Print ISSN: 2321-6379
Online ISSN: 2321-595X

Original Article

Oral Health Profile of Chronic Mentally Ill Patients in Moradabad City: A Cross-Sectional Study

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Abstract

Introduction: Good oral health is an important feature of good general health depression or chronic mental illness causes different types of oral problem such as xerostomia, acidic salivary pH, tooth decay, or periodontal disease. There is no study carried out in the Department of Psychiatry, Teerthanker Mahaveer Medical Hospital, Moradabad, which show oral health status of depression or chronic mentally ill patient.

Materials and Methods: The study was carried out in the out patient Department of Psychiatry, Teerthanker Mahaveer Medical Hospital Moradabad with total number of 250 patients.Type III method of examination was used. oral examination was done by the help of WHO oral health assessment form for adult 2013. Salivary PH was calculated by the help of universal PH indicator solvent.

Results: Mean score of decayed, missing, and filled tooth (DMFT) was 3.75 and the SD of DMFT is 1.75. Mean of salivary pH is 4.89 and the standard deviation (SD) is 0.81. Mean of periodontal pocket is 1.14 and the SD of periodontal pocket is 0.81. Mean distribution of pH in relation to periodontal pocket was 4.86 and the SD of 0.79 pH in relation to periodontal pocket was 0.79. By using ANOVA *P* value in relation to salivary pH and periodontal pocket was 0.23 which is less than 0.5 (i.e. significant) .

Conclusion: The adverse effect of antidepressants leads to xerostomia and salivary pH of psychiatry patient is more acidic so psychiatry patients are more periodontally compromise.

Key words: Antidepressants, Depression, Salivary PH

INTRODUCTION

Depression is a common mental health problem which involves low mood or loss of interest in daily activity. We can say that depression is a whole body sickness. Depression not only effects eating pattern, sleeping pattern and perspective of life and things the symptoms of depression can be seen from, weeks months or years.[1] There is difficulty in doing concentration and taking small decisions in life, unusual memory forgetfulness, negative thinking, feeling loss of interest, and feeling of sad in every small things, etc., these symptoms may get worst with the severity of depression.[2] People suffering from depression feels sad and losses their interest in everything. Their feeling of sadness and loss of interest lead to unemployment poverty housing insecurities and most important social isolation they completely detach themselves from society.[3,4] These factors play an important role in the poor oral condition. Good oral health is an important feature of good general health.[5,6] There is a two-way relationship between oral health and general health.[7] People suffering from depression or other mental disorder have very poor oral hygiene that leads to poor general health.[8] Depression patient or chronic mentally ill patient having poor oral hygiene experiences dental diseases such as dental caries erosion periodontitis.[7] People suffering from severe depression or other mental disease are more prone to dental disease because of their poor oral hygiene,[9] dental phobia,[10] dental treatment,[11] cost, or difficulty in getting dental facilities.[12] To cure depression, antidepressants (tricyclic antidepressants) are given.[13] These antidepressants show adverse side effect

Access this article online

www.ijss-sn.com

Month of Submission : 11-2020
Month of Peer Review : 11-2020
Month of Acceptance : 12-2020
Month of Publishing : 01-2021

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on orofacial region such as bruxism and xerostomia.[14] Xerostomia is also known as dry mouth or reduce in saliva flow. These drugs cause change in saliva flow and salivary concentration as well.[15-17] Saliva plays an important role in the maintenance of good oral health. Saliva helps in keeping oral cavity moist help in remineralization of teeth, protect our oral cavity from infections.[18] Saliva is the only oral tissue protective fluid and the importance of saliva only realize when the rate of flow of saliva is decrease.[19] Salivary flow is regulated by the autonomic receptors present salivary gland. Antidepressant blocks the effect of acetylcholine on the muscarinic receptors and leads to decrease in flow of saliva. If unstimulated saliva flow is under 0.7 ml/min, then it is consider as hyposalivation or xerostomia.[20] In hyposalivation or dry mouth condition, the patient experiences many problems such as problem in deglutition, difficulty in speaking, and highly prone to infections dental caries gingivitis periodontitis bruxism.[21] There is no clear mechanism by which antidepressant reduces saliva flow as in salivary gland, there are so many endogenous receptors (vasoactive intestinal peptide receptors) that regulate the flow of saliva.[22] Therapeutic drugs in the past decades play a huge in the treatment of depression or other mental disease but coin have its other side to as these drugs have orofacial adverse side effects. My research paper will highlight the adverse side effect antidepressants on unstimulated saliva, pH of saliva, and the buffing capacity is been evaluated moreover the side effect of antidepressant on oral cavity.

MATERIALS AND METHODS

A cross-sectional study was held in the outpatient department (OPD) of the Department of Psychiatry, Teerthanker Mahaveer Medical Hospital, Moradabad. The total sample size of study is 250 patients. A verbal guidance, nature of study was explained to the patient and informed written consent was obtained by the patient as per the Helsinki Declaration. The ethical clearance was obtained by the Ethical Committee of Teerthanker Mahaveer Dental College and Research Centre Ref No: TMDCRC/IEC/SS/19-20/PHD02.

Inclusion

- Both the sexes, males and female, and age group of 20–50 years were included in the study
- Patients with a history of systemic disease or condition that may affect the flow of saliva and composition of saliva
- Patient who are on antidepressant form past minimum 21 days.
- Patient who are on tricyclic antidepressants and selective serotonin reuptake inhibitors
- Patient who give a history of dry mouth.

Exclusion

- Patient with a history of any systemic disease that do not affect the flow of saliva
- Patient who are more than 50 years of age
- Patient who is having oral cancer or has undergone oral cancer surgery
- Patient who is under chemotherapy or radiation therapy
- Patient who has undergone oral prophylaxis in the past 6 months
- Patient who is suffering from Sjogren's syndrome or any other salivary gland disorders
- Patient who are not willing to fulfill the consent form
- Patient who are uncooperative.

Patients were examined according to type III examination (American Dental Association) which is used for public health survey.[23] Intraoral examination was done according to the World Health Organization (WHO) pro forma 2013.[24] The intraoral examination was done with the help of the WHO CPI probe. In the study periodontal status, dental caries is examined in each patient.

Saliva Sampling

The pH value of saliva of each patient is checked by the help of pH universal indicator solvent. "Common Minimal Technical Standards and Protocol" was the method by which saliva sample was collected. This technique was given by the WHO/International Agency for Research on Cancer guideline.[25] The patient was asked give there saliva sample in the morning with overnight fasting. The patient was asked not to eat or drink any liquid except water. After making patient comfortable, the patient was asked to wait for 5 min after 5 min the patient was asked to put their head in downward direction and ask to spit the saliva in a sterile tube the pH of saliva was checked by the universal indicator as soon as possible.

Statistical Analysis

The collected sample was entered into MS Excel (Window 2010). The statistical analysis was done in 21.0 version of Statistical Package for the Social Sciences. *P* value was calculated by the help of analysis of variance (ANOVA). $P < 0.05$ was considered statistically significant.

RESULTS

In the study, 250 were total sample size. The study was conducted in the OPD of Psychiatry, Teerthanker Mahaveer Medical Hospital, Moradabad. In the study, 63.2% (158) were male and 36.8% (92) were female. The mean age was 39.94 and the standard deviation (SD) of age is 11.61 [Table 1]. In the study, decayed, missing, and filled

tooth (DMFT) was also recorded in which 96% (241) of patients were having dental caries maximum no. of patients is suffering from tooth decay of decay which is 2.22 and the SD is 1.19. The mean 33.6% (74) of patients have missing tooth due to tooth decay mean of missing due to decay which is 0.82 and the SD is 1.39. About 29.2% (73) of patients having filled tooth. The mean if filled tooth is 0.52 and SD is 0.93. The mean of DMFT is 3.75 and the SD of DMFT is 1.75 [Table 2]. In the study, 72% (180) of the total study population have gingival bleeding is present, the mean of gingival bleeding is 0.72, and SD of gingival bleeding is 0.45. About 28% of the study population is not having gingival bleeding. About 40.4% (101) of the study population was having pocket of pocket depth of 6 mm or more. About 33.2% (83) of the study population was having pocket of pocket depth 4–5 mm. About 26.4% (66) of the study population was not having pocket. The mean of periodontal pocket is 1.14 and the SD of periodontal pocket is 0.81 [Table 3]. The loss of attachment of 4–5 mm was seen in 60.8% (152) of the study population. About 20.4% (51) was having loss of attachment of 6–8 mm. About 18.8% (47) of the study population was having loss of attachment of 0–3 mm.

Table 1: Distribution of DMFT, mean and SD of DMFT

Variables	Absent (%)	Present	Mean	SD
Decayed	3.6	96.4	2.22	1.19
Missing	66.4	33.6	0.82	1.39
Filled	70.8	29.2	0.52	0.93
DMFT	–		3.57	1.75

SD: Standard deviation; DMFT: Decayed, missing, and filled tooth

Table 2: Distribution of gingival bleeding and pocket score among the study subjects

Variables	*n*	%
Gingival bleeding present	180	72
Gingival bleeding absent	70	28
Pocket score 0	66	26.4
Pocket score 1	83	33.2
Pocket score 2	101	40.4

Table 3: Distribution of LOA score

Sextant	LOA score							
	0		1		2		X	
	n	%	*n*	%	*n*	%	*n*	%
16/17	52	20.8	118	47.2	80	32	0	0
11	137	54.8	113	45.2	0	0	0	0
26/27	37	14.8	124	49.6	52	20.8	37	14.8
36/37	87	34.8	142	56.8	21	8.4	0	0
31	111	44.4	139	55.6	0	0	0	0
46/47	47	18.8	152	60.8	51	20.4	0	0

The pH of saliva was record by the help of pH universal indicator solvent and the change in color of saliva was match by the pH guide, mean of salivary pH is 4.89, and the SD is 0.81 [Table 4]. In the study, 96% of the study population was having tooth decay, the mean distribution of pH in relation to decayed tooth was 4.77, and the SD of pH in relation to decayed tooth was 0.263. Using ANOVA $P = 0.65$ which was more than 0.5, so the relationship of pH with decayed tooth was not significant [Table 5]. In the study, 33.2% of the study population having periodontal pocket of depth 6 or more. Mean distribution of pH in relation to periodontal pocket was 4.86 and the SD of 0.79 pH in relation to periodontal pocket was 0.79. Using ANOVA $P = 0.23$ which is <0.5, so the PH in relation to periodontal pocket was significant.

DISCUSSION

Saliva is the liquid that help in keeping our oral cavity moist saliva is secreted from the major and the minor salivary gland present in the oral cavity, the secretion of the saliva from the salivary gland is monitored by the autonomic nervous system. However, there are many drugs like antidepressants that may alter the flow of saliva and affect the quantity and quality of flow of saliva. The effect of antidepressant is so intense, until the drug gets completely stable in plasma concentration.[25] In the study, the pH value of saliva of each patient is checked by the help of pH universal indicator solvent. "Common Minimal Technical Standards and Protocol" was the method by which saliva sample was collected. This technique was given by WHO/International Agency for Research on Cancer guideline.[25,26] The patient was asked give there saliva sample in the morning between

Table 4: Mean distribution of pH in relation to decayed tooth

Decayed teeth	Mean	SD
Present	4.77	0.263
Absent	4.90	0.820
ANOVA test	0.207	
P-value	0.65	

ANOVA: Analysis of variance; SD: Standard deviation

Table 5: Mean distribution of pH in relation to periodontal pocket

Periodontal pocket	Mean	SD
Present	4.86	0.79
Absent	5	0.84
ANOVA test	1.4	
P-value	0.23	

ANOVA: Analysis of variance; SD: Standard deviation

9:00 am and 11:00 am with overnight fasting. The patient was asked not to eat or drink any liquid except water. After making patient comfortable, the patient was asked to rinse mouth by water, the patient was asked to wait for 5 min after rinsing the oral cavity after 5 min, the patient was asked to put their head in downward direction and ask to spit the saliva in a sterile tube, the pH of saliva was checked by the universal indicator as soon as possible. Analysis salivary pH was measured with the help of pH universal indicator, solvent salivary pH was analyzed with the pH guide. The normal pH range of saliva is 6.2–7.6. In the study, mean of salivary pH was 4.89 and the SD was 0.81; in the study, 96% (241) of patients were having dental caries maximum no. of patients is suffering from tooth decay of decay is 2.22 and the SD is 1.19. Mean distribution of pH in relation to decayed tooth was 4.77 and the SD of pH in relation to decayed tooth was 0.263. Using ANOVA $P = 0.65$ which was more than 0.5, so the relationship of pH with decayed tooth was not significant.

In the study, 40.4% (101) of the study population was having pocket of pocket depth of 6 mm or more. Mean of periodontal pocket is 1.14 and the SD of periodontal pocket is 0.81. Mean distribution of pH in relation to periodontal pocket was 4.86 and the SD of 0.79 pH in relation to periodontal pocket was 0.79. Using ANOVA $P = 0.23$ which is <0.5, so the pH in relation to periodontal pocket was significant.

Kebede *et al.* (2011) conducted a study on psychiatric disorder patient in which he found out the mean DMFT score of psychiatric patients was 1.9462.12 (mean 6SD). Along with this, 24% of the psychiatric patients had a healthy CPI score. They also documented that incorrect tooth brushing technique and sweet intake are also associated with dental caries and found that the oral health status of the psychiatric patients was poor.

Zaclikevis *et al.*, 2009; Rinaldi *et al.*, 2015; and Mattioli *et al.*, 2016, conducted a study in which he found that antidepressant (lorazepam) shows some changes in the parotid gland of the rats there was reduction in the flow of saliva and apoptosis was also seen in the salivary gland.

CONCLUSION

Depression is a whole body disease. Oral health and general health have two-way relationship. To cure depression, antidepressants are given which lead to xerostomia due to decrease flow of saliva in mental patient lead to many other dental problems. Oral health education is must for psychiatric patients as their salivary PH is comparatively low and should be asked to follow proper oral hygiene aids as well as routine dental visits.

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How to cite this article: Pandit S, Tangade P, Josh J, Singh AV. Oral Health Profile of Chronic Mentally Ill Patients in Moradabad City: A Cross-Sectional Study. Int J Sci Stud 2021;8(10):74-78.

Source of Support: Nil, **Conflicts of Interest:** None declared.