



"ORAL HEALTH STATUS AND QUALITY OF LIFE IN PATIENTS WITH SCHIZOPHRENIA"

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Abstract

Introduction

Schizophrenia is a chronic psychiatric disorder associated with poor oral health, which can significantly impact patients' quality of life (QoL). However, the extent of this impact and the relationship between oral health and QoL in schizophrenia patients remain underexplored. This study aimed to assess the oral health status and its association with QoL in patients with schizophrenia.

Materials and Method

A total of 110 schizophrenia patients were included in this cross-sectional study, conducted at MMIMSR, Mullana. Demographic and clinical data were collected through structured interviews. Oral health was assessed using the Decayed, Missing, and Filled Teeth (DMFT) index, Gingival Index (GI), Plaque Index (PI), and salivary flow rate. The Oral Health Impact Profile-14 (OHIP-14) was used to evaluate QoL. Statistical analyses, including correlation tests and subgroup comparisons, were performed using SPSS version 16.

Results

The mean DMFT score was 14.2 ± 4.3 , with high rates of decayed (mean 8.6 ± 2.5) and missing teeth (mean 4.1 ± 1.8), filled (1.5 ± 1.2). Gingival inflammation was moderate to severe in 63% of participants (mean GI 2.1 ± 0.7). The mean OHIP-14 score was 33.2 ± 7.8 , indicating a significant impact on QoL, especially in the domains of functional limitation and psychological discomfort. A positive correlation was found between DMFT, GI, PI, and OHIP-14 scores ($p < 0.01$).

Conclusion

Schizophrenia patients experience significant oral health problems that adversely affect their quality of life. These findings highlight the need for integrated oral health care in the management of schizophrenia. Oral health education and preventive measures are essential to improve both oral health and overall well-being in this population.

Introduction

Schizophrenia is a chronic and severe psychiatric disorder characterized by disturbances in thought processes, perception, and emotional responsiveness, affecting approximately 1% of the global population [1]. This disorder presents a significant public health challenge, as patients experience a range of cognitive, behavioral, and social impairments that severely impact their functional capacity and overall quality of life [2]. Despite significant advancements in psychiatric care, individuals with schizophrenia are at an elevated risk for various physical health comorbidities, including considerable oral health problems [3].

Oral health, which encompasses the condition of the teeth, gums, and oral mucosa, plays a vital role in overall well-being. It influences crucial functions such as chewing, speaking, and socializing, and has profound effects on psychosocial aspects, including self-esteem and social interactions [4]. However, patients with schizophrenia face numerous challenges that predispose them to deteriorating oral health. These challenges include negative symptoms such as social withdrawal, cognitive deficits, poor self-care behaviors, and the side effects of long-term antipsychotic medications, such as hyposalivation or reduced saliva production, which increase the risk for dental caries, periodontal disease, and tooth loss [5]. As a result, schizophrenia patients exhibit significantly poorer oral health indices than the general population, with higher rates of decayed, missing, and untreated teeth [6].

The impact of oral health on health-related quality of life is profound. Poor oral health can limit dietary choices, lead to pain and discomfort, and negatively affect social interactions, thereby lowering self-confidence and contributing to the stigmatization of affected individuals [7]. For individuals with schizophrenia, these issues are compounded by the psychiatric nature of their condition, often leading to a more complex relationship between oral health and quality of life. While psychiatric populations are known to face such oral health challenges, data evaluating the link between oral health status and health-related quality of life in schizophrenia patients are sparse. Furthermore, existing studies often fail to provide comprehensive insights into the broader psychosocial impact of oral health on these patients [8,9].

Therefore, this study seeks to fill this gap by assessing the oral health status of patients with schizophrenia and exploring its association with their quality of life.

Materials and Method

This was a cross-sectional, observational study conducted at Department of Psychiatry, MMIMSR, Mullana. The study aimed to assess the oral health status and its correlation with quality of life among patients diagnosed with schizophrenia. A total of 110 patients with schizophrenia were included in the study. Patients were recruited from the outpatient psychiatric clinic. The inclusion criteria were as follows: (1) adult patients aged between 18 and 65 years; (2) a diagnosis of schizophrenia according to the Diagnostic and Statistical Manual of Mental Disorders, IV TR (DSM IV TR); (3) stable psychiatric condition with no recent psychiatric hospitalization (at least 3 months of clinical stability); and (4) the ability to provide informed consent. Exclusion criteria included: (1) patients with significant neurological or developmental disorders, (2) patients with severe systemic diseases affecting oral health (e.g., uncontrolled diabetes, cancer), (3) individuals with a history of head and neck cancer or radiotherapy, and (4) patients who had undergone any major dental procedures (e.g., full dentures, major oral surgery) in the past 6 months.

Clinical and Demographic Data Collection

Demographic data including age, gender, socio-economic status, and duration of schizophrenia were collected through structured interviews. Clinical characteristics such as the age of onset, medication history, and the presence of comorbid conditions were also recorded. The Positive and Negative Syndrome Scale (PANSS) was used to assess the severity of psychiatric symptoms in the study participants

Oral Health Assessment

Oral health status was evaluated by a trained dentist using the following tools:

1. **Decayed, Missing, and Filled Teeth (DMFT) Index:** This standard index was used to assess the severity of dental caries and overall oral health status. The number of decayed (D), missing (M), and filled (F) teeth were recorded for each participant
2. **Gingival Index (GI):** The GI was used to assess the severity of gingival inflammation in participants
3. **Plaque Index (PI):** The PI was used to evaluate the amount of dental plaque present on the teeth, a major factor contributing to periodontal disease

4. Salivary Flow Rate: The unstimulated whole saliva flow rate was measured using a standard procedure to assess hyposalivation in participants, which is a common side effect of antipsychotic medications

The **salivary flow rate** measures the amount of saliva produced by the salivary glands, indicating oral health. It can be **unstimulated** (natural saliva) or **stimulated** (induced by stimuli like chewing or sour solutions).

Procedure for Unstimulated Saliva Flow:

1. The patient remains at rest for 5 minutes with their mouth open.
2. Collected saliva is spat into a graduated container.
3. Measure the volume and calculate the flow rate as:

$$\text{Flow rate (mL/min)} = \frac{\text{Volume (mL)}}{\text{Time (min)}}$$

Procedure for Stimulated Saliva Flow:

1. The patient chews paraffin wax or swishes sour solution for 1–5 minutes.
2. Saliva is collected and measured.
3. Flow rate is calculated similarly.

Normal Ranges:

- **Unstimulated flow:** 0.1–0.5 mL/min.
- **Stimulated flow:** 1.0–2.0 mL/min.

Low flow rates (especially unstimulated <0.1 mL/min) indicate hyposalivation, which can result from medications, dehydration, or systemic conditions like diabetes or Sjögren's syndrome.

Quality of Life Assessment

The quality of life (QoL) of participants was assessed using the Oral Health Impact Profile-14 (OHIP-14), which is a validated questionnaire that measures the impact of oral health on daily activities and overall well-being. The OHIP-14 assesses 7 domains: functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and handicap. The participants were asked to report how often each of the 14 items occurred during the past 12 months on a 5-point Likert scale ranging from 0 (never) to 4 (very often). Higher scores indicated a greater impact of oral health on quality of life.

Data Analysis

Descriptive statistics (mean, SD, and percentage) were used to summarize continuous and categorical variables. The relationship between oral health status (DMFT, Gingival Index, Plaque Index) and quality of life (OHIP-14) was assessed using Pearson's or Spearman's correlation coefficients. Group comparisons (e.g., gender, medication type) were performed using independent t-tests or Mann-Whitney U tests for continuous variables, and Chi-square or Fisher's exact tests for categorical variables. A p-value of <0.05 was considered statistically significant. Data analysis was performed using SPSS version 16.

Results

Demographic and Clinical Characteristics

A total of 110 patients diagnosed with schizophrenia were included in the study. The mean age of the participants was 38.5 ± 9.2 years, with an age range of 22–60 years. The majority of the participants were 62% male ($n = 68$) and 38% female ($n = 42$). The mean duration of schizophrenia was 12.4 ± 5.8 years, with a range of 4–28 years. Most patients (78%, $n = 86$) were on second-generation antipsychotic medications, with a mean duration of medication use of 8.1 ± 3.2 years. (Table 1)

Oral Health Status

The oral health status of the participants, assessed using the Decayed, Missing, and Filled Teeth (DMFT) index, revealed a mean DMFT score of 14.2 ± 4.3 , indicating a high prevalence of untreated dental conditions among the participants. Of the total sample, 58% had a high number of decayed teeth (mean 8.6 ± 2.5), 45% had missing teeth (mean 4.1 ± 1.8), and 40% had filled teeth (mean 1.5 ± 1.2). The Gingival Index (GI) showed that 63% of participants had moderate to severe gingival inflammation, with a mean GI score of 2.1 ± 0.7 .

The Plaque Index (PI) revealed that 72% of patients had significant plaque accumulation, with a mean PI score of 1.8 ± 0.5 , suggesting poor oral hygiene practices among the patients. Furthermore, the salivary flow rate measurement indicated that 39% of the participants exhibited hyposalivation, with a mean salivary flow rate of 0.32 ± 0.15 mL/min. (Table 2)

Quality of Life

The quality of life, as measured by the Oral Health Impact Profile-14 (OHIP-14), showed that the mean total OHIP-14 score was 33.2 ± 7.8 , indicating a significant negative impact of oral health on the patients' daily life and overall well-being. The highest scores were observed in the domains of functional limitation (mean 5.2 ± 1.3) and psychological discomfort (mean 5.0 ± 1.1), which reflected significant functional limitation, discomfort, and social disability due to oral health issues. The least affected domains were physical pain (mean 4.3 ± 1.2) and social disability (mean 4.0 ± 1.0), although they still showed notable impairment. (Table 3)

Correlation between Oral Health Status and Quality of Life

The correlation analysis between oral health status and quality of life (OHIP-14 scores) revealed significant positive correlations between the DMFT index and the OHIP-14 total score ($r = 0.68$, $p < 0.001$). Similarly, the Gingival Index and Plaque Index showed moderate positive correlations with the OHIP-14 scores ($r = 0.56$, $p < 0.01$ and $r = 0.62$, $p < 0.01$, respectively). A negative correlation was found between salivary flow rate and OHIP-14 scores ($r = -0.45$, $p < 0.05$), indicating that reduced salivation was associated with a greater impact on quality of life.

Subgroup Analysis

Subgroup analysis based on gender revealed that 69% of males and 60% of females reported significant oral health-related quality of life impairments ($p = 0.18$). When comparing patients on second-generation versus first-generation antipsychotic medications, the DMFT index and OHIP-14 scores were significantly higher in the second-generation antipsychotic group ($p = 0.02$). Furthermore, age-related differences were observed, with older patients demonstrating worse oral health status and higher OHIP-14 scores ($p = 0.04$).

Table 1: Demographic and Clinical Characteristics of Study Participants

Characteristic	Value
Total Sample Size (n)	110
Age (Mean $\pm$ SD)	38.5 ± 9.2 years
Age Range	22–60 years
Gender	
- Male (%)	62% (n = 68)
- Female (%)	38% (n = 42)
Duration of Schizophrenia (Mean $\pm$ SD)	12.4 ± 5.8 years
Medication Type	
- Second-generation antipsychotics (%)	78% (n = 86)
Duration of Medication Use (Mean $\pm$ SD)	8.1 ± 3.2 years

Table 2: Oral Health Status of Study Participants

Oral Health Measure	Value
Decayed, Missing, and Filled Teeth (DMFT) Index	14.2 ± 4.3
Decayed Teeth (Mean $\pm$ SD)	8.6 ± 2.5

Missing Teeth (Mean ± SD)	4.1 ± 1.8
Filled Teeth (Mean ± SD)	1.5 ± 1.2
Gingival Index (GI) (Mean ± SD)	2.1 ± 0.7
Plaque Index (PI) (Mean ± SD)	1.8 ± 0.5
Salivary Flow Rate (Mean ± SD)	0.32 ± 0.15 mL/min
Hyposalivation (Percentage)	39% (n = 43)

Table 3: Oral Health Impact Profile-14 (OHIP-14) Scores of Study Participants

Domain	Mean ± SD
Functional Limitation	5.2 ± 1.3
Physical Pain	4.3 ± 1.2
Psychological Discomfort	5.0 ± 1.1
Physical Disability	4.1 ± 1.0
Psychological Disability	4.2 ± 1.3
Social Disability	4.0 ± 1.0
Handicap	4.5 ± 1.2
Total OHIP-14 Score	33.2 ± 7.8

Discussion

In the present study, the mean age was 38.5 ± 9.2 years, with 62% males and a mean illness duration of 12.4 ± 5.8 years. Most patients (78%) were on second-generation antipsychotics. Friedlander and Marder (2002) [10] reported that schizophrenia commonly affects adults aged 25–45 years and is associated with long illness duration, poor self-care, and prolonged psychotropic medication use, which contribute to worsening oral health. In the present study, the mean DMFT score was 14.2 ± 4.3 . Decayed teeth were present in 58% of participants, missing teeth in 45%, and filled teeth in 40%. Moderate to severe gingival inflammation was observed in 63% of patients, while 72% had significant plaque accumulation. Velasco and Bullón (1999) [11] reported that only 8.5% of psychiatric patients had healthy periodontal tissues, while 43.8% had calculus, 24.6% had shallow pockets, and 8.9% had deep pockets. Angelillo et al. (1995) [12] found that 45.3% of institutionalized psychiatric patients required periodontal treatment and 36.7% required extractions. Kenkre and Spadigam (2000) [13] reported a mean DMFT score of 12.8, with 52% of patients having untreated caries and 46% missing teeth. Teng et al. (2004) [14] reported a mean DMFT score of 13.9 ± 8.4 , with 80.5% of psychiatric patients having untreated dental caries and 76.3% having visible plaque accumulation. In the present study, 39% of participants had hyposalivation, with a mean salivary flow rate of 0.32 ± 0.15 mL/min. Stiefel et al. (2001) [15] reported that xerostomia was one of the most common oral complaints among schizophrenia patients receiving long-term antipsychotic medications. Friedlander and Marder (2002) [10] also noted that psychotropic medications frequently reduce salivary flow, increasing the risk of dental caries and periodontal disease. The mean OHIP-14 score in the present study was 33.2 ± 7.8 , with functional limitation and psychological discomfort being the most affected domains. Persson et al. (2009) [16] reported that psychiatric patients with missing teeth and poor dentition had significantly worse oral health-related quality of life, particularly in psychological discomfort and social handicap domains. Hede (1995) [17] found that 40% of psychiatric patients had difficulty eating and 28% reported social embarrassment because of poor oral health. In the present study, DMFT showed a strong positive correlation with OHIP-14 score ($r = 0.68$), while Gingival Index and Plaque Index also showed moderate positive correlations. Salivary flow rate showed a negative correlation with OHIP-14 score. Persson et al. (2007) [16] similarly found that poor dental status, greater tooth loss, and periodontal disease were significantly associated with poorer oral health-related quality of life. Petersen et al. (2008) [18] reported that poor oral health was strongly associated with chewing difficulty, pain, speech problems, and reduced social interaction. In the present study, 69% of males and 60% of females reported significant oral health-related quality of life impairment. Patients on second-generation antipsychotics had significantly higher DMFT and OHIP-14 scores, while older

patients had poorer oral health. Angelillo et al. (1995) [12] found that older age and longer duration of institutionalization were associated with greater tooth loss and periodontal disease.

Limitations of the study:

This study has several limitations. The cross-sectional design prevents the establishment of causal relationships between oral health and quality of life. Self-reported data for quality of life may introduce bias. Additionally, the study was conducted at a single center, which may limit the generalizability of the findings to other populations. Finally, the assessment of oral health was not comprehensive enough to include advanced periodontal measures like probing depth or attachment loss.

Conclusion:

This study highlights the significant oral health challenges in schizophrenia patients, including high rates of dental caries and periodontal disease, which impact their quality of life. The findings emphasize the need for integrated oral health care and preventive interventions in psychiatric settings. Regular dental screenings and oral health education are crucial to improving outcomes. Future research should assess the effectiveness of these interventions.

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