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Effect of psychiatric illness on oral tissue, gingival and periodontal health among non-institutionalized psychiatric patients of Mangalore, India

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Summary

Background: Psychiatric illness makes overall health weaker. Different types of psychiatric illness cause various oral changes. Thus this study aimed at assessing the oral health parameters among non-institutionalized psychiatric patients of private set up.

Material and method: In this cross-sectional study 250 psychiatric patients were examined. The parameters related to psychiatric illness were documented using their medical records. A structured questionnaire including demographic details, oral hygiene practices, habits, occupation, and income was used. A thorough full mouth examination was carried out to assess the oral soft tissue changes, dryness of oral cavity, plaque, gingival and periodontal status.

Results: The age of the participants ranged from 21years to 70 years with a mean age of 36 years.

The majority of participants were suffering from psychiatric illness like depression, schizophrenia, mood disorders and mania respectively. Majority of the participants suffering from psychiatric illness were homemakers. This study showed a link between low income population to psychiatric illness. The participants also reported oral dryness which may be partly due to psychiatric medications. Gingival and plaque index scores showed statistically significant association to presence of mental psychiatric illness.

Conclusion: Subjects with psychiatric illness were having poor oral health. Dental examination should be incorporated as a part general examination. Policymakers need to consider optimal methods of intervention for mental disorders among low-income individuals. This group of patients who are making major part of the population of the society should be attended with utmost care.

gingivitis, periodontal health, oral care, psychiatric illness, dryness of mouth

INTRODUCTION

A sound oral health is crucial to overall health. There is a possibility that quality of life gets psychosocial impact due oral health problem [1,2]. It affects daily activities like eating, talking, social and psychological areas of life [2]. Among the different dental problems caries and periodontal disease are the two major problems which

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affects majority of human population [3,4]. Periodontal disease affects up to 90% of the world population and exhibit different range of severity of the disease. Failure in providing treatment leads to loss of teeth due to the progressive destruction of the alveolar bone. Periodontal disease is a mixed infection which having multifactorial etiology. Diabetes mellitus, psychosocial factors, habits such smoking, etc. are recognized as risk factors for poor oral hygiene [5].

One of the vital components of health is mental health. Due to change in lifestyle, increased demands at work places or many other situations many individuals experience some kind of psychiatric disturbances in the course of their lifetime. A major portion of population in the society are suffering from different types of psychiatric illness and all live with it.

Special care or attention is demanded by the mentally disturbed or psychiatric patients who are the considerable portion of society. Due to general self – neglect, poor nutrition, tobacco use, irregular oral hygiene habits and the side effect of medications makes this group more susceptible to have weak oral health [6,7]. Several researchers have identified oral health problems in psychiatric patients and have suggested that these people are at a greater risk of periodontal disease and have a greater need for periodontal treatment [5,8,9]. The dental professionals face many difficulties and challenges in treating these patients. The factors like poor motivation and apathy, limited cooperation, fear of dental procedures, poor communication and financial constraints are the few major ones [2,10,11]

Present evidence advocates that superior oral health should be encouraged as part of the healthy lifestyle and it should focus on reducing the burden of chronic disease. Thus this study aimed at assessing the oral health parameters like oral soft tissue changes, common oral problems and effects of psychiatric medications on gingival and periodontal tissues of non-institutionalized psychiatric patients of private set up at Dakshin Kannada, India.

MATERIAL AND METHOD:

The ethical committee approval was obtained from Institutional Ethics Committee (protocol no-14019) of the institution prior to the initiation of the study. The patient enrollment was done from the outpatient Department of Psychiatry of private teaching institution and hospital and patients who are visiting Department of Periodontology, of private dental college and hospital based on the inclusion and exclusion criteria.

Patients having chronic psychiatric illness according to International Classification of Disease 12 were considered for the study. This was done by thorough checking of their medical records and confirmation by the experienced psychiatrist. The recruitment of the patients done after obtaining signed consent from patient's legally acceptable representative. All the patients who were co-operative for full mouth dental examination with minimum 20 teeth excluding third molars were considered for the study. Patients suffering from other systemic disorders other than psychiatric illness, subjects who were on anti-inflammatory drugs, antibiotics, steroids, hormonal replacement therapy which affect the oral tissues, patients with severe crowding or anatomical variations in dentition, pregnant and lactating females and subjects who had under gone periodontal therapy in past three months were excluded from the study.

For each study participant along with demographic details, type of psychiatric illness, duration of the condition, ongoing medication and duration of medication, oral hygiene practices dental problems like pain, dryness of the mouth, bad breath, and presence of para functional habits, gingival and periodontal conditions were recorded.

A total of 250 patients were considered for the study. A structured questionnaire was used to collect the information regarding age, gender, socio economic status, occupation, education level, marital status, smoking details, oral hygiene practice, presence of pain, para functional habit, bad breath, dryness of mouth, psychiatric illness, duration of illness and medication details. This was followed by detailed intra oral examination to record number of teeth, Plaque index13, Gingival index 14, probing pocket depth (PPD) and loss of attachment (LOA). The oral health examination was carried out by the single examiner using mouth mirror and William's periodontal probe.

Plaque index (PI) 13 and Gingival index (GI)14 were recorded by examining buccal and lingual surfaces of the teeth. The scoring criteria for plaque and gingival index is mentioned in Box 1

Box 1 – Scoring Criteria for Plaque and Gingival index and interpretation	
Plaque index	**Gingival index**
Scoring criteria 0 = No plaque in the gingival area. 1 = A film of plaque adhering to the free gingival margin and adjacent area of the tooth. The plaque may only be recognizes by running a probe across the tooth surface. 2 = Moderate accumulation of soft deposits within the gingival pocket, on the gingival margin and/or adjacent tooth surface, which can be seen by the naked eye. 3 = Abundance of soft matter within the gingival pocket and/ or on the gingival margin and adjacent tooth surface.	**Scoring criteria** 0 = Normal gingiva 1 = Mild inflammation – slight change in color, slight oedema. No bleeding on probing 2 = Moderate inflammation – redness, oedema and glazing. Bleeding on probing. 3 = Severe inflammation – marked redness and oedema. Ulceration. Tencency to spontaneous bleeding
Interpretation of Plaque index score Excellent – 0 Good: – 0.1-0.9 Fair:1.0-1.9 Poor: 2.0-3.0	**Interpretation of Gingival index score** Mild gingivitis-0.1-1.0 Moderate gingivitis – 1.1-2.0 Severe gingivitis – 2.1-3.0

Based on the plaque score, these patients were categorized into excellent, good, fair, and poor condition. The PPD and LOA was recorded at six sites per tooth (mesio buccal, mid buccal, disto buccal mesio palatal, mid palatal and disto palatal). The mean probing pocket depth and loss of attachment was calculated for each patient..

STATISTICAL ANALYSIS

All the data were analyzed using statistical software SPSS. Version17 (IBMSPSS® Statistics) – Java (TM) Platform SE binary IBM Corp: London: UK (trial version).The descriptive statistics were tabulated. Chi square test and Student ″t″ test was applied. The P value was kept at ≤ 0.01 to assess the statistical significance.

RESULTS

A total of two hundred and fifty (250) patients were examined. The age distribution of the psychiatric patients who were on antipsychiatric drugs ranged from 36 years to 42 years which showed no statistical significance in the age wise distribution (Table 1).

Table 1. Mean age of the participants

		Depression	Schizophrenia	Mood disorder	Mania	F value	P value*
	Age	37.64±15.19	36.20 ± 13.26	41.19 ±10.75	36.22 ±13.61	0.64	0.58(NS)

*= p value 0.05 is statically significant ; NS-Non significant

A structured questionnaire was used collect the demographic details, psychiatric illness and oral health parameters (Table 2).

Table 2. Frequency distribution and statistical significance between types of mental illness

		Depression	Schizophrenia	Mood disorder	Mania	Chi-square value	df	P value *
Gender	Male	76(44.4)	14(46.7)	11(42.3)	14(60.9)	2.36	3	0.50(NS)
	Female	95(55.6)	16(53.3)	15(57.7)	9(39.1)			
Marital	Married	64(37.4)	12(40)	6(23.1)	7(30.4)	2.54	3	0.46(NS)
	Unmarried	107(62.6)	18(60)	20(76.9)	16(69.6)			
Occupation	Home maker	95(55.6)	13(43.3)	11(42.3)	11(47.8)	21.54	12	0.04(S)
	Service workers	44(25.7)	9(30)	10(38.5)	8(34.8)			
	Semi-Skilled	13(7.6)	6(20)	5(19.2)	2(8.7)			
	skilled	17(9.9)	-	-	2(8.7)			
	Professionals	2(1.2)	2(6.7)	-	-			
Education	Illiterate	16(9.4)	-	2(7.7)		18.42	12	0.10(NS)
	Primary school	16(9.4)	4(13.3)	-	5(21.7)			
	High school	52(30.4)	5(16.7)	10(38.5)	3(13)			
	Graduate	70(40.9)	17(56.7)	12(46.2)	13(56.5)			
	Post graduate	17(9.9)	4(13.3)	2(7.7)	2(8.7)			
Income	0	102(59.6)	14(46.7)	11(47.8)	11(47.8)	20.44	9	***0.01(S)***
	< 10 K/Month	15(8.8)	1(3.3)	8(30.8)	3(13)			
	10K-20K/Month	33(19.3)	7(23.3)	5(19.2)	7(30.4)			
	>30K/Month	21(12.3)	8(26.7)	2(7.7)	2(8.7)			
Smoking	Yes	139(81.3)	29(96.7)	22(84.6)	15(65.2)	8.94	3	***0.03(S)***
	No	32(18.7)	1(3.3)	4(15.4)	8(34.8)			
Frequency	< 5 per day	8(4.7)	1(3.3)		3(13)	34.06	9	***0.00(S)***
	5-10 cig per day	13(7.6)		1(3.8)	8(34.8)			
	> 20 cig per day	11(6.4)		3(11.5)				
Duration	< 5 years	9(5.3)			7(30.4)	39.04	9	***0.00(S)***
	5-10 years	6(3.5)	1(3.3)	4(15.4)	1(4.3)			
	> than 10 years	13(7.6)						
Brushing	Once daily	122(71.3)	20(66.7)	17(65.4)	13(56.5)	19.61	6	***0.003(S)***
	Twice/More daily	49(28.7)	10(33.3)	9(34.6)	10(43.5)			
Parafunctional	Absent	110(64.3)	19(63.3)	19(73.1)	16(69.6)	0.99	3	0.80(NS)
	Present	61(35.7)	11(36.7)	7(26.9)	7(30.6)			
Dry mouth	Absent	53(31)	7(23.3)	10(38.5)	8(34.8)	1.64	3	0.63(NS)
	Present	118(69)	23(76.7)	16(61.5)	15(65.2)			
Bad breath	Absent	38(22.2)	6(20)	6(23.1)	5(21.7)	0.09	3	0.99(NS)
	Present	133(77.8)	24(80)	20(76.9)	18(78.3)			
Pain	Absent	86(50.3)	13(43.3)	16(61.5)	13(56.5)	2.17	3	0.53(NS)
	Present	85(49.7)	17(56.7)	10(38.5)	10(43.5)			

*= p value 0.05 is statically significant ;S-Statistically significant; NS – Non significant

The duration of illness among participants was one to forty years with majority with minimum of 5 years of illness (Table 2). It was interesting to note that occupation had impact on various psychiatric illness with the p value of 0.04 where majority of home makers showing more prevalent to have psychiatric illness. It was also seen that no income had more percentage of participants with psychiatric illness (p=0.01) (Table 2). Those with psychiatric illness showed highest

prevalence of smoking and habit was more intensive. The gender wise distribution to presence of different psychiatric illness did not show any significance (Table3).

Table 3. Depicting gerderwise distribution of PI,GI,PD and LOA among psychiatric patients

	Male	Female	t value	P value
PI	3.01± 1.74	2.51± 1.69	2.28	0.02 (S)
GI	2.57 ± 0.66	2.27± 0.85	3.12	0.00 (S)
PD	4.83 ± 1.19	4.72 ± 1.30	0.71	0.47(NS)
LOA	5.82 ± 1.20	6.36 ± 5.40	1.05	0.26 (NS)

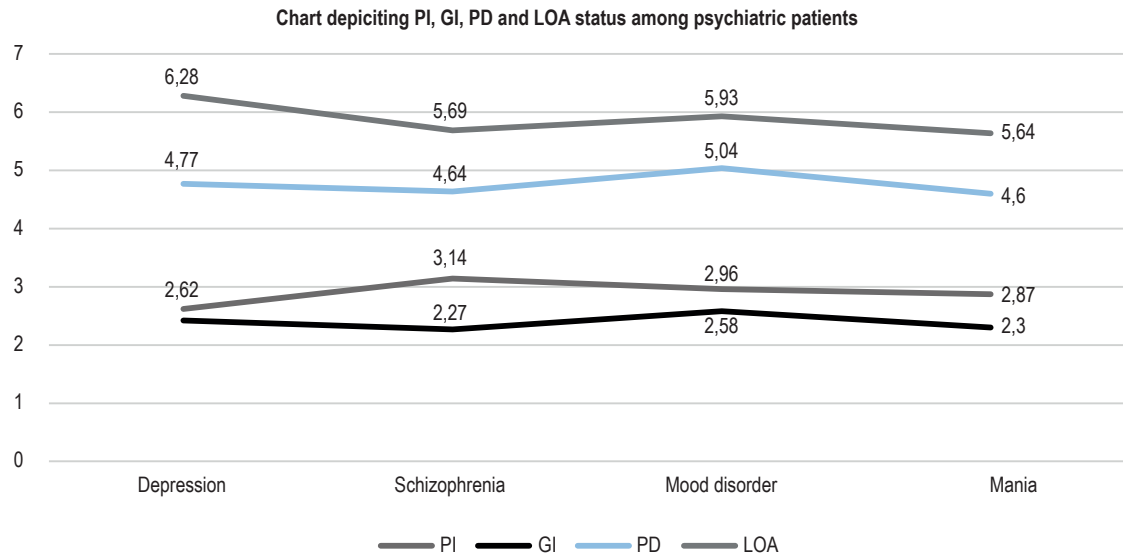
*= p value 0.05 is statically significant; S – Significant ; NS-Non significant

Presence of psychiatric illness among participants showed once brushing habit than twice brushing as it was regularly recommended. When the comparison of clinical parameters were done, PI and GI showed statistical significance to presence of psychiatric illness. Only one (4.8%) participant showed LOA of 1mm with mild periodontitis, 26% (65) participants were suffering from 3-4mm of LOA suggesting moderate periodontitis and 69.2% (173) study population had severe periodontitis with LOA of 5mm and above. but PD and LOA did not show statically significance to psychiatric illness.(Table 4,Graph 1))

Table 4. Association between types of illness to oral health status

	Depression	Schizophrenia	Mood disorder	Mania	F value	P value*
PI	2.62± 1.51	3.14 2.67	2.96 ± 1.53	2.87 ± 1.93	0.97	0.40(NS)
GI	2.42 ± 0.78	2.27± 0.82	2.58± 0.64	2.30 ± 0.87	0.86	0.45(NS)
PD	4.77 ± 1.29	4.64 ± 1.00	5.04± 1.43	4.60 ± 1.10	0.63	0.59(NS)
LOA	6.28 ± 4.83	5.69 ± 0.88	5.93± 1.38	5.64 ± 1.36	0.33	0.80(NS)

*= p value 0.05 is statically significant; NS-Non significant



Graph 1. PI, GI, PD and LOA status among psychiatric patients

DISCUSSION

The interaction of mental health and physical well-being is well established. However, few studies have investigated the prevalence of oral diseases among psychiatric patients. Oral health is an essential part of our overall health and largely contributes in modifying our self-esteem as well as normal social interaction. Fluctuation in oral health can cause stress, depression and poor quality of life [15,16]. Subjects having psychiatric disorders often seen hav-

ing advanced oral diseases. This may be partly due to change their life style, negligence in oral care, fear and poor concern for general and oral health because of psychiatric illness [17,18]. Few oral manifestations are noticed as adverse effects of antipsychotic medications if they are taken over a long duration, which increases the risk for oral diseases and their duration. The present study reported different oral conditions in the psychiatric patients. The psychiatric illness is common in the age group of 3rd to 4th decade. The mean age among population suffering from different disorders is shown in Table 1 and this in accordance with earlier study [19]. Poor oral hygiene favours plaque accumulation results in gingivitis. In the present study all the participants were having different stages (mild, moderate and severe) of gingivitis. This is similar to earlier studies [2,6,9]. The gingival index and plaque index score showed statistically significant among male participants which was in accordance with the previous study by Mushtaq R et al.2014 [19]. The majority study participants were having moderate to severe periodontitis.

Many of the participants had the habit of forceful brushing and bruxism habit. This was similar to earlier studies [19,20]. Patients under psychological usually develop these habits. In the current study smoking habit was seen in majority of participant and it was statistically significant. Higher cases erosion, cervical abrasion, gingival necrosis, and other mucosal lesions are reported in people using oral cocaine [21]. This was similar to earlier researches [22,23]. In the present study dry mouth complained varied from mild to severe range. This may be partly due to ongoing medication for mental illness and poor oral hygiene. Occurrence of dental diseases may increase due to dry mouth (xerostomia) through reduced salivary flow [23,24]. This may be partly due to medications [25]. It has been noticed that overall quality of life gets negatively affected due to reduced salivary flow [26]. Higher incidence of caries, gingivitis and periodontitis are observed in these patients because of increased plaque and calculus formation [23].

There was a statistical significance difference with low income and mental illness, this is in accordance with study by Sareen J et al 2011 [27]. Increased risks of long duration major psychiatric illness, suicide attempts, and reduced household income are associated with incident mental disorders.

In the present study the psychiatric illness was more among homemakers this in contrary to study by Kermane et al. 2016 [28]. In the present study this may be due to low income and different education level. Dental problems and dental care should be taken into consideration when psychiatrist or psychologist conducting comprehensive examination. As with other aspects of physical ill-health, alcohol and substance use, altered diet (including the consumption of carbonated drinks) also contribute to poor oral health [21]. Tooth brushing at least once a day is sufficient for the prevention of most infection and inflammation related oral disorders [29].

The poor oral hygiene favours higher chances periodontal disease. This suggests that increased need of preventive aspect among the population [30].

CONCLUSION

In the present study subjects suffering from different mental illness had poor oral health compared to the general population. These group of patients needs long term regular reinforced oral care. Thus precise preventive dental program/protocol planning needed to be incorporated as an integral part along with psychiatric treatment and care. On regular intervals basic oral examination, preventive dental care should be scheduled for this special group of patients. Policymakers need to consider optimal methods of intervention for mental disorders and their chances of developing suicidal behavior among low-income individuals. This group of patients who are making major part of the population of the society should be attended with utmost care.

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