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Original Article

Dentistry Section

Evaluation of Oral Health Status and Temporomandibular Joint in Patients with Various Psychiatric Disorders in a Tertiary Care Center of Maharashtra, India

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ABSTRACT

Introduction: Living a physically and mentally healthy lifestyle is equally vital. It occurs at all socio-economic levels and affects individuals of all backgrounds. It is estimated that 450 million people are suffering from mental problems worldwide. Irrespective of the cause, everyone should be aware that poor dental health impacts overall health.

Aim: To assess the level of oral health for people with different psychiatric illnesses and to determine whether these people's level of oral health correlates with other characteristics and also to determine the extent of the issue with dental health and the best way to address it.

Materials and Methods: In this cross-sectional study, ninety-eight patients receiving care at the Psychiatric Department of Maharashtra, India, between April and May 2022 were included. A case history performa was prepared to gather detailed information on all aspects. The oral examination was done by examining lymph nodes, lips, tongue, gums and tissue, saliva, natural teeth, oral cleanliness, and dental pain with a sterile mouth mirror and probe using Oral Health Assessment Tool (OHAT) for dental screening modified from Kayser-Jones. Dental caries was reported using the Decayed, Missing, and Filled Teeth (DMFT) index. Furthermore, Helkimo's TMJ Index was used to assess Temporomandibular Joint (TMJ). Descriptive statistics were used to observe frequency variation.

Results: The participant patients mean age were 41.33±13.58 years, and their range of age was 21-65 years. The female:male ratio of the study population was 1.1:1. Sleep disorders (24.50%) and anxiety (22.40%) were the most prevalent psychiatric conditions impacting the research population. The oral health examination of the patients described changes in the oral cavity and associated factors, including lips, tongue, gums and tissues, saliva, natural teeth, oral cleanliness, and dental pain. Total 59.10% of the participants had moderate to severe TMJ dysfunction. The range of the DMFT score was 3 to 17 (mean 7.89±3.21). The participants' TMJ Index score ranged from 0 to 17 (mean 5.51±4.48). More than half of the participants (59.10%) had moderate to severe TMJ dysfunction.

Conclusion: Maharashtra's psychiatric patients have poor oral health conditions, highlighting the need for oral health education and expanding access to dental care for these patients.

Keywords: Dental caries, Mental disorder, Oral health status examination, Psychiatric illness

INTRODUCTION

One of the essential components of a healthy lifestyle is mental health. Regarding the UN, the World Health Organisation (WHO) founding document, health is "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity." Several studies prove that physical health affects mental well-being [1]. Both are necessary for better maintenance of wellness [2]. Psychiatric diseases impact individuals from every socio-economic group and reaching more than 450 million globally [3].

Dental anxiety, phobia, psychosis, eating disorders (such as anorexia and bulimia nervosa), alcohol and drug misuse, and mood disorders are omission psychiatric conditions that can negatively impact dental health. People who are dependent on drugs or alcohol frequently disregard their nutritional requirements, personal hygiene, and personal circumstances, all of which contribute to poor dental health [4]. Inflammation-based periodontal and caries disorders are widespread oral health issues around the globe. Because of stigma, misinformation, fear, and unfavourable views, psychiatric patients make up a sizable segment of the population that need particular care yet are frequently overlooked. Mental or psychiatric illnesses impact a person's general behavior, level of functioning and perceptions, resulting in poor oral health and inefficient self-care [5].

According to Reddy VM and Chandrashekar CR, meta-analysis, India has 58 people with mental illnesses per 1,000 residents [6]. According to Ranjan LK et al., it is 122 per 1,000 people in South Asian countries, compared to Ganguli HC, estimates of 70.5% (rural) and 73% (urban) [7,8].

Oral health is directly linked to general health, irrespective of whether a person has a mental illness. Medical diseases, including cardiovascular disease, type 2 diabetes, low birth weight, aspiration pneumonia, osteoporosis, and rheumatoid arthritis, are strongly associated with oral health issues [9]. The difficulties these people face in receiving dental treatment are their inexperience, lack of motivation, apathy, low willingness to cooperate, difficulty adapting to new prosthetic devices, mobility issues, fear of treatment, poor communication, and financial concerns [10].

An inadequate understanding of dental pathology and the psychological repercussions of oral disease exists among psychiatrists and their patients. The best part is that numerous studies have shown that those who receive education, direction, and reminders will have improved dental health and hygiene and that adaptive education- instruction can help them to learn new skills [11-14].

The researchers found that only 40% of the 19,609 patients in the study by Teng PR et al., visited the dentist [15]. People are

becoming more and more aware of the significance of oral health. India has few published data [5,16-18] on the oral health of those suffering from psychiatric disorders [16].

Comprehensive data on all the components of the stomatognathic system, including the soft and hard tissues of the oral cavity and the TMJ is required. Thus, the purpose of this study was to assess the level of oral health for people with different psychiatric illnesses in the Indian community, to determine whether these people's level of oral health correlates with other characteristics, and to determine the extent of the issue with dental health and the best way to address it.

MATERIALS AND METHODS

This cross-sectional study was conducted in the Department of Psychiatry at Acharya Vinoba Bhave Rural Hospital in Sawangi (Meghe), Wardha, India, from April to May 2022. Ethical clearance was obtained from the Institutional Ethics Committee (IEC) of Datta Meghe Institute of Medical Sciences, Deemed to be University, with IEC Number DMIMS (DU)/IEC/2022/978).

A convenient sample of ninety-eight patients receiving care at the Psychiatric Department of Acharya Vinoba Bhave Rural Hospital (AVBRH), Sawangi (Meghe), Wardha, Maharashtra, India, were included in this study. Participants, their parents and guardians, and the personnel of the Psychiatry Department were informed about the study. Informed consent was obtained from the individual after receiving their guardian's approval. A case history proforma was prepared to gather detailed information on all aspects. Performa entails collecting socio-demographic information and thorough examination of the oral cavity and TMJ.

Inclusion criteria:

1. Patients diagnosed with any psychiatric disorder.
2. Patients aged more than 21 years.

Exclusion criteria:

1. Patients with any significant systemic disorder.
2. Patients with a physical disability.

Procedure

The patient was informed about the study and acquired consent. The patient and their relatives were then asked about their demographic information, daily activities, and health-related behaviors. Age, gender, and length of mental illness were the recorded demographic factors. The clinical medical records of the patients were utilised to retrieve the medical variables, which included the mental condition diagnosis and the drugs taken.

After gathering the patient's demographic and medical information in the clinic; an oral examination was performed with the patient sitting straight and facing natural daylight. The oral examination was done by examining lymph nodes, lips, tongue, gums and tissue, saliva, natural teeth, oral cleanliness and dental pain with a sterile mouth mirror and probe using Oral Health Assessment Tool (OHAT) for dental screening [19] modified from Kayser-Jones et al. Aditionally, lymph nodes and pairs of teeth in chewing position were also assessed according to The Kayser-Jones BOHSE [20]. Dental caries was reported using the DMFT index. To assess individuals with Temporomandibular Disorders (TMDs), the Helkimo Clinical Dysfunction Index (HCDI) is a rapid and easy test. The exam provides a brief overall assessment that could be very helpful at various stages of care by evaluating movement, joint function, pain, and muscles. The HCDI is a viable and accurate assessment tool; it has good clinimetric qualities and a decent capacity to distinguish between people with and without TMD [21].

STATISTICAL ANALYSIS

Descriptive statistics were used to observe frequency variation. Chi-square test was used for statistical analysis. A p-value<0.05 was considered significant.

RESULTS

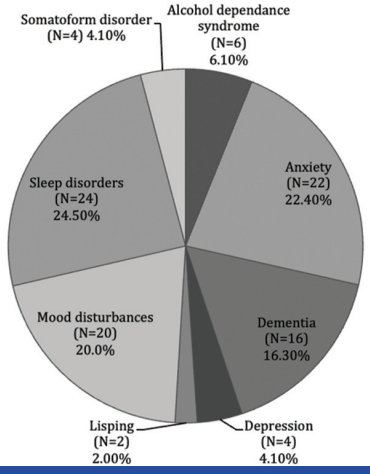
The participants' mean age was 41.33±13.58 years, and their range of age was 21 to 65. The female:male ratio of the study population was 1.1:1. The study population's demographic details are shown in [Table/Fig-1].

Variable	N	%
Age category		
21-25 years	12	12.24
26-35 years	30	30.61
36-45 years	22	22.45
46 years and older	34	34.69
Total	98	100
Gender		
Male	46	46.93
Female	52	53.06
Total	98	100

[Table/Fig-1]: Socio-demographic characteristics of the study population.

Out of the 98 patients studied, 44 patients stated that they brush their teeth twice a day, while 54 reported brushing only once. A total of 34 individuals have had a drinking habit for 8-10 years, and 43 have been smoking for 5-7 years. About the sugar intake, 60 reported consuming sugar twice daily, 7 reported consuming it three times a day, and 31 reported consuming it once daily. Of the patients, 74 had been suffering from an illness for 3-4 months and were visiting the hospital for the first time. Fifteen were undergoing treatment for two months, and eight had been receiving treatment for six months. Only 23 patients who were receiving treatment were taking medications, which included tab clonazepam, tab paroxetine, and tab sertraline.

Mental health: The most prevalent psychiatric condition impacting the research population was sleep disorder and anxiety [Table/Fig-2].



[Table/Fig-2]: Mental disorders affecting the study population.

The oral health examination of the research population [Table/Fig-3] describes changes in the oral cavity and associated factors, including lymph nodes, lips, tongue, gums and tissues, saliva, natural teeth, oral cleanliness, dental pain and pairs of teeth in chewing position. An 88 (89.8%) of the patients had gum and tissue alterations, whereas 74 (75.5%) had tongue changes. A 90 (91.8%) of the patients had impaired salivary flow. 72 patients did not have any lymph nodes enlargement, 20 had enlarged but non tender lymph nodes while in 6 paitients, the lymph nodes were enlarged and tender. Moreover, 88 patients had 12 or more pairs of teeth in chewing position, 6 had 8-11 pairs and in 2 patients only 0-7 pairs of teeth were found in chewing position.

The range of the DMFT score was 3 to 17 (mean 7.89±3.21). Decayed teeth were 1 to 10, with a mean (1.67±1.75). Only 30 (30.6%)

S. No.	Category	Score	Frequency	Percentage	Mean±SD
1	Lips	0=healthy	22	22.4	0.84±0.51
		1=changes seen	70	71.4	
		2=unhealthy	6	6.1	
2	Tongue	0=healthy	24	224.5	0.79±0.49
		1=changes seen	70	71.4	
		2=unhealthy	4	4.1	
3	Gums and tissue	0=healthy	10	10.2	1.0±0.46
		1=changes seen	78	79.6	
		2=unhealthy	10	10.2	
4	Saliva	0=healthy	8	8.2	1.0±0.41
		1=changes seen	82	83.7	
		2=unhealthy	8	8.2	
5	Natural teeth	0=no broken teeth	4	4.1	1.02±0.32
		1=1 broken tooth	88	89.8	
		2=more than 1 broken teeth	6	6.1	
6	Denture	0= no broken teeth areas	68	69.4%	0.37±0.61
		1=1 broken tooth	23	23.5%	
		2=more than 1 broken teeth	7	7.1%	
7	Oral cleanliness	0=clean no plaque visible	0	0	1.43±0.50
		1=plaque in some areas	56	57.1	
		2=plaque with calculus seen	42	42.9	
8	Dental pain	0=no pain	30	30.6	0.82±0.63
		1=verbal signs of pain	56	57.1	
		2=physical signs of pain seen	12	12.2	

[Table/Fig-3]: Oral health examination of the study population.

of the participants had missing teeth; the average number of missing teeth was 1.63±3.19. Furthermore, 34 (65.3%) of the participants had filled teeth in their oral cavities.

The participants' TMJ index score ranged from 0 to 17 (mean 5.51±4.48). More than half of the participants (59.10%) had moderate to severe TMJ dysfunction [Table/Fig-4].

S. No.	Score	Frequency	Percentage
1	Mild dysfunction	40	40.80%
2	Moderate dysfunction	46	46.90%
3	Severe dysfunction	12	12.20%

[Table/Fig-4]: TMJ evaluation of the study population.

To determine whether these people's level of oral health correlates with other characteristics and the extent of the issue with dental health, the oral health findings of the study had been associated with the various psychiatric disorders [Table/Fig-5].

S. No.	Category	Score	Alcohol dependence syndrome	Anxiety	Dementia	Depression	Lisping	Mood disturbances	Sleeping disorder	Somatoform disorder	p-value
1	Lips	0=healthy	0	4	4	0	0	6	6	2	0.001
		1=changes seen	4	18	10	4	2	12	18	2	
		2=unhealthy	2	0	2	0	0	2	0	0	
2	Tongue	0=healthy	2	6	0	2	2	6	4	2	0.003
		1=changes seen	4	16	14	2	0	14	20	0	
		2=unhealthy	0	0	2	0	0	0	0	2	
3	Gums and tissue	0=healthy	0	2	0	2	0	4	2	0	0.274
		1=changes seen	4	20	14	2	2	16	18	2	
		2=unhealthy	2	0	2	0	0	0	4	2	
4	Saliva	0=healthy	0	0	0	2	2	2	2	0	0.003
		1=changes seen	6	20	14	2	0	16	20	4	
		2=unhealthy	0	2	2	0	0	2	2	0	
5	Natural teeth	0=no broken teeth	0	2	0	2	0	0	0	0	0.029
		1=1 broken tooth	6	20	10	2	2	20	24	4	
		2=more than 1 broken teeth	0	0	6	0	0	0	0	0	
6	Denture	0=no broken teeth areas	4	15	12	2	0	16	16	3	0.000
		1=1 broken tooth	3	6	0	2	3	0	8	1	
		2=more than 1 broken teeth	0	0	4	0	0	2	0	1	

7	Oral cleanliness	0=clean no plaque visible	0	0	0	0	0	0	0	0	0.010
		1=plaque in some	2	14	4	2	2	14	16	2	
		Areas2=plaque with calculus seen	4	8	12	2	0	6	8	2	
8	Dental pain	0=no pain	2	4	2	2	2	8	8	2	0.006
		1=verbal signs of pain	4	16	8	2	0	10	16	0	
		2=physical signs of pain seen	0	2	6	0	0	2	0	2	

[Table/Fig-5]: Correlation between psychiatric disorder and oral health status.
Chi-square test , p<0.05 considered significant

DISCUSSION

The outcomes of this study revealed a concerning trend in the oral health of psychiatric patients. With a high prevalence of caries, alterations in the oral cavity supporting tissues, and some degree of TMJ dysfunction, it is evident that the dental health of this population is not being adequately addressed.

Lisping is a speech disorder that affects the pronunciation of the "s" and "z" sounds, and it can be associated with anxiety and stress. According to research, individuals who struggle with lisping may experience low self-esteem, social avoidance, and other negative emotions related to their speech difficulties [22]. Speech therapy is often recommended as a treatment for lisping, as it can help individuals develop the motor skills needed to produce the correct sounds and build their confidence when speaking [23].

Studies conducted in different nations have demonstrated how mental illness can negatively impact the dental health of psychiatric patients. The mean DMFT score (7.89±3.21) of the current study was higher compared to a study conducted in Ethiopia (1.9461±2.12) [24], but lower than a study conducted in Singapore (21.6±9.7) [25].

A study by Adeniyi AA et al., found that the dental health of mental health outpatients in Nigeria could be better and they should receive comprehensive care that includes oral health [3]. A study by Teng PR et al., in China found that patients with serious mental illness receive less preventive dental care compared to the general population [15].

Other studies by Aditya A et al., and Ngo DYJ et al., [25] have also shown similar results with higher mean DMFT scores in psychiatric patients [3,19,25].

This trend is consistent with other studies [3,9,10,15] that have shown higher mean DMFT scores in psychiatric patients compared to the general population. [Table/Fig-6] includes a comparison of similar Indian and international studies from literature with the present study [3,4,12,15-17,24,25].

The findings of this study underscore the importance of dental health care for psychiatric patients. Poor oral health can have a significant impact on a person's overall well-being, affecting their ability to eat, speak, and smile with confidence. In addition, dental problems can cause pain, negatively impact self-esteem, and lead to social isolation.

Given the unique challenges faced by psychiatric patients, it is crucial to provide comprehensive care that considers their oral health. Mental health professionals should be trained to assess their patients' dental needs and refer them for treatment as necessary. Patients with mental illness should be encouraged to prioritise their dental health and seek the care they need.

To address the dental health needs of this underserved population, it is important to create a closer and more coordinated effort between the hospitals' social and dental care units. With a unified approach, mental health and dental professionals can work together to provide the comprehensive care that psychiatric patients need and deserve.

S. No.	Author's name	Place of study	No. of subjects	Parameter assessed	Conclusion
1	Stevens T et al., (2006) [12]	Stock well, London	155	Impact of a dedicated dental clinic on the oral health needs of an inner-city in-patient psychiatric population.	Suggested improvements in patients' perception of oral health, behavior directed at oral hygiene and knowledge of accessing services after initiation of a dedicated in-patient dental clinic.
2	Adeniyi AA et al., (2008) [3]	Nigeria	105	DMFT, OHI, Gingival index	The oral hygiene status of the study participants was poor; the mean oral hygiene index score was 2.7 1.20. The DMFT ranged from 0 to 9 with a mean of 2.3 2.28.
3	Kebede B et al., (2012) [24]	Jimma, Ethiopia	240	DMFT, CPI	Oral health status of the psychiatric patients was poor.
4	Teng PR et al., (2016) [15]	Taiwan	19609	Dental care utilisation	Patients with severe mental illness received less dental care than the general population.
5	Ngo DYJ et al., (2018) [25]	Singapore	91	DMFT, Treatment needs, salivary flow	Mean DMFT scores were significantly higher among males and older patients. Total 77 of 176 patients (43.8%) were found to have salivary gland hypo function.
6	Dangore-Khasbage S et al., (2011) [17]	Maharashtra, India	150	Prevalence of oral mucosal	The prevalence of burning mouth syndrome was much higher in patients taking psychiatric medications (25%) than in drug-naïve patients.
7	Goud V et al., (2021) [4]	Karnataka, India	150	Oral health status, CPI	This study highlights a substantial need for prevention and treatment of oral health needs among psychiatric patients, and to increase awareness toward oral health.
8	Gupta S et al., (2021) [16]	Madhya Pradesh, India	400	Oral Health Impact Profile (OHIP)	The highest mean OHIP score for the disorders was seen among the patients diagnosed with schizophrenia.
9	Present study, 2023	Maharashtra, India	98	Oral examination, DMFT, TMJ Index	DMFT score was 3 to 17 (mean 7.89±3.21). The participants' TMJ Index score ranged from 0 to 17 (mean 5.51±4.48). More than half of the participants (59.10%) had moderate to severe TMJ dysfunction.

[Table/Fig-6]: Comparison of similar studies in the literature with the present study.
DMFT: Decayed, missing, and filled teeth, CPI: Community periodontal index, OHI: Oral hygiene index

Limitation(s)

The limitations of the present study are: Firstly, no causal relationship could be inferred because of its cross-sectional nature. Secondly, because of the relatively small size of our sample, additional research with a bigger sample size is required to support our findings. Authors did not compare our individuals to a control group of people not suffering from psychiatric conditions.

CONCLUSION(S)

Based on the results of the present study, it is concluded that psychiatric outpatients have poor dental health. Psychiatric illness significantly impacts oral health, the associated factors and TMJ. Furthermore, it may further lead to several oral complications, if neglected. Therefore, measures should be taken by counseling the patient and his/her caretaker about paying attention to dental health as a part of their overall care. Dental treatments can aid the development of general well-being and quality of life.

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