

A Study on Common Oral Lesions in Psychiatric Inpatients at Shahid Lavasani Hospital

Ghazal Ghorbani

Islamic Azad University Dental Branch of Tehran

Maryam Vahdat Shariatpanahi

Islamic Azad University

Arman Sam Daliri

Islamic Azad University Dental Branch of Tehran

Arezoo Alaei

arezoo.alaei@yahoo.com

Islamic Azad University

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Abstract

Background and Objective:

Oral health is closely related to psychiatric conditions, which have a high prevalence. Dental and oral issues can exacerbate psychiatric symptoms and vice versa. The aim of this study was to investigate common oral lesions in psychiatric inpatients at Shahid Lavasani Hospital during the year 2024.

Methods

This was a descriptive and analytical study. The sampling method was census-based. Demographic data were collected through interviews, and the presence of oral manifestations was examined. Data were analyzed using SPSS version 23 software. Statistical analyses were conducted using appropriate tests, and p-value < 0.05 was considered statistically significant.

Results

The mean DMFT index was higher than values reported in the general population. Significant correlations were found between the type of psychiatric disorder and oral problems such as xerostomia (dry mouth), halitosis (bad breath), mucosal ulcers, and bruxism ($p < 0.05$). Additionally, the use of anticholinergic medications was significantly associated with burning mouth syndrome, oral candidiasis, and gingivitis ($p < 0.05$). The most common oral lesions observed in patients were fissured tongue (52.9%), sublingual varices (51.4%), and dry mouth (50.5%). Other prevalent conditions included gingivitis (44.8%), hairy tongue (30.5%), geographic tongue (28.6%), halitosis, dental disorders (24.3%), mucosal ulcers (23.8%), and bruxism (22.9%). Lesions with lower prevalence were, respectively: fissured tongue (9%), angular cheilitis (8.6%), oral candidiasis (8.1%), hypertrophy of lingual papillae (3.8%), petechiae and ecchymosis (3.8%), burning mouth syndrome (3.8%), presence of nodules in the oral mucosa (3.8%), lichen planus (3.3%), active herpes labialis (2.9%), atrophic tongue (2.4%), and finally, leukedema (1.4%).

Conclusion

The most common oral findings observed were fissured tongue, sublingual varices, and xerostomia. These findings highlight the importance of oral health assessment and appropriate dental care for psychiatric inpatients.

Introduction

Mental disorders are recognized as one of the major health challenges in various societies (1). These disorders typically follow a chronic course and are associated with a high risk of premature mortality. Despite these risks, the general health care needs of this population are often overlooked (2, 3).

Psychiatric disorders encompass a wide range of illnesses, including bipolar disorder, anxiety, depression, somatoform disorders, schizophrenia, and psychosis (4, 5). Common oral complications in psychiatric patients include traumatic ulcers, cheek and tongue biting, burning mouth syndrome, iatrogenic ulcers, xerostomia (dry mouth), root and crown caries, candidiasis, increased plaque and calculus, poor oral hygiene, atypical facial pain, burning mouth syndrome, and bleeding due to medication-related side effects after dental treatments.

This connection indicates that mental illnesses can impair an individual's ability to maintain personal hygiene, leading to inadequate plaque control. Additionally, many psychotropic medications used to treat these disorders may cause xerostomia, which significantly increases the risk of dental caries.

The prevalence of mental disorders is rising globally, accounting for approximately 10% of the total disease burden worldwide. With increasing life expectancy, the number of individuals affected by psychiatric conditions has also grown, leading to a higher prevalence of oral health problems and a reduced quality of life in these patients.

Oral health issues in psychiatric patients can cause pain, nutritional deficiencies, and social difficulties, all of which may exacerbate psychiatric conditions and reduce the effectiveness of mental health treatments (1).

Recent research suggests that very few studies have specifically investigated the oral health status of psychiatric patients (6). Unfortunately, in Iran, dedicated studies on this topic are scarce. Dental care for psychiatric patients is often limited to emergency treatments, and medical staff frequently lack the willingness to participate in the daily oral hygiene management of these patients.

Several factors have been identified as contributing to the poor oral health of psychiatric inpatients, including hospitalization duration, disease chronicity, education level, age, use of psychiatric medications, gender, brushing habits, and infrequent dental visits. However, very few studies have examined these factors among hospitalized psychiatric patients.

Given this knowledge gap, this study aims to investigate common oral lesions in psychiatric inpatients at Shahid Lavasani Psychiatric Hospital in Tehran and the associated factors during the year 2024.

Materials and Methods

Study Design and Participants

This cross-sectional descriptive and analytical study was conducted during the 2024 year on male and female psychiatric inpatients at Shahid Lavasani Hospital in Tehran. Patients with hospital records who consented to participate by signing an informed consent form underwent clinical oral examinations. In this study, all methods were performed in accordance with the relevant guidelines and regulations.

Ethical Considerations

The study was approved by the Ethics Committee of Islamic Azad University, Tehran Medical Sciences Branch, Faculty of Dentistry (Ethics ID: IR.IAU.DENTAL.REC.1402.112), and informed consent was obtained from all participants and/or their legally authorized representatives, as applicable. The confidentiality of patient data was strictly maintained.

Sample Size Determination

Based on the logistic regression model and the formula $N = 100 + 10k$ (where k represents the number of independent variables), a minimum sample size of 210 was required for this study.

The collected data were analyzed using SPSS version 23 software. To examine the relationship between psychiatric disorders and oral lesions, descriptive statistics (mean, standard deviation, frequency) were used. Pearson's correlation test or its non-parametric equivalent (Spearman's test) was applied for analysis.

Inclusion Criteria

All psychiatric inpatients at Shahid Lavasani Hospital who agreed to participate in the study.

Data Collection

Demographic and medical data, including age, gender, body mass index (BMI), duration of psychiatric illness, hospitalization duration, systemic diseases, use of psychotropic medications, smoking (number of cigarettes per day), alcohol consumption, history of electroconvulsive therapy (ECT), education level, and frequency of dental visits, were recorded based on patient interviews and hospital records.

Each patient's oral cavity was thoroughly examined by a final-year dental student under the supervision of an oral medicine specialist. The examination was conducted in adequate lighting conditions using a dental mirror, tongue depressor, and gauze to assess the presence or absence of oral manifestations. The findings were documented in standardized data collection forms.

Data Availability

The datasets generated and/or analysed during the current study are not publicly available due to privacy and confidentiality considerations but are available from the corresponding author on reasonable request.

Oral Manifestations Diagnosis

The following oral conditions were diagnosed through clinical examination under proper lighting using a disposable dental mirror and under the supervision of an oral and maxillofacial pathology expert. Diagnoses were made based on standard reference books (7).

1. **Mucosal Pallor (Pale Mucosa):** A reduction in mucosal color contrast, often indicating anemia or kidney disease (8).

2. **Petechiae and Ecchymosis:** Small red to purple spots caused by blood leakage into connective tissue, which do not blanch upon pressure.

Lesions < 0.5 cm are termed petechiae, while larger lesions are ecchymoses (9). Often associated with trauma, coagulation disorders, or anticoagulant medications (10).

1. **3. Mucosal Ulcers:**

- • Well-defined lesions with epithelial loss, exposing underlying connective tissue.
- • Covered by a yellowish-white fibrinous clot (7).

1. **4. Bruxism (Teeth Grinding):**

- • Associated with dental wear, tooth mobility, and abfraction lesions.
- • Considered a major risk factor for temporomandibular disorders (TMD) (11).

1. **5. Xerostomia (Dry Mouth):** Diagnosed through patient-reported symptoms and the “tongue depressor test” (if the tongue depressor adhered to the mucosa, dry mouth was confirmed) (12).

2. **6. Halitosis (Bad Breath):** Due to the high risk of viral transmission, direct breath odor assessment was avoided. Diagnosis was based on patient self-report.

3. **7. Dental Erosion:** Caused by acidic substances dissolving enamel, exposing the softer underlying dentin. Clinically presents as chalky, pitted, or yellowish surfaces with sharp edges (13).

4. **8. Attrition:** Mechanical wear due to tooth-to-tooth contact, primarily affecting incisal and occlusal surfaces (14).

5. **9. Gingivitis:** A mild, reversible gum disease causing redness, swelling, and easy bleeding (15).

6. **10. Oral Candidiasis:** Diagnosed based on four clinical forms:

- • Pseudomembranous candidiasis: Classic white plaque, easily wiped off.
- • Erythematous candidiasis: Red, atrophic mucosa.
- • Candida leukoplakia: Non-removable white lesions, requiring biopsy.
- • Denture stomatitis: Inflammatory changes under dentures (7).

1. **11. Fissured Tongue:** Characterized by deep grooves (2–6 mm) on the dorsal tongue surface. Generally painless, but some patients report burning sensations (16).
2. **12. Geographic Tongue:** Presents as smooth, red, depapillated areas that migrate over time. May cause burning sensation when consuming spicy foods (17).
3. **13. Leukoedema:** Clinically appears as grayish-white mucosa, which disappears upon stretching (18).
4. **14. Sublingual Varices:** Prominent, dilated, bluish veins under the tongue (19).
5. **15. Oral Herpes (Herpes Labialis):** Multiple painful vesicles that progress into ulcers on the lips (20).
6. **16. Hairy Tongue:** Characterized by elongated, keratinized filiform papillae on the dorsal tongue, appearing white, yellow, or black. Associated with poor oral hygiene, smoking, and antibiotic use (21).
7. **17. Scalloped Tongue:** Indentations on the lateral tongue border, often due to macroglossia (22).
8. **18. Atrophic Tongue:** Smooth, depapillated tongue surface due to papillary loss (23).
9. **19. Oral Pigmentation:** Presence of dark patches on oral mucosa (24).
10. **20. Angular Cheilitis:** Inflamed, cracked lesions at the mouth corners (25).
11. **21. Oral Lichen Planus:** White, lace-like striae (Wickham's striae) on the mucosa. Erosive forms may present with redness and ulceration. Diagnosis confirmed via biopsy (19).
12. **22. Burning Mouth Syndrome:** A chronic burning sensation in the mouth without visible lesions. Often linked to diabetes, nutritional deficiencies, or psychological factors (19).
13. **23. DMFT Index:** The number of decayed, filled, and missing teeth due to caries was calculated as the sum of decayed, missing, and filled teeth. (16)

In order to assess the periodontal status and oral hygiene of the patients, and considering the prevailing conditions, data were collected through evaluating the patients' oral hygiene habits. To this end, patients were asked about the frequency of tooth brushing per day and the use of dental floss. These factors were used as indicators of oral hygiene.

Results

Demographic Characteristics

A total of 210 patients participated in this study, including 105 males (50%) and 105 females (50%). The demographic and clinical characteristics of the patients are summarized in Table 1.

Table 1
Demographic and Clinical Characteristics of Patients

Variable	Mean	Minimum	Maximum
Age	44.79	17	75
BMI*	27.078	17.1	47.8
DMFT**	22.05	2	28
Duration of Illness (years)	13.5	0 or less than 1 year	55
Duration of Hospitalization	14.5	0 or less than ...	61
* BMI: Body Mass Index / ** DMFT: Decayed, Missing, and Filled Teeth index			

- BMI data indicated that most patients were overweight.
- DMFT scores were significantly higher than the general population.
- The longest hospitalization period recorded was 61 days.

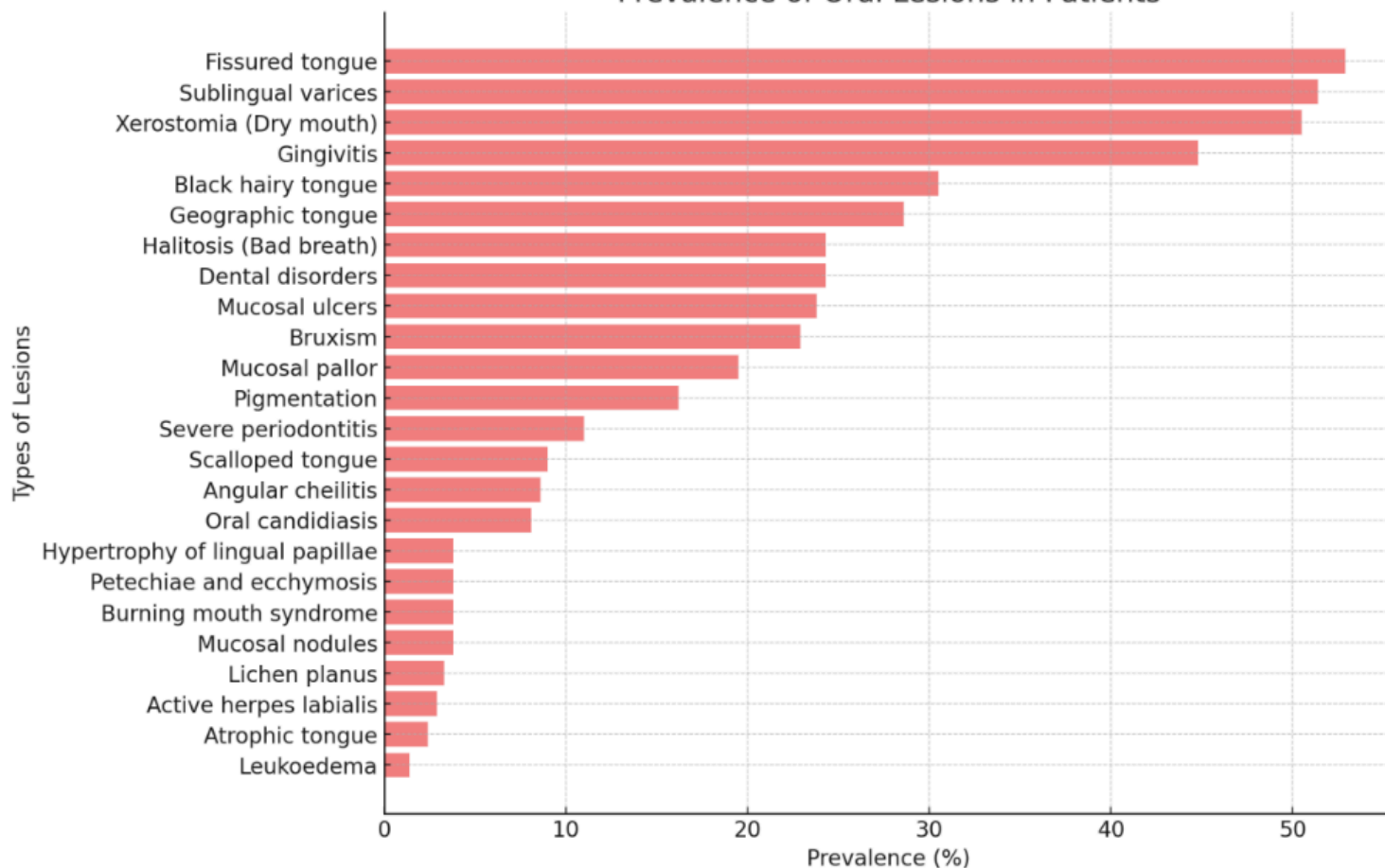
Prevalence of Oral Lesions

- The most common oral lesion was fissured tongue (52.9%), followed by sublingual varices (51.4%) and xerostomia (50.5%).
- The least common lesion was leukoedema (1.4%).

These findings differed significantly from the general population.

Table 2: Frequency and Percentage of Common Oral Lesions

Prevalence of Oral Lesions in Patients



DMFT Distribution

- 20% of patients had a DMFT score of 28, the highest recorded in this study.
- 16.7% had a DMFT score of 24, and 15.1% had a score of 16 .
- The lower DMFT scores (2–10) were much less frequent.

Oral Hygiene and Behavioral Factors

Table 3
Behavioral and Demographic Variables

Variable	Frequency	Percentage (%)
Toothbrushing – 0 times/day	53	25,2
Toothbrushing - Irregular	23	11
Toothbrushing – 1 time/day	86	41
Toothbrushing – 2 times/day	36	17,1
Toothbrushing – 3 times/day	6	2,9
Toothbrushing – 4 times/day	4	1,9
Toothbrushing – 5 times/day	2	1
Floss Use - No	177	84,3
Floss Use - Yes	33	15,7
Smoking - No	114	54,3
Smoking – 0.5 pack/day	26	12,4
Smoking – 1 pack/day	52	24,8
Smoking – 2 packs/day	6	2,9
Smoking – 3 packs/day	2	3,8
Smoking – 4 packs/day	4	1,4
Alcohol Use - No	172	81,9
Alcohol Use - Yes	38	18,1
Education - Illiterate	11	5,2
Education - Below Diploma	73	34,8
Education - Diploma	71	33,8
Education - Associate and Bachelor	49	23,3
Education - Above Bachelor	6	2,9
Dental Visits - Never	94	44,8
Dental Visits - When Needed	75	35,7
Dental Visits - Yearly or more	41	19,5
Electroshock - No	152	72,4

Variable	Frequency	Percentage (%)
Electroshock - Yes	58	27,6
Medication: Anticonvulsants/Anticholinergics - No	119	56,7
Medication: Anticonvulsants/Anticholinergics - Yes	91	43,3
Medication: Lithium & Mood Stabilizers - No	59	28,1
Medication: Lithium & Mood Stabilizers - Yes	151	71,9
Medication: Antipsychotics - No	35	16,7
Medication: Antipsychotics - Yes	175	83,3
Medication: Clonazepam, Alprazolam, Lorazepam (Benzodiazepines) - No	83	39,5
Medication: Clonazepam, Alprazolam, Lorazepam (Benzodiazepines) - Yes	127	60,5
Medication: Methadone - No	173	82,4
Medication: Methadone - Yes	37	17,6

The types of psychiatric disorders

schizophrenia (25.7%) had the highest prevalence, followed by bipolar disorder (25.2%) and major depressive disorder (MDD) with 9.5%. Obsessive-compulsive disorder (OCD) and substance use-related disorders were also identified in this study. Additionally, various combinations of disorders were observed.

The duration of illness

The results of the study on the duration of illness in hospitalized psychiatric patients revealed that the highest prevalence was observed in the group that had been suffering from the illness for 1 to 5 years (24.3%). This was followed by the group that had been ill for less than one year (plus individuals who were unaware of their illness duration) at 12.9%. Patients with an illness duration of 6 to 10 years accounted for 13.3%, and those with 11 to 15 years of illness made up 12.9%. Patients who had been ill for 16 to 20 years represented 11%, and those with an illness duration of 21 to 25 years accounted for 8.1%. A lower frequency was observed in the groups with a longer duration of illness (31 to 55 years).

The duration of hospitalization

In this study, the duration of hospitalization among psychiatric patients was examined. The results showed that the highest frequency belonged to the group hospitalized for 11 to 15 days (24.3%). Additionally, 23.3% of patients were hospitalized for 1 to 5 days, and 17.1% for 6 to 10 days. About 11.4%

of patients stayed in the hospital for 15 to 20 days, and 11% for 21 to 25 days. The number of patients hospitalized for very short (less than one day) or very long periods (more than 60 days) was very low, with only 0.5% of patients falling into these categories

Association Between Psychiatric Disorders and Oral Lesions

In this study, the status of systemic disorders in patients was examined. 53.3% of the patients had no systemic disorders.

Table 4
Frequency of Systemic Disorders

Systemic Disorder	Frequency	Percentage (%)
None	112	53.3
Diabetes	5	2.4
Diabetes + Migraine	2	1.0
Diabetes + Hypertension + Digestive Disorders	1	0.5
Hypertension	4	1.9
Digestive Disorders	5	2.4
Digestive Disorders + Skin Problems	1	0.5
Hypothyroidism	6	2.9
Cardiac Problems	9	4.3
Cardiac + Parkinson's Disease	1	0.5
Hyperlipidemia	2	1.0
Hyperlipidemia + Migraine	2	1.0
Hyperlipidemia + Fatty Liver	1	0.5
Seizure	3	1.4
Anemia	7	3.3
Vision Problems	1	0.5
Vision Problems + Hypothyroidism + Hyperlipidemia	1	0.5
Genital Ulcers	10	4.8
Stroke	4	1.9
Migraine	3	1.4
Fatty Liver	2	1.0
Gynecological Disorders	1	0.5
Parkinson's Disease	1	0.5
Dementia	3	1.4
Cancer	2	1.0
Respiratory Issues	1	0.5
Other Combined Conditions	19	9.8

Findings from this study revealed statistically significant associations (based on P-value levels) between the following variables:

- The type of psychiatric disorder and the presence of xerostomia, halitosis, oral mucosal ulcers, bruxism, dental disorders, fissured tongue, history of electroconvulsive therapy (ECT), oral pigmentation, hairy tongue, scalloped tongue, and atrophic tongue.
- Use of anticholinergic medications was significantly associated with burning mouth syndrome, oral candidiasis, gingivitis, and atrophic tongue.
- Use of mood stabilizers showed significant associations with geographic tongue and angular cheilitis.
- Use of antipsychotic medications was significantly associated with burning mouth syndrome, oral candidiasis, bruxism, dental disorders, geographic tongue, and scalloped tongue.
- Use of benzodiazepines was significantly related to angular cheilitis.
- Use of methadone was significantly associated with burning mouth syndrome, gingivitis, geographic tongue, history of ECT, oral pigmentation, and hypertrophy of the oral papillae.

Discussion

This study revealed a high prevalence of oral lesions among psychiatric inpatients at Shahid Lavasani Hospital, with fissured tongue (52.9%), sublingual varices (51.4%), and xerostomia (50.5%) being the most common conditions. The least common lesion was leukoedema (1.4%).

Our findings align with the 2022 study by Keshani et al. (26), which examined oral pathological lesions and dry mouth in hospitalized psychiatric patients. They reported that 72% of patients had oral lesions, with white and red lesions (23.1%) and xerostomia (37.2%) being the most common. Similarly, our study confirmed xerostomia as a major issue, which may reflect the impact of psychotropic medications on salivary function.

Additionally, our study found a higher DMFT index than the general population, consistent with previous research. The high rate of dental caries and missing teeth in psychiatric patients suggests a severe lack of oral health care and preventive measures in this group.

Comparison with Other Studies

Medication-Related Xerostomia

A 2024 study by Smith et al. (27) confirmed a direct link between psychiatric medications and dry mouth, emphasizing the need for regular dental monitoring in patients taking psychotropic drugs. Our findings support this, as xerostomia was statistically associated with anticholinergic medication use ($p < 0.05$).

DMFT in Psychiatric Patients

Our results align with the 2003 study by Ramon et al. (28), which assessed oral health in psychiatric patients in Israel. They reported a mean DMFT score of 26.74, with 72% of cases attributed to missing teeth. In contrast, our study found elevated DMFT levels but did not determine the primary contributing factor.

Gingival and Periodontal Health

A 2014 study by Morales-Chávez et al. (29) found that psychiatric patients commonly suffer from dental caries, gingivitis, and periodontal disease, findings that are consistent with our results.

Prevalence of Psychiatric Disorders and Oral Lesions

Our study identified schizophrenia (25.7%) as the most common psychiatric disorder, followed by bipolar disorder (25.2%) and major depressive disorder (9.5%). A 2022 study by Roy et al. (30) found similar results, confirming that schizophrenia was the most prevalent disorder in psychiatric institutions.

Roy et al. also reported that lichen planus and aphthous ulcers were common among psychiatric patients. While our study did not find a high prevalence of lichen planus, we observed a significant correlation between psychiatric conditions and oral ulcers ($p < 0.05$).

Fissured Tongue, Hairy Tongue, and Geographic Tongue

- Fissured tongue (52.9%) was the most common lesion in our study. A 2021 study (31) reported a 5% prevalence in the general population, indicating a much higher occurrence among psychiatric inpatients.
- Sublingual varices (51.4%) were notably more common in our study than in the general population (10%), as reported by Shadid et al in 2023. (32).

Conclusion

This study highlights the high prevalence of oral lesions among psychiatric inpatients, with fissured tongue (52.9%), sublingual varices (51.4%), and xerostomia (50.5%) being the most common. The DMFT index was higher in these patients higher than values reported in the general population, These findings suggest a substantial oral health burden in this study population; however, comparisons with the general population should be interpreted cautiously because this study did not include a concurrent control group.

Several statistically significant associations were observed between psychiatric disorders or psychotropic medication use and oral conditions, particularly between:

- Schizophrenia and xerostomia, halitosis, ulcers, and bruxism ($p < 0.05$).
- Anticholinergic medications and burning mouth syndrome, candidiasis, and gingivitis ($p < 0.05$).
- Mood stabilizers and geographic tongue, angular cheilitis ($p < 0.05$).

- Antipsychotics and burning mouth syndrome, candidiasis, bruxism, and dental disorders ($p < 0.05$).

These findings support the value of integrating oral health assessment and appropriate dental care into psychiatric services. Oral hygiene education for patients and caregivers may also support prevention and management of oral health problems.

Limitations

1. Data collection was challenging due to the specific conditions of psychiatric inpatients.
2. The study was limited to one hospital, which may not fully represent all psychiatric inpatients.
3. The cross-sectional nature of the study does not establish causality between psychiatric disorders and oral health issues.

Strengths

1. This study provided a comprehensive analysis of oral lesions in psychiatric patients.
2. It examined the impact of medications, systemic diseases, and personal habits on oral health.
3. Dental care recommendations were provided to patients, including referrals for urgent treatment when needed.
4. Oral hygiene education was offered to all participants, encouraging better personal care habits.

Recommendation

These findings support consideration of oral health assessment and dental care as part of multidisciplinary care for psychiatric inpatients. Oral hygiene education for patients and their caregivers may be beneficial; however, the cross-sectional design of this study does not allow conclusions about causal effects or improvements in quality of life.

Final Thoughts

This research highlights the urgent need for improved oral health care in psychiatric settings. Multidisciplinary collaboration between psychiatrists and dentists can significantly enhance the overall health and well-being of psychiatric patients.

Declarations

Competing interests

The authors declare that they have no competing interests.

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Author Contribution

G.G. contributed to the study conception and design, methodology, data collection, investigation, data curation, formal analysis, and preparation of the original manuscript. M.V.S. contributed to psychiatric assessment, clinical data collection, and interpretation of psychiatric information. A.S.D. contributed to data collection, clinical investigation, and data curation. A.A. contributed to supervision, methodology, validation, project administration, and critical review of the manuscript. All authors contributed to interpretation of the findings, reviewed and approved the final manuscript, and agreed to be accountable for all aspects of the work.

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Data Availability

Data AvailabilityThe datasets generated and/or analysed during the current study are not publicly available due to privacy and confidentiality considerations but are available from the corresponding author on reasonable request.

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