

## PREVALENCE OF XEROSTOMIA AND BURNING SENSATION IN PATIENTS WITH PSYCHOSOCIAL DISORDERS

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### Abstract

There are many ways in which mental health and oral health can impact each other. Certain oral symptoms like xerostomia and burning sensation are thought to be associated with psychological status of individuals. However, very little data are available on the presence and prevalence of xerostomia and burning sensation in patients suffering from psychosocial disorders, especially so in the Indian population. This study is expected not only to provide a baseline data about the prevalence, but help in a better understanding of the association between these oral symptoms and the psychological status of the patients.

Two hundred adult individuals diagnosed with some psychosocial disorder, either institutionalized or under out-patient care, were included in the study. Based on direct interviews and using standard questionnaires, xerostomia and burning sensation as well as certain other associated symptoms were evaluated.

Analysis of the results showed prevalence of xerostomia and burning sensation to be 43.5% and 9.5% respectively among the studied population. The mean Visual Analogue Scale score for burning sensation was 7.23.

Xerostomia and burning sensation are prevalent in significantly high number of patients with psychosocial disorders. Assessment of these oral symptoms in such patients therefore should be done on a routine basis. Conversely, there is also the possibility of patients with xerostomia and burning mouth syndrome possessing an altered psychosocial status. Thus, standardized evaluation of psychosocial state should be incorporated in the examination protocol. Xerostomia; Burning sensation; Prevalence; Psychosocial disorders.

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### Introduction

The modern era has seen an unprecedented rise in the incidence of disorders affecting the human psyche. The term "psychosocial" refers to the psychological and social factors that influence mental health. A psychosocial disorder is a mental illness caused or influenced by life experiences, as well as

maladjusted cognitive and behavioural processes. Various epidemiological studies have estimated the national prevalence rate of mental disorders in India to be about 65.4 / 1000 population.<sup>1</sup> It is also generally seen that the physical health of this group is often neglected because of ignorance, fear, stigma, misconception and negative attitudes.

It is a fact that mind and body share an intimate relationship. Psychosocial factors play a part in pathogenesis of physical health, and oral health is no exception.

There are several factors that may contribute to poor oral health in patients with psychosocial disorders. These include saliva reducing medications being taken, poor diet, and apathetic nature of many psychiatric patients.

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The most common side effect of the psychotherapeutic medications is the reduction in salivary secretions, leading to several oral diseases. Sialorrhea, dysphagia, sialadenitis, dysguesia, stomatitis, periodontal disease, glossitis, tongue edema, discolored tongue and bruxism are other complications reported.<sup>2</sup>

Though some studies have been conducted to evaluate the association between oral symptoms like xerostomia, burning mouth syndrome and the psychological status of patients<sup>3,4</sup> very little data are available about the presence and prevalence of these symptoms in patients suffering from psychosocial disorders.

Xerostomia has often been reported to be associated with certain psychosocial disorders, especially anxiety and depression. In fact, most individuals have experienced a dry mouth during a period of nervous tension. The xerostomic potential of many of the psychotropic drugs is also well documented.<sup>5</sup>

Xerostomia in these patients is also speculated to be associated with certain other symptoms like altered taste sensation and increased caries prevalence.<sup>6</sup>

A higher proportion of psychological disorders in Burning mouth syndrome patients has also been reported,<sup>3</sup> however this finding might reflect either patient's underlying anxiety or anxiety resulting from BMS, a dilemma always present in patients with chronic pain conditions.

Although oral health may get lower priority in the context of mental illness, the impact of such disorders and their treatment on oral health needs to be addressed.

The first step towards addressing this problem will certainly be recognizing and estimating these problems.

If the occurrence of xerostomia, burning mouth syndrome and other such oral symptoms in patients suffering from psychosocial disorders could be estimated, this will not only provide a baseline data about the prevalence but also help in a better understanding of the association between these oral symptoms and the psychological status of the patients; hence leading to provision of better oral health care to this often neglected group of patients.

Hence, this study was carried out to estimate the prevalence of two most commonly reported symptoms; xerostomia and burning sensation in patients with psychosocial disorders.

## Materials and methods

The recruitment of participants to this epidemiological study was done from three different centres in Pune, Maharashtra which provided in-patient and out-patient care to patients with psychosocial disorders. Patients reporting to dental Out-patient department with a history of such disorders were also included.

Adults over the age of 18 years, who were medically stable i.e. not under psychotic attack and were capable of understanding the supplied information and provide informed consent were considered for the study, and were explained the need and the procedure of the study. Out of the total 218 potential participants, 200 agreed for the participation, and signed the informed consent to become participants of the study.

The participant's demographic data, details of their psychosocial disorder as well as the management and stage of recovery were retrieved from their most recent records and entered in a pre-designed proforma. Presence of xerostomia was assessed with the help of the questionnaire developed by Fox et al (1987), which was shown to be closely associated with a resting salivary flow rate below 1 ml/minute.<sup>7</sup> A positive response to the any of the first four questions asked was taken as confirmatory of the subjective feeling of oral dryness.

Burning sensation in the mouth was assessed with the help of the questionnaire developed by Bergdahl et al.<sup>8</sup> Visual Analogue Scale (VAS) was used to determine the severity of burning sensation. Also, experience of altered taste sensation was enquired and recorded. All the above data were sorted, tabulated and analyzed to meet the objectives of the study.

## Results

**Table 1** shows age and gender-wise distribution of the participants. Out of 200 participants, 125 were males and 75 were females.

Majority of participants (53.5%) belonged to the age group of 18 to 35 years. Also, as the age advanced the number of participants with psychosocial disorder decreased, and this pattern was even more remarkable in men.

As far as the distribution of psychosocial disorders is concerned, schizophrenia was the commonest psychosocial disorder; followed by

depression and alcohol withdrawal syndrome with psychosis. Depression and bipolar mood disorder, if taken together, formed the second largest group of disorders (27.5%). Depression was significantly high (P value=0.004, relative risk=1.77) in women. Among the institutionalized patients, schizophrenia was the commonest disorder. Among patients being managed on O.P.D. basis, depression was the commonest disorder with 12 out of 19 (63.2%) suffering from it. Majority of the participants were under pharmacological management.

Gender	Age range in years			Total (%)	Mean age in years (± SD)
	18-35 (%)	36-55 (%)	56-75 (%)		
Male	77 (38.5)	35 (17.5)	13 (16.5)	125 (62.5)	35.81 (±14.1)
Female	30 (15.0)	33 (16.5)	12 (6.0)	75 (37.5)	38.65 (±12.8)
Total	107 (53.5)	68 (34.0)	25 (12.5)	200 (100)	36.87 (±13.3)

**Table 1.** Age and Gender- wise Distribution of Participants.

**Table 2** depicts the prevalence of various subjective symptoms in patients with specific psychosocial disorder. Xerostomia was the commonest subjective symptom in the studied group with a prevalence of 43.5%.

Of the 87 (43.5%) participants who reported xerostomia, 34 (39.08%) had schizophrenia and 25 (28.73%) suffered from depression.

Burning sensation was reported by 9.5% of the participants. The mean Visual Analogue Scale score for burning sensation was 7.23. Altered taste sensation was reported by 48 (24%) of the participants. In many participants, it was seen to be concomitantly present with xerostomia. An increase in proportion of participants when the duration of psychosocial disorder was more than 5 years was also noticed. However, this difference was not statistically significant. Impact of duration of psychosocial disorder on occurrence of oral symptoms needs further exploration.

A relation between most commonly prescribed psychotropic drugs and presence of these symptoms were also analyzed as depicted in **Table 3**. Prevalence of 3 subjective symptoms,

viz. xerostomia, burning mouth syndrome and altered taste sensation, was analyzed in patients on five classes of drugs, viz. atypical neuroleptics (AN), benzodiazepines (BZ), butyrophenones (BU), H1 antagonists (H1A) and phenothiazines (P).

Burning mouth sensation	Xerostomia	Subjective symptoms	D I A G N O S I S O F P S Y C H O S O C I A L D I S O R D E R (% O F P A R T I C I P A
4 (21.1)	34 (39.1)	S (n=83)	
5 (26.3)	25 (28.7)	D (n=38)	
3 (15.8)	6 (6.9)	BMD (n=17)	
1 (5.3)	6 (6.9)	AWS (n=16)	
3 (15.8)	2 (2.3)	P (n=9)	
1 (5.3)	5 (5.7)	SA (n=11)	
1 (5.3)	3 (3.4)	PAD (n=8)	
1 (5.3)	2 (2.3)	M (n=7)	
0 (0.0)	1 (1.1)	OCD (n=4)	
0 (0.0)	1 (1.1)	DA (n=2)	
0 (0.0)	1 (1.1)	CD (n=2)	
0 (0.0)	1 (1.1)	A (n=2)	
19 (9.5)	87 (43.5)	Total (% of all part.)	

**Table 2.** Psychosocial Disorder-wise Distribution of Subjective Symptoms.

S=Schizophrenia, D=Depression, BMD=Bipolar Mood Disorder, AWS= Alcohol withdrawal Syndrome, P=Psychosis, SA= Schizoaffective Disorder, PAD= Polysubstance abuse disorder,

M= Mania, OCD=Obsessive Compulsive Disorder, DA=Delusional Amnesia, CD=Conversion Disorder, A=Anxiety

		<b>Xerostomia, burning sensation &amp; altered taste sensation</b>	
		<b>Symptoms present (%)</b>	<b>Symptoms absent (%)</b>
<b>Select drug classes*</b>	<b>AN</b> (n=107)	52 (48.6)	55 (51.4)
	<b>BZ</b> (n=73)	44 (60.3)	29 (39.7)
	<b>BU</b> (n=35)	22 (62.9)	13 (37.1)
	<b>H1A</b> (n=35)	25 (71.4)	10 (28.6)
	<b>PZ</b> (n=32)	20 (62.5)	12 (37.5)
	<b>Not on drugs</b> (n=18)	6 (33.3)	12 (66.6)

**Table 3.** Xerostomia, burning sensation and altered taste sensation in patients using select psychotropic drugs.

\*AN=Atypical neuroleptics, BZ=Benzodiazepines, BU=Butyrophenones, H1A=H1 Antagonists, PZ= Phenthiazine

As could be seen, atypical neuroleptics were the most frequently prescribed drugs (107 out of 200 participants), followed by benzodiazepines (73), butyrophenones (35), H1 antagonists (35) and phenothiazines (32).

The prevalence of select subjective symptoms ranged from 48.59% of patients using atypical neuroleptics to as much as 71.40% in those on H1 antagonists. It could thus be said that a significant number of patients on the commonly prescribed psychotherapeutic drugs, experienced oral symptoms of xerostomia, burning mouth syndrome and altered taste.

### Discussion

In the present study, psychosocial disorders were seen to be more prevalent in younger age group. A changing life style pattern and competitiveness especially in the urban youth, rising levels of stress associated with personal and professional life and lack of life

skills to cope with them could be some of the factors behind high psychosocial morbidity in this age group. This pattern of age distribution has also been observed by some of the previous investigators. In a study done by Kumar M et al,<sup>9</sup> 15-24 years age group had the highest proportion of psychiatric patients.

Xerostomia was seen to be prevalent in a significant number of patients, especially those suffering from schizophrenia and depression.

The presence of xerostomia in the participants may be explained on the basis of various neurophysiologic, neurochemical and neurobiological abnormalities associated with the psychosocial disorders. Since salivary glands are neurobiologically regulated by autonomic nervous system, processes influencing the levels of transmitter substances in this system affect the salivary gland function.

Psychosocial disorders may alter the salivary secretions by affecting both afferent as well as efferent control mechanisms of salivation. These disorders are known to cause changes in levels and pattern of neurotransmission due to abnormalities of autonomic nervous system.<sup>10</sup>

Amygdala is a component of brain's limbic system which regulates mood and emotions. In certain psychosocial disorders, there are changes in cerebral blood flow and metabolism. This leads to the stimulation of lateral and paraventricular nuclei by amygdala. This in turn results in autonomic arousal as well as increase in plasma cortisol levels. Randomly in history of psychosocial disorders, there may be an increased or spontaneous neuronal firing, or paucity of neurotransmitters.<sup>11</sup> Both these phenomenon may lead to inconsistent stimulation or inhibition of cholinergic pathway, which may result in fluctuations in salivary flow.

Abnormalities of certain enzymes like P50 are associated with certain psychosocial disorders. Molecular genetic studies have shown that P50 deficits are linked to the gene coding for a subunit of the nicotinic cholinergic receptor, implying that alterations in cholinergic neurotransmission.<sup>10</sup>

In certain psychosocial disorders, endocrinal changes like over-activity of HPA axis is present, which results in increased cortisol levels. This increased cortisol level is known to have xerogenic effects.<sup>11</sup>

Apart from all these factors, various psychotropic drugs which are used in

psychosocial disorders are known to have xerogenic potential. For example, Atypical neuroleptics, butyrophenones and phenothiazines are antipsychotic drugs with potent dopamine D2 receptor blocking action. This action is also responsible for their extra-pyramidal effects, including anticholinergic actions, motor dysfunctions, and certain sensory disturbances.

Thus, the presence of xerostomia in such patients may be the result of interplay of these various complex factors.

Though, relatively it was a smaller number, the mean Visual Analogue Scale score for burning sensation was found to be moderately high, that is 7.23. Hence, if present, burning sensation in such patients calls for immediate clinical attention. The prevalence of BMS reported in the literature is 0.7 to 4.6 percent of the general population. Despite the evidence suggesting that BMS may reflect a dysfunction involving the peripheral and/or central nervous system, a common thread linking all cases of BMS is an underlying psychiatric problem that, at the very least, contributes the severity and pattern of the symptoms.<sup>12</sup>

As far as altered taste sensation is concerned, it could be due to an increased spontaneous firing rate of afferent taste fibres or afferent inhibition of others leading to altered taste perception. Alteration in salivary composition may also be responsible for this aberrancy. Various other sensory abnormalities like altered olfactory, gustatory and tactile perception have also been reported in the psychiatric patients. Generally olfactory and gustatory disturbances are seen to co-exist.<sup>13</sup>

The antipsychotic drugs are known to have anticholinergic effects.<sup>14,15</sup> While the subjective symptoms of xerostomia and altered taste sensation can be explained on the basis of the pharmacological actions described above, the cause of burning mouth syndrome remains unclear.

## Conclusions

Hence, we conclude that xerostomia, burning sensation and related symptoms like altered taste sensation are prevalent in significantly high number of patients with psychosocial disorders. It is therefore imperative to routinely assess the oral symptoms and signs

in such patients. It entails provision of oral health care along with the care for psychosocial disorder. Conversely, the study also points to the possibility of patients with certain oral symptoms possessing an altered psychosocial status. Thus, standardized evaluation of psychosocial state should be incorporated in the examination protocol.

The primary aim of the present study was to collect preliminary data regarding psychosocial disorders and certain oral symptoms in Indian population, so that it could form the base-line for further studies. It is expected to open many new avenues as each psychosocial disorder and oral symptom has a potential to become a matter for further exploration in its own right.

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## Declaration of Interest

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