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RESEARCH ARTICLE

Impact of periodontal health on the Quality of Life among Diabetics

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Abstract

Introduction: Diabetes Mellitus is a major public health problem worldwide. Diabetes Mellitus with its concomitant oral manifestations especially in the form of periodontal disease not only affects people physically but also has emotional and psycho-social consequences. **Objective**: The objective of this study was to assess the impact of periodontal health on the quality of life among diabetics. **Materials & Method**: The study was a cross sectional type using a questionnaire, the Oral Health Impact Profile (OHIP-14) on 115 diabetics in Mangalore. An oral health examination was subsequently carried out using the Community Periodontal Index (CPI) and Loss of attachment to determine the periodontal status. **Data analysis**: Data was analyzed using the statistical package for social sciences (SPSS) version 11. The Pearson Correlation test was used to determine the presence or absence of any correlation. **Results**: The CPI and loss of attachment was scored for the 95 dentate individuals. Only 9 subjects had a completely healthy periodontium. The CPI scores showed a positive correlation with the oral health impact score and the impact of oral health on the quality of life was high with at least 10 of the 14 items showing a statistical significant impact. **Conclusion:** This study demonstrates a significant impact of periodontal health on the quality of life among diabetics.

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INTRODUCTION

Diabetes Mellitus is a major public health problem worldwide. According to the WHO global data bank, in the year 2000, India ranked first among the countries with the highest numbers of people with diabetes with a diabetic population of 31.7 million and the projection for 2030 is 79.4 million.[1]

Diabetes Mellitus with its concomitant oral manifestations especially in the form of periodontal disease not only affects people physically but also has emotional and psycho-social consequences. Periodontal disease is a complicated interplay between the plaque etiological agents and various genetic and environmental risk factors, and it has been found to be associated with altered systemic health conditions, especially diabetes[1].

In a broader perspective, the relationship between various satisfaction factors and periodontal status, in other words, patient-centered outcomes, lays emphasis on Quality of life (QoL) which is consistent with the concept that health is a resource and not simply the absence of disease.[2]

A better understanding of the consequences of periodontal disease and its treatment on patients' perceptions of how their oral health affects their daily lives can help to insure that the planning and evaluation of periodontal care and

treatment adequately address patients' needs and concerns. The objective of this study was to assess the impact of periodontal health on the quality of life among diabetics using the Short form version of the oral Health Impact Profile (OHIP - 14)[3]

Materials and Method:

The study used a cross sectional questionnaire design on 115 subjects with Type 2 Diabetes Mellitus who were members of the diabetic club in an urban hospital in Mangalore. Ethical clearance to conduct the study was obtained from the Institutional Ethics Committee of MCODS, Mangalore. Informed consent was taken from all the subjects prior to dental examination. The subjects were requested to complete the short-form version of the Oral Health Impact Profile (OHIP-14)[3] which is a self-completed questionnaire consisting of 14 items subdivided into seven subscales: functional limitation, physical discomfort, psychological discomfort, physical disability, psychological disability, social disability and handicap. An oral health examination was subsequently carried out using the Community Periodontal Index (CPI) and Loss of attachment to determine the periodontal status.[4]

Data analysis:

Data was analyzed using the statistical package for social sciences (SPSS) version 11. The Pearson Correlation test was used to determine the presence or absence of any correlation.

Results:

Among the 115 members of the diabetic club, a total of 106 subjects (92%) completed the questionnaire. The group comprised of 71 male and 35 female subjects. Most of the subjects belonged to the 45-64 year age group (58%). (Table 1) A total of 11 subjects were completely edentulous with 6 of them being female and 5 male.

CPI and loss of attachment was scored for the remaining 95 dentate individuals. Only 9 subjects had a completely healthy periodontium. A total of 43 subjects had a highest CPI score of 2 and 33 subjects had a highest CPI score of 4. The proportion of males with a higher CPI score was more as compared to females and this was found to be statistically significant (Table 2)

When we analyzed the loss of attachment scores, we found that although 18 subjects did not show any loss of attachment, 34 subjects had a loss of attachment score of 4. (Table 3)

Table 4 shows the perceived ratings given by the subjects regarding their oral health. Only 8 subjects felt that their oral health was excellent whereas 50 perceived their oral health as good and 36 perceived their oral health as fair.

When the responses of the subjects were elicited regarding the items of the Oral Health Impact Profile, we found that most of the subjects (84) very often had trouble pronouncing words, whereas 82 subjects felt that their sense of taste had worsened because of problems with their teeth, mouth or dentures. This was found to be statistically significant. Many subjects (87) found it uncomfortable to eat any food and often had an unsatisfactory diet due to problems with their teeth, mouth or dentures. Majority of subjects (90) had to often interrupt their meals, 81 subjects often found it difficult to relax, 83 were embarrassed and 80 reported often being irritable with other people. The impact of oral health on the quality of life was of exceptional significance when 85 reported having difficulty doing their job and 88 reported that they were often totally unable to function. ($P < 0.05$) (Table 5)

Correlation between periodontal status and impact scores:

Although the CPI scores showed a positive correlation with the oral health impact score, there was no correlation between the loss of attachment scores and the oral health impact score (Table 6).

However when gender wise analysis was done, we found that there was a statistically significant higher correlation between periodontal status and oral health impact score among females compared to males. (Table 7) However age wise correlation did not yield any statistically significant correlation. (Table 8)

Table 1: Distribution of subjects - age & gender wise

	18-34	35-44	45-64	65-74	>74	Total
Female	0	3(8.6%)	25 (71.4%)	6 (17.1%)	1 (2.9%)	35
Male	1 (4.3%)	8 (11.3%)	37 (52.1%)	22 (31%)	3 (4.2%)	71
Total	**1(0.9%)**	**11(10.4%)**	**62(58.5%)**	**28(26.4%)**	**4 (3.8%)**	**106**

Table 2: Mean number of subjects based on the highest CPI score

	CPI 0	CPI 1	CPI 2	CPI 3	CPI 4	CPI 9
Female	3 ± 8.6	3 ± 8.6	14 ± 40	0	8 ± 22.9	1 ± 2.9
Male	6 ± 8.5	3 ± 4.2	29 ± 40.8*	2 ± 2.8	25 ± 35.2*	1 ± 1.4

*** P < 0.05**

Table 3: Mean number of subjects based on highest loss of attachment score

	Total number	LoA 0	LoA 1	LoA 2	LoA 3	LoA 4	LoA 9
Female	**35**	9 ± 25.4	7 ± 20	5 ± 14.3	0	7 ± 20	1 ± 2.9
Male	**71**	9 ± 12.7	23 ± 32.4	4 ± 5.6	2 ± 2.8	27 ± 38	1 ± 1.4
	106	**18**	**30**	**9**	**2**	**34**	**2**

Table 4: Mean number of subjects who scored their oral health

	Excellent	Very good	Good	Fair	Poor
Males	3 ± 4.2	3 ± 4.2	38 ± 53.5	26 ± 36.6	1 ± 1.4
Females	5 ± 14.3	4 ± 11.4	12 ± 34.3	10 ± 28.6	4 ± 11.4
Total	**8**	**7**	**50**	**36**	**5**

Table 5: Responses to OHIP items

	ITEMS	Hardly ever/ Never	Occasionally	Very often/ Often
1.	Trouble pronouncing words	3 ± 2.8	19 ± 17.9	84 ± 79.3*
2.	Felt that your sense of taste has worsened	6 ± 5.6	18 ± 17	82 ± 77.3*
3.	Had painful aching in your mouth	4 ± 3.8	32 ± 30.2	70 ± 66
4.	Found it uncomfortable to eat any foods	8 ± 7.6	11 ± 10.4	87 ± 82.1*
5.	Been self-conscious	17 ± 16	23 ± 21.7	66 ± 19.3
6.	Felt tense	20 ± 18.9	29 ± 27.9	57 ± 53.8
7.	Had an unsatisfactory diet	3 ± 2.8	16 ± 15.1	87 ± 82.1*
8.	Had to interrupt meals	4 ± 3.8	12 ± 11.3	90 ± 84.9*
9.	Found it difficult to relax	7 ± 6.6	18 ± 17	81 ± 76.4*
10.	Been embarrassed	7 ± 6.6	16 ± 15.1	83 ± 78.3*
11.	Been a bit irritable with other people	3 ± 2.8	23 ± 21.7	80 ± 75.5*
12.	Had difficulty doing your other jobs	4 ± 3.8	17 ± 16	85 ± 80.2*
13.	Felt that life in general was less satisfying	10 ± 9.4	29 ± 27.4	67 ± 63.2
14.	Been totally unable to function	9 ± 8.5	9 ± 8.5	88 ± 83*

*** P < 0.05**

Table 6: Correlation between CPI, LoA & Impact score

	CPI	LoA
Total Impact	0.247	0.209
P value	0.01	0.032

Table 7: Correlation between CPI, LoA & Impact score – gender wise

	CPI	LoA
Female	**0.366***	**0.402****
Male	**0.157**	**0.068**

*** P = 0.03; **P = 0.017**

Table 8: Correlation between CPI, LoA & Impact score – age wise

	CPI	LoA
35-44	1*	0.126*
45-64	1*	0.167*
65-74	1*	0.212*
>75	1*	0.802*

*** P > 0.05**

Discussion:

The present study was conducted on 106 subjects with the purpose of assessing the impact of periodontal health on the quality of life among diabetics using the Short form version of the oral Health Impact Profile[3].

Among the dentate, only 9 subjects (9.5%) had a completely healthy periodontium. This is very low when compared to the study by Santana TD et al[5] who found that 15.7% of their population had a healthy periodontium. In the present study, a total of 43 subjects (45.2%) had a highest CPI score of 2 and 33 subjects (34.7%) had a highest CPI score of 4. This finding is comparable to other studies[5, 6]

In the present study, the proportion of males with a higher CPI score was more when compared to females and this was found to be statistically significant. A total of 18 subjects (18.9%) did not show any loss of attachment whereas 34 subjects (35.8%) had a loss of attachment score of 4. The poor periodontal status of this group might to be attributed to their diabetic condition. In our study, 50 subjects (52.6%) perceived their oral health as good in spite of at least 90% of the subjects having some periodontal condition. According to Allen EM et al[7], people with chronic disabling disorders often perceive their quality of life as better than healthy individuals, i.e., poor health or presence of disease does not inevitably mean poor quality of life. [6]

The impact of oral health on the quality of life was high with at least 10 of the 14 items showing a statistically significant impact. This is in accordance with the findings reported by Needleman I et al[6] and Ng & Leung[8] in their study. In the present study, the CPI scores showed a positive correlation with the oral health impact score. A statistically significant correlation was found between periodontal status and oral health impact score among females as compared to males. However, Silva de Pinho et al[9] reported that CPI scores in their study were not statistically associated with oral health related quality of life.

Conclusion:

This study demonstrates a significant impact of periodontal health on the quality of life among diabetics. Diabetic patients manifest a higher prevalence of oral disorders such as xerostomia, sialosis, oral candidosis and oral lichen planus and studies indicate that diabetic patients are more likely to develop and display a greater severity of periodontal disease[6, 9] The potentially important interactions between periodontal disease and diabetes mellitus, makes it necessary to ensure optimal oral health care for diabetic patients. The concept of oral health related quality of life considers the patient as a whole and brings a holistic perspective to patient care.

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