

# Prevalence and Severity of Periodontal Disease and its Association with Type-II Diabetes Mellitus and Smoking by Using Periodontal Screening and Recording: A Retrospective Study

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## Abstract

**Background:** Periodontal screening recording (PSR) is considered a quick, reliable, reproducible valuable screening tool for periodontal disease. This study aims to find the prevalence and severity of periodontal disease and its association with self-reported diabetic status and smoking history of the patients by using PSR codes over a period of 2 years. **Material and Methods:** This was a cross-sectional retrospective study in a dental hospital in Chandigarh. Data of 10,882 patients comprising self-reported history of smoking (893) and diabetes (725) patients were assessed for the prevalence of periodontal disease by using PSR codes. Pearson Chi-Square test was used for statistical evaluation of PSR codes data. **Results:** Out of a total of 65,292 sextants assessed, the maximum and minimum reported PSR codes were 2 and 4, respectively. Gingivitis was found to be the most prevalent, followed by periodontitis and periodontal health in the total assessed population ( $P < 0.001$ ). Mucogingival problems and complete edentulism were found to be more prevalent in posterior sextants in comparison to anterior sextants. Both self-reported smokers and type-II diabetes mellitus patients presented gingivitis as the most common clinical presentation, with the highest prevalence seen in the 55–74-year age group, which also comprised the group with maximum mucogingival problems and edentulism. **Conclusion:** This study gives an overview of patients' general oral health status and reflects the burden of periodontal disease in the Chandigarh region, thus contributing to the national oral health data.

**Keywords:** Diabetes, gingivitis, periodontal health, periodontitis, PSR, smoking

## INTRODUCTION

Periodontal disease is a chronic, microbially associated inflammatory disorder resulting in the breakdown of tooth-supporting apparatus. It is the primary cause of tooth mobility and tooth loss worldwide.<sup>[1]</sup> It initiates as gingivitis, which if not controlled, can progress to an irreversible disease that causes permanent damage to the periodontal apparatus.<sup>[2]</sup> The rate of progression of periodontitis from one stage to the next may also be affected by various risk factors such as diabetes or cigarette smoking.<sup>[3]</sup>

Diabetes and periodontal disease coexist as comorbid conditions; both are chronic in nature and show a bidirectional association with an equal reciprocal increase in the risk, incidence, prevalence, progression, and severity.<sup>[4]</sup> There is a higher risk of developing periodontitis in poorly controlled diabetic patients as compared to well-controlled and non-diabetic patients.<sup>[5]</sup>

Cigarette smoking is one of the most critical environmental risk factors associated with periodontitis. Smokers show signs of consistent gingival bleeding, heavy gingival keratinization, and increased probing pocket depth.<sup>[6]</sup>

Early detection of periodontal disease plays an essential role in its further progression and can be done routinely using periodontal index,<sup>[7]</sup> periodontal dental index,<sup>[8]</sup> and community periodontal index of treatment needs (CPITN).<sup>[9]</sup> These methods are time-consuming, confusing, and not cost-effective.

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Periodontal screening recording (PSR), which is a modification of the CPITN index, is considered a quick, reliable, reproducible valuable screening tool for periodontal disease. PSR index is easy to use, fast, cost-effective, and aids in efficient record keeping, risk management, and patient education.<sup>[10]</sup>

This study aimed to find the prevalence and severity of periodontal disease and its association with self-reported diabetic status and smoking history of the patients using PSR codes over a period of 2 years.

## SUBJECTS AND METHODS

This retrospective, cross-sectional study was conducted over a period of 2 years by using recorded PSR codes and demographic data of the patients who had attended the routine outpatient department in the periodontology department of a dental hospital in Chandigarh from April 2018 to March 2020. The study was approved by the Institutional Ethics Committee of Panjab University, Chandigarh, with approval number HSJ/21/229. Indian Council of Medical Research Guidelines (2017) were followed regarding consent from the patients.<sup>[11]</sup>

Patients above 14 years with self-reported history of smoking and diabetes were included for PSR examination. This study included the data of 10,882 patients with self-reported history of 893 smoking and 725 diabetes patients in the age groups of 15–34 years, 35–54 years, 55–74 years, and above 75 years.

The oral cavity comprising the maxillary and mandibular arch was divided into six sextants (S1: maxillary right posterior sextant, S2: maxillary anterior sextant, S3: maxillary left posterior sextant, S4: mandibular left posterior sextant, S5: mandibular anterior sextant, and S6: mandibular right posterior sextant) to conduct the PSR examination procedure.

The clinical examination of the eligible patients was performed by a single dentist. CPITN probe was walked around the tooth's gingival circumference of each patient. Each sextant was designated a code (0, 1, 2, 3, 4, \*, X) based on the highest probing value of any tooth in that sextant.<sup>[9,12]</sup> Code 0 represents periodontal health, codes 1 and 2 represent gingivitis, whereas codes 3 and 4 represent periodontitis.<sup>[13]</sup>

### Statistical analysis

The PSR codes of the total data were statistically evaluated using the Pearson Chi-Square test with Statistical Package for the Social Sciences -20.0 (IBM SPSS, Armonk, NY, USA). Furthermore, descriptive analysis of the compiled data was performed by four dentists.

## RESULTS

A total of 4741 female and 6141 male participants with self-reported history of type-II diabetes mellitus (725) and smoking (893) were evaluated using PSR codes to assess the state of periodontal health, gingival inflammation, and periodontitis. Each participant was assessed using PSR

code criteria in the six aforementioned sextants; thus, a total of 65,292 sextants were assessed in this retrospective study.

The total number of patients as per different age groups were 5931 (15–34 years), 2251 (35–54 years), 2316 (55–74 years), and 384 (above 75 years). This study reported the maximum PSR code of 2 (40,065 sextants), followed by code 1 (18,686 sextants), code 3 (4505 sextants), code 0 (1336 sextants), and code 4 (703 sextants).

The overall prevalence of periodontal health was reported to be similar in males (2.05%) and females (2%) in 918 posterior and 418 anterior sextants. Gingivitis and periodontitis were reported to be higher in females as compared to males, with a statistical significance of  $P < 0.001$ . A total of 38,734 posterior and 20,017 anterior sextants reported to have gingivitis, whereas periodontitis was found to be present in 3879 posterior and 1329 anterior sextants. Mucogingival problems and complete edentulism of a sextant were also higher in the males as compared to females. This study found the involvement of 77.7% posterior sextants as compared to 22.3% anterior sextants in terms of mucogingival problems. A total of 77.1% posterior and 22.9% anterior sextants were completely edentulous [Table 1].

The results of this study showed gingivitis (90%), followed by periodontitis (8%) and periodontal health (2%), in the total assessed population ( $P < 0.001$ ). Gingivitis was reported to be the highest among 15–34-year-olds (56.5%) and the lowest among those who were above 75 years (3.2%). Periodontitis was found to be the highest among 54–74-year-olds (36.8%) and the lowest among the most elderly age group, that is, above 75 years (5.7%). Furthermore, 15–34 years (61.4%) represented the most periodontally healthy group [Table 1a].

The highest self-reported cases of type-II diabetes mellitus patients were that of gingivitis in 3062 sextants (64.3% posterior and 35.7% anterior sextants;  $P < 0.001$ ), followed by periodontitis in 1053 sextants (72.8% posterior and 27.2% anterior sextants) and periodontal health in 91 sextants (88% posterior and 22% anterior sextants). Mucogingival problems were reported in 1740 sextants (75.6% posterior and 24.4% anterior sextants), with a statistical significance of  $P < 0.001$ . A total of 87 sextants (77% posterior and 23% anterior sextants) were reported to be completely edentulous. The results of the total evaluated smokers indicated the highest cases of gingivitis in 3841 sextants (64.4% posterior and 35.6% anterior sextants;  $P < 0.001$ ) and the lowest cases of periodontal health in 87 sextants as compared to periodontitis cases in 1430 sextants. Edentulism was reported to be more in posterior sextants (75.3%) than in anterior sextants (24.7%). Mucogingival problems showed a statistical significance of  $P < 0.001$ , with more involvement of posterior sextants (75.2%) as compared to anterior sextants (24.8%) [Table 2].

Gingivitis (73.7%) was found to be the most prevalent as compared to periodontitis (24.2%) and periodontally

Table 1: Sextant-wise prevalence of periodontal screening and recording (PSR) codes based on gender

Sextants	Code 0		Code 1		Code 2		Code 3		Code 4		P	Code X		P	Code *		P
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male		Female	Male		Female	Male	
Sextant 1 n (%)	116 (46.5%)	130 (53.5%)	1535 (47.6%)	1693 (52.4%)	2724 (42.6%)	3675 (57.4%)	321 (37.3%)	540 (62.7%)	48 (31.8%)	103 (68.2%)	<0.001	27 (51.9%)	25 (48.1%)	0.223	346 (32.7%)	711 (67.3%)	<0.001
Sextant 2 n (%)	126 (42.4%)	171 (57.6%)	1906 (47.55%)	2105 (52.5%)	2530 (41.4%)	3579 (58.6%)	158 (38.8%)	249 (61.2%)	21 (36.2%)	37 (63.8%)	<0.001	16 (47.1%)	18 (52.9%)	0.681	252 (34.2%)	484 (65.8%)	<0.001
Sextant 3 n (%)	109 (46.0%)	128 (54.0%)	1484 (46.7%)	1691 (53.3%)	2795 (43.0%)	3709 (57.0%)	317 (38.1%)	515 (61.9%)	36 (26.9%)	98 (73.1%)	<0.001	27 (49.1%)	28 (50.9%)	0.408	461 (34.9%)	859 (65.1%)	<0.001
Sextant 4 n (%)	85 (38.5%)	136 (61.5%)	1431 (47.3%)	1592 (52.7%)	2855 (42.9%)	3801 (57.1%)	328 (38.2%)	530 (61.8%)	42 (33.9%)	82 (66.1%)	<0.001	21 (41.2%)	30 (59.8%)	0.730	556 (35.3%)	1021 (64.7%)	<0.001
Sextant 5 n (%)	53 (43.8%)	68 (56.2%)	1049 (48.9%)	1096 (51.1%)	3305 (42.6%)	4447 (57.4%)	293 (39.0%)	459 (61.0%)	41 (36.6%)	71 (63.4%)	<0.001	10 (37.0%)	17 (63.0%)	0.493	347 (34.1%)	670 (65.9%)	<0.001
Sextant 6 n (%)	91 (42.5%)	123 (57.5%)	1460 (47.0%)	1644 (53.0%)	2860 (43.0%)	3785 (57.0%)	295 (37.1%)	500 (62.9%)	35 (28.2%)	89 (71.8%)	<0.001	19 (40.4%)	28 (59.6%)	0.663	812 (37.9%)	1333 (62.1%)	<0.001
Total	580	756	8865	9821	17,069	22,996	1712	2793	223	480		120	146		2774	5078	

Code 0 - periodontal health; Codes 1 and 2 - gingivitis; Codes 3 and 4 - periodontitis; Code X - edentulous sextant; Code \* - mucogingival problem; n - number; P≤0.05 is statistically significant

healthy (2.1%) cases in diabetic patients ( $P < 0.001$ ). Both Gingivitis and periodontitis were reported to be the highest among the 55–74 years age group and lowest among the youngest age group of 15–34 years. The 55–74 years age group comprised the most periodontally healthy group among diabetes patients [Table 3].

Among the different age groups of smokers, gingivitis (71.7%) was reported to be the highest as compared to periodontitis (26.7%) and periodontally healthy cases (1.6%) ( $P < 0.001$ ). Both gingivitis and periodontitis were the most prevalent in 55–74 years and least prevalent in those above 75 years. In comparison to different age groups, the 55–74 years age group represented the highest periodontally healthy group among smokers [Table 4].

The highest edentulism and mucogingival problems were seen among the 55–74 years age group, whereas the youngest age group (15–34 years) showed a complete absence of edentulism and the least associated mucogingival problems ( $P < 0.001$ ). The total assessed smokers reported the highest edentulism in the 55–74 years (81.8%) and absence of edentulism in the 15–34 years age group ( $P < 0.001$ ). Mucogingival problems were found to be the most prevalent in the 55–74 years age group (50.2%) and the least prevalent in the >75 years age group (6.1%) ( $P < 0.001$ ) [Table 5].

## DISCUSSION

This retrospective study gives an insight into the evaluated periodontal status of the population in the Chandigarh region by using the PSR index. Our study showed an overall higher population of males (56%) as compared to females (44%). The likely reason for the lower attendance of females in comparison to males for dental treatment can be attributed to greater financial barriers faced by women due to their lesser number in the working population in spite of better attitude toward dental treatment.<sup>[14]</sup>

The evaluated population revealed the highest predilection for gingivitis, with a very large proportion of patients comprising PSR code 2 (61.4%), which is indicative of poor gingival health among the assessed population. The results of our study are similar to the study conducted by Covington *et al.*,<sup>[10]</sup> who reported a higher prevalence of gingivitis as compared to periodontitis and disease-free cases in the military population evaluated using the PSR coding system. The results of the present study are also in accordance to a systematic review and meta-analysis conducted by Janakiram *et al.*<sup>[15]</sup> to find the prevalence of periodontal disease among Indian adults, which reported higher pooled prevalence estimates of gingivitis (49%) than periodontitis (47.2%).

The findings of our study indicate a higher number of mucogingival problems (recession, tooth mobility, and furcation involvement) and edentulism in males than in females, mostly involving the posterior sextants as compared to the anterior sextants. These findings are supported by

**Table 1a: Prevalence and severity of periodontal screening and recording (PSR) codes in different age groups**

PSR Codes	Age groups				Total	P
	15–34 years n (%)	35–54 years n (%)	55–74 years n (%)	Above 75 years n (%)		
Code 0	819	162	269	83	1333	
Code 1	12,406	3007	2766	507	18,686	
Code 2	20,772	8933	8944	1416	40,065	
Code 3	1437	1172	1658	238	4505	0.001
Code 4	152	232	259	60	703	
Code X	15	23	156	72	266	
Code M	1459	1542	2762	659	6422	
Code *	1589	1945	3592	726	7852	

Code 0 - periodontal health; Codes 1 and 2 - gingivitis; Codes 3 and 4 - periodontitis; Code X - edentulous sextant, Code \* - mucogingival problem; n - number;  $P \leq 0.05$  is statistically significant

**Table 2: Sextant-wise prevalence of periodontal screening and recording (PSR) codes in type-II diabetes and smoking patients**

Diabetes									
Sextants	Code 0	Code 1	Code 2	Code 3	Code 4	Code X	Code M	Code*	P
Sextant 1 n (%)	17 (7.0%)	104 (3.2%)	407 (6.4%)	158 (18.4%)	39 (25.8%)	16 (30.8%)	423 (17.8%)	269 (25.4%)	<0.001
Sextant 2 n (%)	10 (3.4%)	162 (4.0%)	439 (7.2%)	98 (24.1%)	16 (27.6%)	10 (29.4%)	57 (27.3%)	191 (26.0%)	<0.001
Sextant 3 n (%)	21 (8.9%)	97 (3.1%)	414 (6.4%)	157 (18.9%)	36 (26.9%)	20 (36.4%)	359 (21.3%)	312 (23.6%)	<0.001
Sextant 4 n (%)	18 (8.1%)	103 (3.4%)	414 (6.2%)	157 (18.3%)	33 (26.6%)	17 (33.3%)	271 (26.3%)	341 (21.6%)	<0.001
Sextant 5 n (%)	10 (8.3%)	71 (3.3%)	472 (6.1%)	141 (18.8%)	31 (27.7%)	10 (37.0%)	122 (28.2%)	233 (22.9%)	<0.001
Sextant 6 n (%)	15 (7.0%)	97 (3.1%)	426 (6.4%)	157 (19.7%)	30 (24.2%)	14 (29.8%)	196 (28.7%)	394 (18.4%)	<0.001
Smokers									
Sextants	Code 0	Code 1	Code 2	Code 3	Code 4	Code X	Code M	Code *	P
Sextant 1 n (%)	16 (6.6%)	90 (2.8%)	508 (7.9%)	219 (25.4%)	60 (39.7%)	16 (30.8%)	399 (16.7%)	399 (37.7%)	<0.001
Sextant 2 n (%)	13 (4.4%)	130 (3.2%)	595 (9.7%)	126 (31.0%)	29 (50.0%)	10 (29.4%)	34 (16.3%)	270 (36.7%)	<0.001
Sextant 3 n (%)	14 (5.9%)	89 (2.8%)	525 (8.1%)	207 (24.9%)	58 (43.3%)	20 (36.4%)	297 (17.6%)	435 (33.0%)	<0.001
Sextant 4 n (%)	15 (6.8%)	82 (2.7%)	551 (8.3%)	195 (22.7%)	50 (40.3%)	17 (33.3%)	196 (19.0%)	489 (31.0%)	<0.001
Sextant 5 n (%)	10 (8.3%)	54 (2.5%)	588 (7.6%)	194 (25.8%)	47 (42.0%)	10 (37.0%)	99 (22.9%)	351 (34.5%)	<0.001
Sextant 6 n (%)	19 (8.9%)	90 (2.9%)	539 (8.1%)	198 (24.9%)	47 (37.9%)	14 (29.8%)	141 (20.7%)	555 (25.9%)	<0.001

Code 0 - periodontal health; Codes 1 and 2 - gingivitis; Codes 3 and 4 - periodontitis; Code X - edentulous sextant; Code \* - mucogingival problem; n - number;  $P \leq 0.05$  is statistically significant

a cross-sectional study conducted by Paturu *et al.*,<sup>[15]</sup> who reported gingival recession as one of the most common mucogingival problems, especially in males (68.7%), as compared to females (31.3%). The possible reason for higher mucogingival problems among males can be attributed to the higher ignorance of men toward their oral health, poorer oral hygiene habits such as vigorous brushing methods, and higher consumption of tobacco products, which increase the risk of tooth loss.<sup>[16,17]</sup>

According to the gender distribution, the overall population had gingival inflammation as the most prevalent problem, comprising 42.6% females and 57.4% males, with more involvement of posterior sextants (65.9%) than anterior sextants (34.1%). The reason for the lower prevalence of gingivitis among females could be due to their better oral hygiene habits and increased frequency of brushing and flossing, which decreases the chances of development of plaque-induced gingival inflammation.<sup>[18]</sup>

This study revealed the highest predilection for gingival disease in the 15–34 years age group, which could be due to the predominance of circulating sex hormones seen usually in this age group associated with gingival bleeding.<sup>[16]</sup> Periodontitis was reported to be highest in the age group of 55–74 years, possibly due to chronic course of the disease. The higher figures of gingivitis in the current study indicate the risk of onset and progression of periodontitis as gingival bleeding is considered to be an early sign of periodontitis.<sup>[18]</sup> The 15–34 years age group also showed the highest periodontal disease-free population. This can be supported by the fact that there is an increased incidence of periodontal disease in the older age group.<sup>[19]</sup>

Earlier screening could reduce the rate of destruction caused by progressively destructive diseases, including diabetes and periodontal disease.<sup>[4,20]</sup> In the present study, the self-reported type-II diabetes patients presented gingivitis as the most common clinical presentation with the maximally affected

**Table 3: Sextant-wise periodontal screening and recording (PSR) codes of different age groups in type-II diabetes mellitus patients**

Sextants (S)	PSR scores	Age groups				Total	P
		15–34 years	35–54 years	55–74 years	Above 75 years		
S1	0	0	0	0	0	0	0.446
	1	4	16	63	21	104	
	2	21	82	240	64	407	
	3	2	36	97	23	158	
	4	2	10	23	4	39	
S2	0	0	0	0	0	0	0.564
	1	7	30	93	32	162	
	2	21	88	264	66	439	
	3	1	21	61	15	98	
	4	0	5	10	1	16	
S3	0	0	0	1	0	1	0.273
	1	2	18	57	20	97	
	2	23	81	248	62	414	
	3	1	37	99	20	157	
	4	3	7	19	7	36	
S4	0	0	0	1	0	1	0.263
	1	1	21	59	22	103	
	2	22	76	246	70	414	
	3	4	35	101	17	157	
	4	2	10	17	4	33	
S5	0	0	0	0	0	0	0.002
	1	1	12	38	20	71	
	2	21	89	284	78	472	
	3	5	29	93	14	141	
	4	2	14	12	3	31	
S6	0	0	0	1	0	1	0.407
	1	1	17	56	23	97	
	2	21	85	249	71	426	
	3	5	36	99	17	157	
	4	2	5	19	4	30	

S1 - maxillary right posterior sextant; S2 - maxillary anterior sextant; S3 - maxillary left posterior sextant; S4 - mandibular left posterior sextant; S5 - mandibular anterior sextant; S6 - mandibular right posterior sextant ;  $P \leq 0.05$  is statistically significant

age group being 55–74 years. In addition, periodontitis, mucogingival problems, and edentulism were found to be the most prevalent in the 55–74 years age group. The most likely reason for an overall prevalence of periodontal disease in the 55–74 years age group could be associated with the fact that type-II diabetes mellitus is usually diagnosed after the age of 40 years due to lesser awareness among the general population.<sup>[21]</sup>

Among the self-reported smokers, gingivitis was found to be the most prevalent in the 55–74 years age group. Our study contradicts the evidence from the literature, which shows an association of smokers with decreased gingival inflammation and gingival bleeding.<sup>[22,23]</sup> In contrast to the current study finding, Holde *et al.*<sup>[24]</sup> reported lower gingival bleeding tendencies among smokers as compared to non-smokers in both plaque-free and plaque-covered sites. Our study findings present periodontitis to be the most prevalent in 55–74 years as compared to the other

age groups. The lowest prevalence of periodontitis was reported above 75 years, which could be due to the very low attendance of patients of this age group to our department for periodontal treatment. Mucogingival problems were found to be the highest in the 55–74 years age group among smokers. Smokers are known to be widely associated with mucogingival problems, most commonly gingival recession, tooth loss, and furcation involvement, which is related to both the quantity and duration of smoked tobacco products rather than the age of the patient.<sup>[25]</sup>

The main strength of this retrospective study is that it included data from a large population of males and females covering wider age groups. PSR used in this study is an easier method for evaluating the periodontal status of the patients, which further aids in formulating the diagnosis of periodontal disease and planning of periodontal therapy.

The potential limitations associated with this study are mainly due to the inherent drawbacks of the PSR index used

**Table 4: Sextant-wise periodontal screening and recording (PSR) codes of different age groups in smokers**

Sextants (S)	PSR scores	Age groups					Total	P
		15-34 years	35-54 years	55-74 years	Above 75 years			
S1	0	0	0	1	0	1	0.282	
	1	22	26	37	5	90		
	2	100	141	240	27	508		
	3	56	70	82	11	219		
	4	11	23	20	6	60		
S2	0	0	1	2	0	3	0.152	
	1	35	25	62	8	130		
	2	122	181	257	35	595		
	3	25	41	57	3	126		
	4	7	12	7	3	29		
S3	0	0	1	0	0	1	0.100	
	1	18	22	44	5	89		
	2	114	139	242	30	525		
	3	47	71	80	9	207		
	4	10	26	17	5	58		
S4	0	0	1	0	0	1	0.410	
	1	19	19	39	5	82		
	2	112	157	250	32	551		
	3	47	64	77	7	195		
	4	11	18	16	5	50		
S5	0	0	0	1	0	1	0.093	
	1	9	12	27	6	54		
	2	131	161	265	31	588		
	3	36	69	82	7	194		
	4	13	18	12	4	47		
S6	0	0	1	2	0	3	0.384	
	1	22	20	42	6	90		
	2	111	150	249	29	539		
	3	44	69	77	8	198		
	4	12	17	14	4	47		

S1 - maxillary right posterior sextant; S2 - maxillary anterior sextant; S3 - maxillary left posterior sextant; S4 - mandibular left posterior sextant; S5 - mandibular anterior sextant; S6 - mandibular right posterior sextant;  $P \leq 0.05$  is statistically significant

**Table 5: Sextant-wise \* (mucogingival problem) and X (edentulous sextant) codes of all age groups in type-II diabetes and smoking patients**

Sextants (S)		Age groups (Diabetes)					Total	P
		15-34 years	35-54 years	55-74 years	Above 75 years			
Mucogingival problems (*Code)	S1	6	44	175	44	269	0.045	
	S2	2	29	127	33	191	0.014	
	S3	8	55	202	47	312	0.068	
	S4	8	59	216	58	341	0.044	
	S5	4	38	149	42	233	0.042	
	S6	12	71	240	71	394	0.172	
Edentulous sextant (X code)	S1	0	0	9	7	16	0.010	
	S2	0	0	5	5	10	0.023	
	S3	0	1	9	10	20	0.001	
	S4	0	2	9	6	17	0.159	
	S5	0	0	5	5	10	0.023	
	S6	0	1	10	3	14	0.516	

Contd...

**Table 5: Contd...**

	Sextants (S)	Age groups (Smokers)				Total	P
		15–34 years	35–54 years	55–74 years	Above 75 years		
Mucogingival problems (*Code)	S1	56	120	199	24	399	0.001
	S2	27	75	149	19	270	0.001
	S3	67	126	218	24	435	0.001
	S4	78	140	240	31	489	0.001
	S5	45	105	179	22	351	0.001
	S6	98	156	268	33	555	0.002
Edentulous sextant (X code)	S1	0	0	14	1	15	0.001
	S2	0	0	9	1	10	0.016
	S3	0	1	11	1	13	0.020
	S4	0	1	12	1	14	0.012
	S5	0	0	7	2	9	0.010
	S6	0	3	10	3	16	0.016

S1 - maxillary right posterior sextant; S2 - maxillary anterior sextant; S3 - maxillary left posterior sextant; S4 - mandibular left posterior sextant; S5 - mandibular anterior sextant; S6 - mandibular right posterior sextant; Code X - edentulous sextant; Code \*- mucogingival problem ( $P \leq 0.05$  is statistically significant)

for patient screening tools that cannot fully substitute the need for comprehensive periodontal examination as it fails to document clinical attachment loss, thereby masking the extent of periodontal destruction in a patient. Moreover, our study did not use any other additional aids such as periapical radiographs, bitewings, or orthopantomogram for periodontal status assessment. The main drawback of this study can be attributed to the self-reported history provided by the patients, which lacks information such as diabetes type or the current status of smoking.

In conclusion, our study used PSR to give an overview of the patients general oral health status and reflect the burden of periodontal disease in the Chandigarh region, thus contributing to the national oral health data.

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### Conflicts of interest

There are no conflicts of interest.

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