was 29.9. Btained CPI average in Kebede and his co-workers¹³ was 1.6 ± 1.28 that was less in compare to the present study 2.79 ± 1.60 . In present study healthy periodontium (CPI =0) was not observed in any of examined patients and CPI =1 TO CPI =4 was in order reported 0.56%,33%,53.2%,13.2%. As we saw healthy periodontium in comparison to Shah and his coworkers study²³ in order to CPI=0 to CPI=4 was reported 6.8%, 16.5%, 45.1%,24.8%, 4.5% which are lesser than our study. lesser and percentage of areas with calculus and shallow pocket was seen more in Shah and his co-workers study.

Other study on periodontium with other indices like OHI (oral hygiene index) have shown that these patients were no in a good periodontal condition.^{14,20} This can be due to lack of information or lack of facility in educating and training centers according to financial and social status of the individuals and it can also be related to ability of individual these evidence can be related to oral and dental hygiene findings that shows 43% who don't care about oral and dental hygiene (don't brush). Other findings in examined patients other than brushing can be relate to smoking 30.5% and presence of systemic disorder 45.7%, all 3 factors can

be effective in periodontal diseases. Other important factor in these patients is xerostomia 69.6% that can be due to the interaction between consumed medicine and side effect of systemic problems. In addition consumed medicines in these patients can cause reduced salivary secretion and xerostomia.^{14,24}

Regression test was done based on general knowledge and consumed medications in these patients. Among individual's features as it was expected age was related with all periodontal and dental parameters and increase in age was effective in all parameters. This point was shown in many studies^{12,14,20} as there is no relation between oral and dental hygiene and CPI from one point and meaningful relation of age and smoking with CPI can give this chance other affective factors can influence CPI level in these patients. And also due to widespread distribution of patient's ages, this factor is not related to CPI this may cause limitation of this study.

The point which was exactly evaluated, was the consumed medications in these patients with examined indices. The consumed medicines in these patients were different and all of them are divided in groups of 6.

Previous studies have shown the relation of use of medicines with indices like DMFT²⁰ but this has been mentioned before. In present study by dividing medicines have been proved that stimulating medicines had no impact on the factors and no relation was seen.

On the opposite side the highest relation was seen in anti-psychotic medicine with DMFT, CPI, PI parameters and then Anxiolytics/hypnotics and then opioids which both had relation with DMFT.

The result of present study should be judged with specific considerations due to presence of limitations. First of all in this study the financial status, educational level and individual's occupation which is effective in knowledge and attitude in oral and dental health was not considered. Secondly due to descriptive nature of this study was not possible to put patients in specific age group and duration of different diseases as a matter to see the effect on other parameters. Even though there were limitations in present study but it showed the condition of oral and dental health of patients in mental disorders don't have reasonable condition and it proved the requirement for more consideration in this group.

Conclusion

The oral and dental hygiene in mental disorder patients was not in good condition and some of the effective factors on this cause was identified that can be an interventional policy to reduce these factors, that can be beneficial for the patients and also appropriate for on time treatment plan.

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Corresponding Author

Dr. Moojan Karimi

Undergraduate Student,
Department of Dentistry,
Islamic Azad University,
Dental Branch, Tehran, Iran.
Email Id: - mmookkaquiet@yahoo.com