

## Original Article

# Oral health of psychiatric patients: A cross-sectional comparison study

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## ABSTRACT

**Background:** Mental illness is associated with physical health. Oral health affects people physically and psychologically and influences how they grow, enjoy life, look, speak, chew, taste food and socialize. Oral health may have lower priority in the context of mental illness and these diverse and changing client group experiences similar oral and dental problems.

**Objective:** To assess oral health problems in psychiatric patients.

**Materials and Methods:** This cross-sectional study included 133 patients attending the psychiatric outpatient department (OPD) as the study group and 133 patients attending the general OPD of the same hospital as the control group. Both groups were examined for oral health status.

**Results:** Mean age of the study group was 40.2 years, 66.17% were males, 66.17% were married and 83.67% belonged to middle or lower class. 39.8% of patients had mental illness for 1-5 years, 88% were self sufficient and 34.6% had healthy oral practices. These results are very much comparable with the control group. Mean decayed missed filled teeth (DMFT) score (2.10) and mean oral hygiene index-simplex (OHI-S) score (3.6) increased with age. Difference in DMFT score with age was not statistically significant ( $P>0.5$ ) while it was highly significant for OHI-S score ( $P<0.0001$ ). Periodontal condition worsened as age increased, suggested by community periodontal index. Only 26.7% of patients had healthy gingiva in the age group 20-50 years while it was zero for 50 years and above. This difference is statistically significant ( $P<0.001$ ).

**Key Words:** Dental caries, oral hygiene, oral pathology, periodontal diseases

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## INTRODUCTION

The term, mental illness, is used to describe clinically recognizable pattern of psychological symptoms or behavior causing acute or chronic ill health, personal distress or others.<sup>[1]</sup> The compartmentalization involved in viewing the mouth separately from the rest of the body must cease because oral health affects general health by causing considerable pain and suffering and by changing what people eat, their speech and their

quality of life and well being.<sup>[2]</sup> Patients with mental illness are prone to develop dental problems. This may be owing to general self-negligence associated with mental illness, fear of treatment, inability to access dental health services and side effect of various medication used in psychiatry (Cormac and Jenkins 1999).<sup>[3]</sup> One of the primary targets of the health of the nation initiative is to improve the health and social functioning of mentally ill people.<sup>[4]</sup>

Mental disorders are common with more than one in three people in most countries reporting sufficient criteria for at least one diagnosis at some point in their life, and actual life time prevalence rate for mental disorder is estimated to be between 65% and 85%.<sup>[5]</sup> 74% of adults have daily performances affected due to oral health.<sup>[6]</sup> Considering the high prevalence of oral health problems in psychiatric patients, the present

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study is conducted to assess the health problems of psychiatric patients attending the psychiatric outpatient department (OPD) at Guru Govind Singh Hospital, Jamnagar, Gujarat, because quality of oral health care contributes to holistic health and it should be a right rather than a privilege.<sup>[7]</sup>

## MATERIALS AND METHODS

All psychiatric patients with an age greater than 20 years, attending the Psychiatry OPD at Guru Govindsingh Hospital, Jamnagar, were labelled as study group and patients attending the general OPD of same hospital were put in control group.

### Sample size

Considering 75% prevalence of oral health problems in community,<sup>[6]</sup> quantitative estimation of sample size was carried out by the formula  $4PQ/L^2$ , comes a sample size of 133 for study group.<sup>[8]</sup> Similarly 133 patients, not suffering from any psychiatric conditions, had been selected from general OPD as the control group. Totally, 266 study subjects (study group and control group) were enrolled in the present study and case-control ratio was 1:1.<sup>[9]</sup>

### Sampling technique

All patients with an age greater than 20 years had been selected from both psychiatry OPD and general OPD from 1<sup>st</sup> July, 2009 till required sample size was achieved. Patients of control group i.e. selected from general OPD ruled out for any psychiatric condition and excluded from the study if found with any psychiatric disease. Matching (an attempt to eliminate any bias) was done for certain confounding factors present both in study group and control group e.g. age, sex, marital status and social class which may interfere the outcome of the study.

### Social classification

Prasad's Classification (1968), modified by Dr. P. Kumar In collaboration with Psychiatrist, specially designed pre-tested and interview based questionnaire was developed. The proforma consisted of two parts, the first part containing the general information, socio-demographic profiles and medical variables i.e. age, sex, occupation, marital status, social class, diagnosis, duration of mental illness, level of dependency and healthy oral practices (brush their teeth regularly and had dental check up in last one year). Diagnosis of mental illness was reviewed either with the help of psychiatrist on duty or from clinical records of the patients. Information was also collected regarding oral

health awareness and hygiene practices by patients. Second part contained the examination of oral cavity to detect any oral health problem or level of oral hygiene of patient. Dental caries was recorded using decayed, missing and filled teeth (DMFT) and decayed, missing and filled surfaces (DMFS) indices.<sup>[10]</sup> Oral hygiene status was recorded using simplified oral hygiene index OHI-S<sup>[11]</sup> and periodontal status by community periodontal index (CPI).<sup>[12]</sup>

### Community periodontal index

Mouth is divided into sextants by tooth numbers 18-14, 13-23, 24-28, 38-34, 33-43 and 44-48. A sextant should be examined only if there are two or more teeth present which are not indicated for extraction. For adults aged 20 years and over, the teeth examined are the following:<sup>[12]</sup>

17	16	11	26	27
47	46	31	36	37

### Examination and recording

The index teeth, or all remaining teeth in a sextant where there is no index tooth, should be probed and the highest scores are recorded in the appropriate box.

Score	
0	Healthy
1	Bleeding
2	Calculus
3	Shallow pocket (4-5 mm)
4	Deep pocket ( $\geq 6$ mm)
X	Excluded (less than two teeth present)

### Statistical tests

Percentage,  $X^2$  test, ANOVA.

### Statistical software

Data were entered and analyzed in Epi Info (version 6).

### Observations

Table 1 depicts general characteristics of study subjects, socio-demographic profile of study subjects; 30-40 year age group has highest proportion of study subjects (30.83 and 33.83% respectively for study group and control group). Mean age was 40.2 for study group and 39.7 for control group. Male to female ratio was 1.96:1 for study group and 1.46:1 for control group. Almost  $\frac{2}{3}$ <sup>rd</sup> patients in study group were married while this ratio was  $\frac{3}{4}$  for control group. More than 80% of study subjects belonged to either middle or lower class.

Table 2 shows various medical variables of study subjects. It can be seen that mood disorders (34.6%) and anxiety disorders (27.8%) were the top ranked diseases among psychiatry patients followed by substance abuse (21.1%) and schizophrenia (6.8%). 76.7% of patients were suffering from psychiatric disease for more than 1 year. Dependency ratio of psychiatric patients was 12% and as much as 65.4% of patients hadn't healthy oral practices indicated by the absence of regular brushing and had visit to a dentist in last one year.

Table 3 shows the prevalence of dental caries. It was 73 (54.89%) for study group and 37 (27.82%) for control group. Mean DMFT and DMFS scores for study group were 2.10±1.7 and 3.07±3.9 respectively. These scores were 1.36±1.9 and 2.03±4.5 for control group. Data suggested that as age increases, prevalence of dental caries also increases. Differences

in DMFT and DMFS scores with age are not statistically significant for both study group and control group.

Table 4 describes the status of oral hygiene of patients. OHI-S score increased progressively with age for both study group and control group. The mean OHI-S score was found to be 3.6±1.0 for study group and 1.2±0.9 for control group. OHI-S score differences with age are statistically highly significant.

Table 5 shows the periodontal condition of patients measured by CPI. Healthy gingiva was seen in only 9 (6.8%) of psychiatric patients while it was 35 (26.3%) in control group, which indicates good periodontal condition in control group. Calculus was the most common problem in study group and control group i.e. 45.1 and 37.6% respectively, followed by shallow packets (24.3%), bleeding (16.5%), deep pockets (4.5%) in study group and bleeding (20.3%), shallow pockets (14.3%) and deep pockets (0.75%)

**Table 1: General characteristics of study subjects**

Characteristics	Study group		Control group	
	No.	Percentage	No.	Percentage
Age group (years)				
20-30	30	22.56	32	24.06
30-40	41	30.83	45	33.83
40-50	33	24.81	31	23.31
50-60	24	18.05	22	16.54
≥60	05	03.75	03	02.26
Sex				
Male	88	66.17	79	59.40
Female	45	33.83	54	40.60
Marital status				
Married	88	66.17	101	75.94
Unmarried	32	24.06	29	21.80
Widow/widower/ separated	13	09.77	03	02.26
Social class				
Higher and upper	22	16.54	13	09.77
Upper and lower middle	68	51.13	73	54.89
Lower	43	32.33	53	39.84

**Table 2: Medical variables in study group**

Medical variables	No.	Percentage
Diagnosis		
Mood disorders	46	34.6
Anxiety disorder	37	27.8
Substance abuse	28	21.1
Schizophrenia	09	6.8
Others*	13	9.7
Duration of mental illness		
<1 year	31	23.3
1-5 year	53	39.8
≥5 year	49	36.9
Degree of dependency		
Partial or total dependent	16	12.0
Independent	117	88.0
Healthy oral practices		
Yes	46	34.6
No	87	65.4

\*Others include somatoform, dissociated disorders and eating disorders

**Table 3: Prevalence of caries in study subjects**

Age group	Study group			Control group		
	No.	DMFT	DMFS	No.	DMFT	DMFS
20-30	30	1.91±1.6	2.61±2.4	32	0.82±1.7	1.20±2.1
30-40	41	1.54±1.5	2.48±3.2	45	0.92±1.6	1.29±2.1
40-50	33	2.15±1.5	2.90±3.9	31	1.21±1.6	2.41±2.4
50-60	24	2.30±1.7	3.96±4.8	22	1.67±1.8	2.48±3.1
≥60	05	2.62±2.0	3.40±5.3	03	2.20±1.9	2.78±3.8
Total	133	2.10±1.7	3.07±3.9	133	1.36±1.9	2.03±4.5
Significance P value (ANOVA)		F=1.35 P>0.05 (N.S.)	F=0.71 P>0.05 (N.S.)		F=1.52 P>0.05 (N.S.)	F=2.07 P>0.05 (N.S.)

DMFT: Decayed missing and filled teeth; DMFS: Decayed missing and filled surface; ANOVA: Analysis of variance; N.S.: Non significant

for control group. Worsening of periodontal condition was seen as age increased for both study group and control group. Statistical differences were highly significant.

Table 6 illustrates various oral pathologies in study subjects. 12(9.02%) patients were found to have oral sub-mucous fibrosis (OSMF), 23(17.29%) with burning mouth syndrome and 3(2.25%) with Lichen planus. In control group, almost 10 (7.51%) patients were found to have OSMF and none with burning mouth syndrome and Lichen planus.

## DISCUSSION

The present study was conducted to assess the oral health of psychiatric patients of Jamnagar city in the context of scant attention for the psychiatric aspect of dentistry. There are some evidence that patients suffering from mental illnesses are more vulnerable to

dental neglect and poor health (Stifle *et al.*, 1990 and Armstrong, 1994).<sup>[13,14]</sup>

General characteristics of study subjects in our studies showed that highest proportion of study subjects was in the age group of 30-40 years with a mean age of 40.2 years. Male to female ratio in our study was 1.96:1, 66.17% of patients were married and more than 80% belonged to middle or lower class. Kwong Tang *et al.*<sup>[15]</sup> reported 64.8% of subjects were males with a mean age of 44.1 years, Mirza *et al.*,<sup>[16]</sup> reported a mean age of 39 years with male to female ratio of 14:15, Ramon *et al.*<sup>[17]</sup> reported a mean age of 54 with male to female ratio of 1.38:1, while Manish *et al.*<sup>[18]</sup> in their study of oral health and treatment needs in institutionalized patients in Devangere city in Karnataka reported highest proportion of patients in 15-24 age group i.e 25%. Proportion of males was 58.3% and male to female ratio was 1.56:1. These results are more or less consistent with the results of our study.

Data on medical variables showed that mood disorders ranked first while anxiety disorders ranked second i.e. 34.6 and 27.8% followed by psychoactive substance use disorders (21.1%) and schizophrenia (6.8%), 39.8% of patients had duration of mental illness 1-5 years, 88% of patients were independents for their activity of daily living and as much as 65.4% of patients had not healthy practices indicated by the absence of regular brushing and had visit to a dentist. Shukla and Shrivastava<sup>[19]</sup> in their study reported the reverse findings, with anxiety disorders were on top

**Table 4: Simplified oral hygiene index in study subjects (OHI-S)**

Age group	Study group		Control group	
	No.	OHI-S	No.	OHI-S
20-30	30	2.4±1.0	32	0.5±1.1
30-40	41	2.8±1.1	45	0.6±1.2
40-50	33	3.9±1.1	31	1.4±0.8
50-60	24	4.1±1.2	22	1.6±0.6
≥60	05	4.9±0.8	03	2.1±1.1
Total	133	3.6±1.0	133	1.2±0.9
Significance P value (ANOVA)		F=15.7 P<0.0001 (H.S.)		F=8.62 P<0.0001 (H.S.)

ANOVA: Analysis of variance; OHI-S: Oral hygiene index; H.S: Highly significant

**Table 5: Periodontal conditions measured by CPI (community periodontal index)**

Age group	Study group (% of person coded)						
	No.	Healthy gingival (Score 0)	Bleeding (Score 1)	Calculus (Score 2)	Shallow pocket (Score 3)	Deep pocket (Score 4)	Excluded (Score X)
20-30	30 (100)	04 (13.3)	07 (23.3)	17 (56.7)	02 (6.7)	0 (0.0)	0 (0.0)
30-40	41 (100)	03 (7.3)	12 (29.3)	25 (61.0)	01 (2.4)	0 (0.0)	0 (0.0)
40-50	33 (100)	02 (6.1)	02 (6.1)	09 (27.3)	19 (57.5)	01 (3.0)	0 (0.0)
50-60	24 (100)	0 (0.0)	01 (4.2)	09 (37.5)	08 (33.3)	04 (16.6)	02 (8.3)
≥60	05 (100)	0 (0.0)	0 (0.0)	0 (0.0)	03 (60.0)	01 (20.0)	01 (20.0)
Total	133 (100)	09 (6.8)	22 (16.5)	60 (45.1)	33 (24.8)	06 (4.5)	03 (2.3)
Control group (% of person coded)							
20-30	32 (100)	12 (37.5)	09 (28.1)	10 (31.3)	01 (3.1)	0 (0.0)	0 (0.0)
30-40	45 (100)	15 (33.3)	07 (15.6)	20 (44.4)	03 (6.7)	0 (0.0)	0 (0.0)
40-50	31 (100)	05 (16.1)	07 (22.6)	09 (29.0)	10 (32.3)	0 (0.0)	0 (0.0)
50-60	22 (100)	03 (13.6)	03 (13.6)	10 (45.6)	04 (18.2)	01 (4.5)	01 (4.5)
≥60	03 (100)	0 (0.0)	01 (33.3)	01 (33.3)	01 (33.3)	0 (0.0)	0 (0.0)
Total	133 (100)	35 (26.3)	27 (20.3)	50 (37.6)	19 (14.3)	01 (0.75)	01 (0.75)

X<sup>2</sup>=25.2, d.f=5, P<0.001 (H.S.)



**Table 6: Various oral pathology in study subjects**

Oral pathology	Study group		Control group	
	No.	Percentage	No.	Percentage
OSMF	12	09.02	10	07.51
Burning mouth syndrome	23	17.29	0	0.00
Lichen planus	3	02.25	0	0.00

OSMF: Oral sub mucus fibrosis

list and mood disorders on second although proportion of patients was low i.e. 19 and 10%. Manish *et al.*,<sup>[18]</sup> had similar findings, they reported that 45% of patients were suffering from mood disorders followed by schizophrenia (25%) and psychoactive substance use disorders (20.6%). About 90% of patients were self sufficient and 93.2% patients clean their teeth daily. Mirza *et al.*,<sup>[16]</sup> reported good oral health practices, where 20 out of 29 patients brush regularly and 13 had visited dentist in the last one year.

Prevalence of dental caries was found to be 54.89%. Mean DMFT and DMFS scores for study group were  $2.10 \pm 1.7$  and  $3.07 \pm 3.9$  while these scores were  $1.36 \pm 1.9$  and  $2.03 \pm 4.5$  for control group. Studies conducted by Tang *et al.*,<sup>[15]</sup> in Hong-Kong reported higher prevalence with DMFT score of  $9.5 \pm 8.9$ . Other studies conducted among psychiatric patients also reported higher prevalence rate. Mirza *et al.*,<sup>[16]</sup> reported a prevalence of 65.5%, Ramon *et al.*,<sup>[17]</sup> reported a mean DMFT of 26.74, Angellillo *et al.*,<sup>[20]</sup> reported 15.5 and 6.1 by Rekha *et al.*,<sup>[21]</sup> Shukla and Shrivastava<sup>[19]</sup> in their study of “psychiatric study of cases attending the dental OPD of a teaching general hospital in Jhansi reported a lower prevalence rate of 28%. Manish *et al.*,<sup>[18]</sup> reported caries prevalence rate of 32.2% with mean DMFT and DMFS scores of  $0.92 \pm 1.8$  and  $2.54 \pm 5.0$ ; these results are almost consistent with the results of our study. The lower prevalence rate in our study may be explained due to higher concentration of fluoride in water in Jamnagar city. Moreover DMFT and DMFS scores increased with age; these findings are similar with the findings of other studies,<sup>[13,15-17,21]</sup> although the difference was not statistically significant. Mean OHI-S was  $3.6 \pm 1.0$  for study group and  $1.2 \pm 0.9$  for control group. As the age increased, the oral health status in terms of OHI-S worsened, our findings are very much comparable with the findings of other studies.<sup>[16,21]</sup>

Community periodontal index revealed poor periodontal condition of psychiatric patients indicated by healthy gingival in only 6.8% of patients as compared to

26.3% in study group. Calculus and shallow pockets were the priority problems in study group i.e. 45.1 and 24.8% as compared to calculus and bleeding in control group i.e. 37.6 and 20.3%. Other problems of study group were bleeding (16.5%) and deep pockets (4.5%). Tang *et al.*,<sup>[15]</sup> in Hong-Kong reported the same priority periodontal conditions with calculus in 71.8%, shallow pockets in 72.9%, deep pockets in 28.2% and bleeding in 7.1% of patients. Shukla and Shrivastava<sup>[19]</sup> reported lower prevalence of periodontitis in study group i.e. 26%. Manish *et al.*,<sup>[18]</sup> also noted similar findings with healthy gingiva only in 1.9% of patients, calculus in 40.6%, shallow pockets in 35.3%, bleeding in 10.5% and deep pockets in 7.8% of patients. Findings of Rekha *et al.*,<sup>[21]</sup> are also confirmatory with the findings of our study.

Out of 133 psychiatric patients, 23 (17.29%) patients had problem of burning mouth syndrome followed by oral sub mucous fibrosis in 12 (9.02%) and Lichen planus in 3 (2.25%) of patients. In control group, 10 (7.51%) of patients were suffering from OSMF. High prevalence of OSMF both in study and control group may be attributed to high intake of tobacco chewing in Jamnagar city.

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