Periodontal Status and Quality of Life in Adult Patients Attending a Tertiary Care Centre in Kathmandu Valley

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ABSTRACT

Introduction: Symptoms of periodontal disease like redness, bleeding on brushing, loosening of affected teeth, and persistent bad breath are not usually documented in a research report. Such symptoms are highly relevant from the patient's point of view and often have a considerable adverse impact on their daily quality of life.

Objective: The objective of this study was to assess the periodontal health status and its impact on quality of life.

Methods: Clinical attachment loss of total 100 participants were measured at six sites of all teeth and patients divided into severity groups according to loss of attachment. The Nepalese version of the Oral Health Impact Profile (OHIP-14) was used to assess impact of periodontal status on patient's quality of life. In addition, participants were also asked to complete a simple 'yes/no' checklist of symptoms relating to their periodontal health in the past year which included swollen gums, sore gums, receding gums, loose teeth, drifting teeth, bad breath, or toothache.

Results: Overall OHIP-14 score significantly differed between patient groups. The impact of oral health on quality of life was greater in patients with high/severe periodontitis and the result was statistically significant (p=0.001).

Conclusion: There is significant difference between oral health related quality of life in healthy and periodontally involved patients as assessed by using OHIP-14. Treatment strategies should focus on improving the quality of life of periodontal patients.

Keywords: Oral health impact profile 14; periodontitis; quality of life.

INTRODUCTION

Chronic periodontal disease is a major oral health problem, which reportedly affects 18% of adult population of Nepal.[1] Advances have been made in understanding of its pathogenesis, prevention and treatment but have not resulted in significant reduction in prevalence and severity.[2] Clinicians usually use clinical parameters such as bleeding on probing, pocket depth, and clinical attachment level to document severity of periodontal disease. Other symptoms of periodontal disease like redness, bleeding, loosening of teeth, and bad breath are not usually documented in research report but are highly relevant from patient's point of view and often have considerable adverse impact on quality of life.[3] Periodontal disease may compromise functional aspects, such as mastication, swallowing, speech, aesthetics, and consequently self-esteem.[4] As compared with healthy individuals, those with periodontitis have worse quality of life.[3,5] It is essential to understand how people perceive their oral health and importance they attach to it, as these factors provoke desire to seek adequate treatment.[6] Interest in idea of 'quality of life' is growing rapidly. Such kind of studies are very few in field of periodontics especially in our country. Purpose of this study was to assess periodontal health status and its impact on quality of life.

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METHODS

This cross-sectional analytical study was done in Department of Periodontics at KIST Medical college and hospital (KIST-MCTH), Lalitpur, Nepal. KIST-MCTH is a tertiary referral hospital. Study population was patients attending the periodontics department of KIST-MCTH, Lalitpur from 2nd September 2018 to 20th March 2019. Ethical clearance was obtained from the institutional review board of KIST medical college and hospital on 19th August 2018 (IRC No. :2075/76/44). Written informed consent was obtained from all participants. Convenience sampling was used and sample size was calculated using the formula:

$$n=\left(\frac{Z_{\alpha/2}\sigma}{d}\right)^2$$

where, σ= 2.74 6; n=100

Hundred patients aged 25 to 64 having at least 20 remaining teeth with no periodontal treatment within six months and no debilitating systemic disease were included in the study. Demographic data like age, sex, address, education background, number and years of cigarette smoking were recorded. Full mouth clinical attachment loss (CAL) at six sites of each tooth of all patients were recorded using Hu-Friedy's University of North Carolina-15 periodontal probe by the principal investigator. CAL was calculated as the distance from cementoenamel junction (CEJ) to the base of the pocket. Several tooth sites were excluded from the examination: impacted teeth, retained roots, grossly broken-down teeth, teeth which were inaccessible for examination satisfactorily and those teeth in which CEJ was indeterminable on clinical examination.[3]

In accordance with the findings from the periodontal examination, the participants were classified as healthy, mild, moderate, high, and severe.[7]

The impact of oral health on patient's quality of life was assessed using the Oral Health Impact Profile-14 (OHIP-14) questionnaire. The OHIP was developed by Slade and Spencer in 1994[8] which contained 49 questions. The short-form of OHIP containing 14 questions (OHIP-14) was developed by Gary Slade[9] in 1997. The OHIP-14 has been translated and adapted into different languages including Nepalese version by Vikram and Singh.[10] The Nepalese version of OHIP-14 questionnaire comprises 14 questions divided into seven categories as follows: functional limitation, physical discomfort, psychological discomfort, physical disability, psychological disability, social disability, and handicap. These seven conceptual domains were derived from the oral health model described by Locker.[11] Responses to the items were recorded in a five-point Likert scale: 0, never; 1, hardly ever; 2, occasionally; 3, fairly often; 4, very often.

All patients were asked to fill up the Nepalese version of OHIP-14 before clinical examination was done. In addition, the patients were asked to complete a simple yes/no checklist of symptoms relating to their periodontal health in the past year. They were asked if they had swollen gums, sore gums, receding gums, loose teeth, drifting teeth, bad breath, or toothache.[3] Scores were derived from the OHIP-14 by summating the responses on the Likert scales to each of the individual questions. Possible OHIP-14 scores ranged from 0 to 56.

Data were entered into SPSS 21 version. Descriptive statistics were used and frequencies and percentages of demographic variables were calculated. Chi square test was used with 95% Confidence Interval to see the association between categorical variables and level of periodontal diseases. Independent "t" test was done to see the association between OHIP score and clinical attachment level and self reported periodontal symptoms.

RESULTS

A total of 100 participants were included in the study (Table 1). Out of which, 55% of participants were male and 45 % female. The age of the participants ranged from 25 to 64 years. Among the study participants, most (72%) were residing in Lalitpur district. A total of 44% of participants had education level below grade 10. All participants were classified into different groups according to the level of clinical attachment loss (Table 2). The association between education level and severity of periodontal disease was also calculated and there was no statistically significant association (p=0.338).

A total of 29% of participants were smokers and there was statistically significant association between cigarette smoking and clinical attachment loss (p value 0.001).

Overall OHIP-14 score significantly differed between patient groups (Table 3). The impact of oral health on quality of life was greater in patients with high/severe periodontitis and the result was statistically significant (p=0.001).

Table 1: Demographic characteristics of participants (n=100).

Demographic characteristics	n (%)
Gender	
Male	55 (55.0)
Female	45 (45.0)
Age (years)	
25-34	29 (29.0)
35-44	20 (20.0)
45-54	29 (29.0)
55-64	22 (22.0)

Table 2: Clinical attachment level (n =100).[7]

Clinical Attachment Level	Frequency
Healthy (0-1 mm)	66
Low (1.1 – 2 mm)	12
Moderate (2.1 – 3 mm)	14
High (3.1 – 4 mm)	6
Severe (4.1-8 mm)	2

Table 3: OHIP-14 score according to severity of periodontal disease.

Periodontal disease severity	Mean ±SD	P value	T value
Low	11.25±5.65	0.62	0.50
Moderate	15.57±9.94	.075	1.93
High/severe	28.37±8.73	.001	5.81

Table 4: Distribution of OHIP-14S individual items response.

	Never	Hardly ever	Occasionally	Fairly/very often
Functional limitation				
Trouble pronouncing words	84	2	9	5
Change in taste	76	3	14	7
Physical pain				
Pain in mouth	45	12	26	17
Uncomfortable eating	38	10	26	26
Psychological discomfort				
Self-conciousness	33	7	28	32
Tense feeling	39	8	23	30
Physical disability				
Unsatisfactory diet	58	9	18	15
Interrupt meals	63	11	16	10
Psychological disability				
Difficult to relax	70	7	13	10
Embarrassed	56	4	19	21
Social disability				
Irritable with others	76	5	13	6
Difficulty doing usual work	73	5	15	7
Handicap				
Life less satisfying	72	6	10	11
Totally unable to function	86	4	7	3

Table 5: Self-reported symptoms of periodontal disease over preceding 12 months and OHIP-14 score.

Self reported symptoms	n(100)	OHIP-14 scores	T value
Swollen gums			
Yes	58	14.15±9.26	0.052
No	42	10.64±8.10	
Painful gums			
Yes	50	15.78±9.54	<0.001
No	50	9.58±7.08	
Receding gums			
Yes	43	16.06±10.05	0.001
No	57	10.12±7.04	
Loose teeth			
Yes	50	16.34±9.61	<0.001
No	50	9.02±6.41	
Drifting teeth			
Yes	31	14.64±9.98	0.141
No	69	11.79±8.33	
Bad breath			
Yes	58	13.34±9.98	0.384
No	42	11.76±7.22	
Toothache			
Yes	65	13.47±8.99	0.225
No	35	11.20±8.72	

t-test

Table 4 shows OHIP-14 items organised according to the domain affected. The impact of oral health on quality of life (QoL) of patients was considerable in terms of psychological discomfort, physical pain and psychological disability. About 30% of the participants perceived they had psychological discomfort fairly or very often. A total of 26% of participants reported difficulty in eating due to physical pain and 21% reported of feeling embarrassed due to condition of oral cavity fairly or very often.

Patients self-reported symptoms in the past 12 months were also recorded among which 58% reported of swollen gums, 50% painful gums, 43% receding gums, 50% loose

teeth, 31% drifted teeth and 58% bad breath (Table 5). There was a statistically significant association between self-reported periodontal symptoms of loose teeth and severity of periodontal disease (p=0.003). There was no statistically significant association between other self-reported symptoms of periodontal disease and severity of disease.

It was interesting to find that participants OHIP-14 score was significantly associated with most of the self-reported symptoms over past 12 months however the experience of bad breath, drifting teeth and toothache was not significant (Table 5).

DISCUSSION

In the present study, 100 individuals aged 25 to 64 were included so as to include patients most affected by periodontal disease.[3] The interview was conducted on the same day as the clinical examination by an interviewer blinded to the study goals so a response rate of 100% was obtained.

There was no statistically significant association between level of education and severity of periodontal disease in the present study which is in contrast to previous studies.[3,6] This shows that the level of education did not affect the awareness and severity of periodontal disease at least in our part of the world which is in contrast to previous study.[12]

Periodontal disease was more prevalent in cigarette smokers and those who smoked more than 10 cigarettes/day had more severe periodontal disease which is in accordance with previous studies.[7,13]

Periodontal disease is a silent disease and periodontitis patients usually seek treatment only when they notice severe mobility or have severe pain. In this study the self reported symptoms of periodontal disease over past 12 months like swollen gums, loose teeth, bad breath, etc., were asked and compared with the periodontal destruction in the form of clinical attachment loss. This was done to see how much the clinical evidence of accumulated periodontal destruction correlate with symptoms felt by the patients. It was interesting to note that only 10-14% participants with high/severe periodontal attachment loss responded positive when asked about swollen gums, toothache, drifting teeth, bad breath and receding gums. Only the finding of loose teeth was significantly correlated with severity of periodontal disease. This could be because the patients were not aware of signs of periodontal disease or they could not perceive or notice the changes in their oral tissues apart from visibly mobile teeth. This is one alarming finding because until patients don't perceive the changes in their oral tissues, they will not seek treatment. This could be an area of focus and we can spread awareness of periodontal disease through periodontal screening camps.

While comparing the self-reported symptoms and OHIP-14 score, the experiences of swollen gums, painful gums, receding gums and loose teeth were significantly associated with high impact on QoL. The experiences of drifting teeth, bad breath and toothache did not significantly affect the QoL which is in contrast to the previous study.[6]

Patients with high/severe clinical attachment loss (>3 mm) had significantly high OHIP-14 score compared to those with mild and moderate attachment loss which confirms that severity of periodontal disease has a negative effect on individual's quality of life. This is in accordance to studies by Ng and Leung,[3] Needleman et al.,[6] and Meusel et al.[7] who also showed that severity of periodontitis affects the individual QoL. The subscale mostly affected was psychological discomfort subscale which included 'self-consciousness' and 'tensed feeling.' Periodontal disease lead to loss of teeth, tooth migration and gingival recession which affect patients' aesthetics especially if in the anterior region which could have led to high scores in this subscale. This is in accordance with the study by Meusel et al.[7] which also showed a significant association between disease severity and psychological discomfort. Similarly, physical pain subscale in terms of 'pain in mouth', 'uncomfortable eating' and psychological disability subscale in terms of 'difficult to relax' and 'feeling embarrassed' also scored high. This shows that periodontal health frequently impacted QoL as it affected self-confidence and self-esteem as well as led to patient feeling embarrassed. This indicates that clinicians should shift their focus not only on arresting progression of disease but also on aesthetic rehabilitation.

The subscale that scored least was functional limitation which includes 'change in taste' and 'trouble pronouncing words' and social disability which includes 'irritable with others' and difficulty doing usual work both getting a fairly often and often response of 12% and 13% respectively. Ng and Leung[3] also reported a non-association between clinical attachment loss and social disability domain of QoL. This could be because these patients did not perceive the effect of oral condition on word pronunciation or difficulty doing daily work.

The results of this study support those of Lopes et al.,[14] Bernabe and Marcenes,[15] and Jansson et al.,[16] all of whom showed that periodontal disease significantly affected the quality of life.

Finally, the limitation of the study was that the sample size was very small and selective and included only those patients who attended the periodontal department.

CONCLUSION

In conclusion, we can say that there is significant difference between oral health related QoL in healthy and periodontally involved patients as assessed by using OHIP-14. The current focus should be to understand effect of periodontal disease beyond clinical parameters and to assess the consequences of disease in daily life and quality of life so that the therapeutic modalities can be applied accordingly. Further studies with more sample size should be conducted in the future.

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Conflict of Interest: None

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