

Original

## Prevalence of oral mucosal disorders in institutionalized and non-institutionalized psychiatric patients: a study from AVBR Hospital in central India

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**Abstract:** Dental treatment is reported to be the greatest unattended health need of people with a disability. The aim of the present study was therefore to quantify the prevalence of oral diseases with a psychosomatic component (recurrent aphthous stomatitis, burning mouth syndrome, and oral lichen planus) in psychiatric patients and to screen these patients for any other oral disorders, so that better care could be provided. In this cross-sectional, single-assessment study, 150 psychiatric patients were evaluated for presence of oral disorders. They were screened based on their socio-demographic profiles, clinical profile, and standardized psychiatric scales. The prevalence of recurrent aphthous stomatitis (RAS), burning mouth syndrome (BMS), and oral lichen planus (OLP) was 19.33% (29 patients), 20.66% (31 patients) and 5.33% (8 patients), respectively, amongst all psychiatric patients. The prevalence of burning mouth syndrome was much higher in patients taking psychiatric medications (25%) than in drug-naïve patients. On screening for other oral disorders, 35.33% of psychiatric patients had at least one other such disorder. We concluded that this patient group experiences a considerable burden of occult oral disorders necessitating thorough oral care. We also described the possible causes of the higher

prevalence of oral disorders in psychiatric patients. (*J Oral Sci* 54, 85-91, 2012)

Keywords: institutionalized psychiatric patients; non institutionalized psychiatric patients; RAS; BMS; OLP; psychiatric disorders.

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### Introduction

Oral health is an integral part of health care because it affects all aspects of life: personal, social, and psychological. It is particularly important for patients with special needs such as psychiatric patients. However, despite the prevalence of dental diseases, individuals with psychiatric disorders receive less oral care than the normal population, due to ignorance, fear, stigma, misconception, and negative attitudes (1). Dental treatment is reported to be the greatest unattended health need of people with disabilities (2).

The World Health Organization (WHO) declared that the World Health Day theme for the year 2001 would be "Mental Health: Stop exclusion - dare to care" in order to focus global public health attention on this relatively neglected problem. As psychiatric disorders account for 10% of the global burden of disease, and this is expected to rise to 15% by 2020, it is the responsibility of the population and particularly the medical profession to effectively implement this theme (3,4).

Cumulative scientific evidence during the past two decades has improved our understanding of the importance of oral health care in systemic disorders. Nonetheless, little attention has been given to certain

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aspects of oral health care for those with psychiatric and mental disorders, a unique and disadvantaged group of patients. The studies that have been done in this patient group have tended to focus on the prevalence of dental caries and periodontal diseases (5-7).

Given the importance of oral health and the need for deeper knowledge of oral abnormalities, the hypothesis underlying this study was that, when compared to non-institutionalized patients, institutionalized patients might experience more severe and acute psychiatric illness, and might also be more dependent on psychotropic drugs. We therefore aimed to assess and compare the status of oral soft tissue in institutionalized and non-institutionalized patients. Through proper evaluation and development of effective preventive and treatment strategies, action to reduce the incidence of these diseases in psychiatric patients can be implemented.

Recurrent aphthous stomatitis (RAS), burning mouth syndrome (BMS), and oral lichen planus (OLP) are common oral mucosal diseases known to have a psychosomatic component (8,9). The possible association of psychological factors such as stress, anxiety, or depression in their genesis has been suggested by several authors (8-16). On the other hand, no published studies have addressed the prevalence of these oral diseases in psychiatric patients or the influence of psychiatric illness on these conditions. This study therefore systematically evaluated the association of psychiatric disorders and psychotropic medications with the development of RAS, BMS, and OLP.

The present study was undertaken with the following aims:

1. To evaluate the prevalence of RAS, BMS, and OLP in institutionalized versus non-institutionalized psychiatric patients
2. To assess the prevalence of RAS, BMS, and OLP in drug-naïve patients versus patients on psychotropic medications
3. To screen all psychiatric patients for any other oral conditions/disorders

## Patients and Methods

This cross-sectional, single-assessment study was conducted in collaboration with the Department of Psychiatry, Acharya Vinoba Bhave Rural Hospital (AVBRH) and Department of Oral Medicine and Radiology, Sharad Pawar Dental College and Hospital at Datta Meghe Institute of Medical Sciences, Wardha in Maharashtra. It was approved by the institutional ethics committee. The study enrolled 150 patients with a distribution of 50 patients in each of the following three

groups.

Group I: institutionalized psychiatric patients (admitted to the psychiatric ward of AVBRH) on psychotropic medications ( $n = 50$ , mean age  $33.50 \pm 13.01$ ), Group II: non-institutionalized, drug-naïve psychiatric patients ( $n = 50$ , mean age  $34.48 \pm 14.86$ ), and Group III: non-institutionalized psychiatric patients, on psychotropic medications ( $n = 50$ , mean age  $40.84 \pm 11.91$ ).

Inclusion criteria included patients with clinical diagnosis of psychiatric disorder, education to at least primary level, and ability to understand and answer the questionnaire.

Exclusion criteria included oral submucous fibrosis or oral candidiasis; systemic diseases such as nutritional deficiency; cardiovascular, respiratory, metabolic, and endocrinal disorders; medication for such systemic diseases; and history of an intervention or condition that could affect the oral mucosa (e. g., history of radiotherapy). We also excluded denture wearers and patients with poor oral hygiene.

All subjects attended an initial appointment with the psychiatrist followed by an appointment with a dental specialist. Patients were informed about the study and their written consent was obtained. A specially designed patient information sheet, which comprised two parts, was used for recording the study details.

The first part pertained to the questionnaire that included information on demographic and medical variables, in which the explanatory variables included were age; sex; education; residence; duration of mental illness; diagnosis of psychiatric disorder for groups I, II, and III; and information about duration and type of psychotropic medications for group I and III. Psychiatric disorders were diagnosed by a senior psychiatrist in accordance with the International Classification of Diseases (ICD-10). The second part of the information sheet included the clinical details of oral diseases (RAS, BMS, and OLP).

Apthous ulcers were diagnosed based on the presence of clinically well-defined ulcers surrounded by an erythematous halo and the history of recurrent episodes of similar multiple painful ulcers (17). OLP was diagnosed according to the characteristic appearance of white, white and red, or erosive red lesions with radiating white lines intersecting with each other, known as Wickham's striae (9,17). In cases that were not clear cut, the diagnosis of OLP was confirmed by histopathological examination. BMS was diagnosed when the patient gave a history of a chronic stinging or burning sensation of the oral mucosa, mostly of the tongue, in the absence of clinical or laboratory data to justify this symptom (18).

The oral examination was conducted in psychiatric

Table 1 Socio-demographic and medical characteristics of all psychiatric patients

Socio-demographic and medical characteristics		Group I	Group II	Group III	$\chi^2$ -value	P-value
<b>Gender</b>	Male	30 (60)	21 (42)	24 (48)	3.36	0.18 NS, $P > 0.05$
	Female	20 (40)	29 (58)	26 (52)		
<b>Education</b>	Primary	08 (16)	12 (24)	08 (16)	3.17	0.52 NS, $P > 0.05$
	High school	15 (30)	10 (20)	17 (34)		
	College	27 (54)	28 (56)	25 (50)		
<b>Residence</b>	Rural	32 (64)	25 (50)	30 (60)	2.13	0.34 NS, $P > 0.05$
	Urban	18 (36)	25 (50)	20 (40)		
<b>Duration of mental illness</b>	< 1 year	21 (42)	24 (48)	04 (08)	30.22	$P < 0.0001$ , Significant
	1-5 years	25 (50)	23 (46)	29 (58)		
	> 5 years	4 (8)	3 (6)	17 (34)		
<b>Psychiatric disorders</b>						
	Psychoactive substance use disorders	7 (14)	3 (6)	3 (6)	11.26	0.18 NS, $P > 0.05$
	Schizophrenic disorders	21 (42)	12 (24)	17 (34)		
	Mood (affective) disorders	17 (34)	21 (42)	21 (42)		
	Somatoform disorders	5 (10)	11 (22)	6 (12)		
	Other disorders	00 (00)	3 (6)	3 (6)		
<b>Total</b>		50 (100)	50 (100)	50 (100)		

NS = Not significant

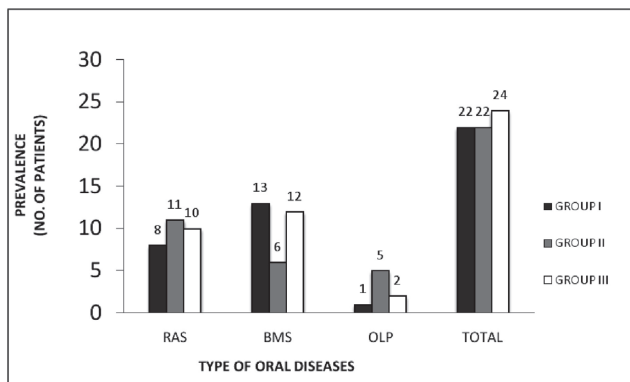


Fig. 1 Prevalence of RAS, BMS, and OLP in all psychiatric patients.

wards for group I subjects and in the outpatient Department of Psychiatry for group II and III subjects. The statistical analysis was performed using Graph Pad Prism 4 software after recording the findings in tabular format.

Chi-squared tests were used to evaluate the significance of the difference in distribution of the parameters among the groups. For the parameters, 95% confidence intervals were calculated.

## Results

The present study recruited 150 patients in three equal-sized groups. The mean age of patients was  $33.50 \pm 13.01$  in Group I,  $34.48 \pm 14.86$  in Group II, and  $40.84 \pm 11.91$  in Group III. The socio-demographic characteristics of all subjects are shown in Table 1. Group I had a predominance of men, and Group II a predominance of women. The majority of the entire patient group ( $n = 80$ , 53%) had a college education and 58% ( $n = 87$ ) were from rural

areas. Duration of mental illness was 1-5 years in 51% ( $n = 77$ ) of patients, as shown in Table 1. Concerning the type of psychiatric disorder, the most common diagnosis in institutionalized patients (Group I) was schizophrenia ( $n = 21$ , 42%) whereas in non-institutionalized patients, (Groups II & III) the most common diagnosis was mood disorder ( $n = 42$ , 42%).

Amongst all psychiatric patients, the prevalence of RAS, BMS, and OLP was found to be 19.33% ( $n = 29$ ), 20.66% ( $n = 31$ ), and 5.33% ( $n = 8$ ), respectively, as shown in Fig. 1.

In terms of the prevalence of these three oral diseases in institutionalized versus non-institutionalized psychiatric patients, RAS ( $n = 21$ , 21%) and OLP ( $n = 7$ , 7%) were more prevalent in non-institutionalized patients ( $n = 100$ ), and the prevalence of BMS ( $n = 13$ , 26%) was found to be higher in institutionalized patients. However, the differences in prevalence between institutionalized and non-institutionalized psychiatric patients were not significant ( $P > 0.05$ ) (Tables 2, 3, and 4).

Prevalence of oral diseases did not differ significantly among the various psychiatric disorders. In psychoactive substance use disorders, BMS (46%) was the commonest oral pathology. In schizophrenic disorders, RAS (22%) and BMS (22%) were equally prevalent. In mood disorders and somatoform disorders, RAS was the most common oral condition (17% and 31%, respectively). Amongst all OLP patients, the most common psychiatric diagnosis was mood disorder whereas a schizophrenic disorder was the commonest diagnosis for the other two oral conditions (RAS and BMS).

A notable finding of the present study was the statisti-

Table 2 Prevalence of RAS in institutionalized vs. non-institutionalized patients, and in drug-naïve vs. medicated patients ( $n = 150$ )

RAS	Institutionalized (50 patients) Group I	Non-institutionalized (100 patients) Group II + III	Total (150 patients)	$\chi^2$ -value
Present	8 (16%)	21 (21%)	29 (19.33%)	0.82, $P = 0.36$
Absent	42 (84%)	79 (79%)	121 (80.66%)	NS, $P > 0.05$
	Patients on psychiatric medications (100 patients) Group I + III	Drug naïve psychiatric patients (50 patients) Group II		
Present	18 (18%)	11 (22%)	29 (19.33%)	0.50, $P = 0.47$
Absent	82 (82%)	39 (78%)	121 (80.66%)	NS, $P > 0.05$

NS = Not significant

Table 3 Prevalence of BMS in institutionalized and non-institutionalized patients and in drug-naïve vs. medicated patients ( $n = 150$ )

BMS	Institutionalized (50 patients) Group I	Non-institutionalized (100 patients) Group II + III	Total (150 patients)	$\chi^2$ -value
Present	13 (26%)	18 (18%)	31 (20.66%)	1.86, $P = 0.17$
Absent	37 (74%)	82 (82%)	119 (79.33%)	NS, $P > 0.05$
	Patients on psychiatric medications (100 patients) Group I + III	Drug naïve psychiatric patients (50 patients) Group II		
Present	25 (25%)	6 (12%)	31 (20.66%)	5.60, $P = 0.01$
Absent	75 (75%)	44 (88%)	119 (79.33%)	S, $P < 0.05$

NS = Not significant, S = Significant.

cally significant difference in prevalence of BMS and OLP between drug-naïve patients and patients on psychiatric medications ( $P < 0.05$ ) as shown in Tables 3 and 4. The prevalence of OLP was higher in drug-naïve psychiatric patients (10%) than in medicated patients, while BMS was found to be more prevalent in psychiatric patients who were taking psychiatric medications (25%) than those who were not.

Concerning the prevalence of RAS, BMS, and OLP associated with the various psychiatric medications, BMS was significantly more common in patients taking benzodiazepines (56%) ( $P = 0.04$ ) than in those taking other drugs, with the next most common class of medications associated with BMS being anxiolytics (42%). The prevalence of RAS was 21%, 21%, and 14% in patients taking antipsychotics, antidepressants, and anxiolytics, respectively. No significant relationship was observed between duration of psychiatric drug treatment and prevalence of these three oral pathologies.

OLP was less prevalent ( $n = 8$ , 5.33%) than the other two oral conditions amongst all psychiatric patients and least prevalent (3%) in those psychiatric patients who were taking psychiatric medications. (Fig. 1, Table 4)

On screening for other oral conditions or disorders, we found that 35.33% ( $n = 53$ ) of psychiatric patients had at least one other such disorder. Dry mouth ( $n = 20$ , 13%), frictional keratosis ( $n = 10$ , 7%), dysgeusia ( $n = 12$ , 8%), bruxism ( $n = 7$ , 5%) and lip or cheek bite ( $n = 4$ , 3%) were the other oral conditions present in psychiatric patients, as shown in Fig. 2.

## Discussion

RAS, BMS, and OLP are relatively common oral conditions that cause considerable distress and discomfort, thereby interfering with normal activities of daily living. Considering their common features of psychosomatic etiology and possible exacerbation by psychiatric drugs, this study attempted to compare the prevalence of these conditions in drug-naïve patients versus those on psychotropic medications and in institutionalized versus non-institutionalized patients. Surprisingly, however, we found no significant difference in prevalence of these conditions between institutionalized and non-institutionalized patients ( $P > 0.05$ ).

The prevalence of BMS (20.66%) and OLP (5.33%) was found to be higher in psychiatric patients as

Table 4 Prevalence of OLP in institutionalized and non-institutionalized patients and in drug-naive vs. medicated patients ( $n = 150$ )

OLP	Institutionalized (50 patients) Group I	Non-institutionalized (100 patients) Group II + III	Total (150 patients)	$\chi^2$ -value
Present	1 (2%)	7 (7%)	8 (5.33%)	2.90, $P = 0.08$
Absent	49 (98%)	93 (93%)	142 (94.66%)	NS, $P > 0.05$
	Patients on psychiatric medications (100 patients) Group I + III	Drug naive psychiatric patients (50 patients) Group II		
Present	3 (3%)	5 (10%)	8 (5.33%)	4.03, $P = 0.04$
Absent	97 (97%)	45 (90%)	142 (94.66%)	S, $P < 0.05$

NS= Not significant, S = Significant

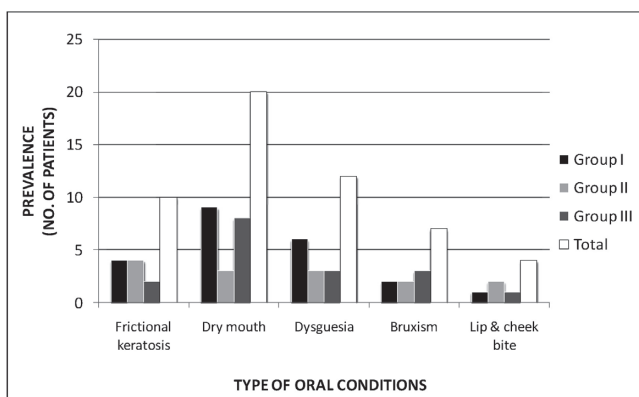


Fig. 2 Prevalence of other oral conditions in all psychiatric patients.

compared to the general population, thus supporting the basic concept of an association with psychiatric illness. (15,18) However, the prevalence of RAS (19.33%) in psychiatric patients was comparable to that in the normal population (17,19).

To explain the association between the high prevalence of BMS and OLP and psychological factors, evidence from previous studies can be considered. Shah et al. (15) stated that psychological stress and psychiatric illness can modify immunological functions. Psychological investigations have reported that the oral mucosa is a complex and vulnerable region that is very reactive to certain psychological influences (13). Ivanovski et al. (13) suggested psychosocial and emotional stress as possible factors converting reticular OLP to erosive OLP. Hence, on the basis of the available literature, the reasons for increased prevalence of BMS and OLP in psychiatric patients may be multiple and involve the interaction of biological and psychological systems. Thus, Delavarian et al. (20) suggested the use of a combination of psychotherapy and conventional treatment in OLP.

A valuable finding of this study is that the prevalence

of BMS in patients using psychiatric medications was double (100 patients - 25%) than in drug-naïve patients (50 patients - 12%) which supports the findings of previous studies (18,21). The categories of psychiatric drugs used in the present study were antipsychotics, antidepressants, anxiolytics, and benzodiazepines. Among these medications, the highest prevalence of BMS (56%) was noted in patients taking benzodiazepines, which was comparable to that in previous reports (18,22). In complete contrast, Soares et al. (23) concluded that there was no association between BMS and use of psychotropics.

The present study showed lower prevalence of RAS and OLP in patients who were taking psychiatric medications, but there have been a number of previous studies describing ulceration of the oral mucosa associated with psychiatric medications (24-26). Bertini et al. (25) reported a case in which an antidepressant used to treat depression resulted in development of an oral mucosal ulcer. Similarly, the present study revealed that a large proportion of patients (21%) who were using antidepressants exhibited RAS, although we did not conclusively prove that antidepressant use has an association with RAS.

The additional oral conditions in the psychiatric patients were dry mouth, dysgeusia, frictional keratosis, bruxism, and cheek bite, in order of decreasing prevalence. While the results of this study cannot conclusively prove a link between oral diseases and the use of psychotropic drugs as mentioned in previous reports (27,28), this tendency was certainly noted.

Previous studies have suggested the use of psychiatric drugs as the strongest factor contributing to dry mouth (21,27-29). Most of the psychotropic medications, including antipsychotic agents, benzodiazepines, mood-stabilizing agents, and antidepressants, have been shown to cause xerostomia by interfering with salivary gland function (27). Results of the present study are



comparable to those of previous studies in this respect, as 17% of patients who were on psychiatric medications had symptoms of dry mouth compared with only 6% of drug-naive psychiatric patients.

Friedlander et al. (27) gave a detailed account of adverse effects on the oral mucosa linked to psychotropic medications. This linked antipsychotic agents to xerostomia, dysgeusia, and stomatitis; benzodiazepines to xerostomia and sialorrhea; the mood-stabilizing agent, lithium, to xerostomia and dysgeusia; and valproate sodium and carbamazepine to xerostomia and glossitis. They found that the majority of psychotropic medications were associated with xerostomia, stomatitis, and glossitis, and a smaller percentage of these medications have been identified as causing sialadenitis, gingivitis, and edema and discoloration of the tongue (27).

The association of all these oral conditions with psychiatric disorders is already mentioned in the literature (17,29,30-33). Approximately 40% of patients with clinical depression complain of dysgeusia (32). Indeed, dysgeusia can be a result of dry mouth (as adequate saliva is necessary for taste function) or it can be secondary to BMS in psychiatric patients (18). However, dental factors such as tooth decay and number of remaining teeth also affect oral health.

With the exception of frictional keratosis, these oral disorders can be a source of great discomfort. From an empirical point of view, the present observations in psychiatric patients suggest that periodic oral examinations by an oral specialist are necessary to detect such occult oral disease. Ebrahimi et al. (16) stated that prolonged chronic discomfort affects an individual's emotional profile. A prolonged period of untreated and sometimes undiagnosed oral pain probably aggravates the already "disturbed" psychology of these patients and consequently makes them more resistant to therapy (16).

The present study is unique, and as there are no similar studies, direct comparison of these results with others was not possible. The real limitation is that it does not quantify the extent to which poor oral health exacerbates the mental deterioration of these patients; this aspect will need to be addressed in a separate study in the future.

In conclusion, considerable numbers of psychiatric patients experience oral disease. This study suggests that the care of psychiatric patients must include periodic monitoring of oral health and that greater coordination between dentists and psychiatrists may better serve the needs of this underprivileged population.

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