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Research Article

Periodontal Status and its Impact on Oral Health Related Quality of Life (OHRQOL)

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ABSTRACT

Introduction: Periodontitis is a common infection that damages soft and hard tissues of the oral cavity, with an age-standardized prevalence of 11.2%. Quality of life refers to one's perceptions about life, both positive and negative, because of the cultural context in which one lives. Objective of the study: To determine the clinical periodontal status and its impact on quality of life of patients visiting dental OPD. Materials and method: A cross-sectional analytical study was conducted from January to June 2018 among 320 patients at BUDC. OHRQOL questionnaire was interviewed in local language (Urdu) from the patients. Dental examination included plaque index, gingival index, clinical attachment loss and periodontal pocket depth. Data was analyzed using SPSS 22. Chi square was applied to find relationship between periodontal health status and functional, emotional, and social aspects of well-being of life. The p value of <0.001 was statistically significant. Results: Among 20-70 years, majority were males 54.4%. 36.3% were between ranges of 26-35 years. Positive association ($p<0.001$) was found between age and facial appearance. It was found evident that sound and healthy teeth can have a positive effect ($p<0.001$) on individual disposition and personality based on gender. Conclusion: To conclude, there is a noteworthy dissimilarity between oral health related QoL in primarily non-regular attendee participants as judged using OHRQOL. Those with more desirable periodontal conditions were more likely to have a good QoL.

Keywords: Periodontal health; Quality of life; Patients; Oral health

INTRODUCTION

APeriodontitis is a common infection that damages soft and hard tissues of the oral cavity, an age-standard prevalence of 11.2%. The factors causing this disease are diabetes smoking and most commonly poor oral hygiene [1,2]. Plaque and calculus commonly is due to inappropriate brushing, negligence of interdental cleaning and not going for dental visits regularly [3], which causes inflamed gingiva. Chronic gingivitis is the main factor for the failure of periodontal attachment loss [4,5]. Prevalence ranges from 25% to 54% in early gingivitis with no attachment loss to 43% with chronic periodontitis involving one/more sites of attachment loss [6]. Usual risk factors of periodontal disease include old age, tobacco/alcohol abuse, hereditary factors, obesity, uncontrolled diabetes and stress [7]. Periodontal conditions in early stages is not recognized and as the disease advances, signs such as inflamed/bleeding gums, tooth mobility due to boneless becomes evident and painful [8,9]. Periodontal diseases are associated to low quality of life [10]. Quality of life refers to understanding about life of the cultural perspective in which one lives [11]. Quality of life surrounds different domains like psychological issues, social links among others [12]. Quality of life specific to oral health and its effect is seemed to be low in patients with periodontal problems [13-15]. A decline in OHRQOL can be due to severe pain, tooth decay following loss of function. For example, patients with periodontal problems outline poor effects of their oral health on their general outcome such as significant functional-restrictions, physical pain, and psychological anxiety [16]. Due to the harmful effects of periodontal disease on quality of life, it is important to find possible factors that may facilitate these relations. Accepting such unintended pathways may provide areas for future involvements to help ease straight undesirable effects on quality of life [17].

Therefore, the purpose of this study is to determine the clinical periodontal status and its impact on quality of life of patients visiting dental OPD. The detail clinical examination of periodontal

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status will provide marks of general oral hygiene including the facts of dental plaque and calculus, gingival health, clinical attachment loss and pocketing. Moreover, the OHRQOL questionnaire will exclude the impact of periodontal health on specific life in terms of functional, social and emotional security and its link with chronic periodontitis.

MATERIALS AND METHODS

A study at Bahria University Medical and Dental College (BUMDC) in the department of periodontology was carried out from January to June 2018 which was cross-sectional analytical study to determine clinical periodontal status and its effect on standards of living among patients visiting dental OPD. Prior to the data collection, ethical approval was obtained from the institution to conduct the research. A total of 45 number of patients visits periodontology OPD daily for their routine periodontal screening and treatment. In a month, approximately 900 patients pay a visit. So, keeping population size of 900 with an anticipated frequency of 50%, the computed sample size calculated for the study was 320 patients. The patients were purposively selected whose age ranged between 20-70 years. Both male and female patients who had at least 20 functional teeth present in the oral cavity and gave informed consent were recruited for the study. Any history of systemic condition like diabetes, cardiovascular disease etc. or localized/generalized chronic periodontitis with a clinical probing depth of >5 mm were also not considered as the part of study. Also, pregnant or lactating woman and the patients undergoing systemic antibiotic therapy/oral prophylaxis within past 6 months were excluded from the study. A questionnaire [18] which was well organized and corroborated on Oral Health-Related Quality of Life (OHRQOL) was interviewed in local language (Urdu) from the patients. The questionnaire comprised of 14 enquiries based on a participant's oral condition, well-being, emotional well-being, presumptions and satisfaction with care, and perception of personal scored on a likert scale ranging from 1 (very bad effect) to 5 (very good effect). Dental examination was then conducted under daytime sun-light following standard care for cross control infection and using sterilized examination set and a William's periodontal probe. Periodontal status was assessed using the Plaque Index (PI), Loe and Silness, Gingival Index (GI), Clinical Attachment Loss (CAL) and Periodontal Pocket Depth (PPD) [19]. The dental probing of plaque and gingival index was examined on four surfaces of six teeth (12, 16, 24, 36, 32 and 44). The recording was scored from distal buccal surface to the mesial surface for each index teeth, and then lingual to mesial side to distal, therefore four readings for individual index teeth were noted. Similar method of probing was recorded for CAL for each index tooth. Whereas, for PPD, the whole upper and lower arch teeth (excluding 3rd molars) were probed and the deepest periodontal pocket located either on the buccal or lingual surface were recorded for each tooth. The mean was calculated for everyone. SPSS version 22 was used for data entry and its analysis. The descriptive of mean and frequency for the variable of socio-demographics were tabulated. Chi square or Fisher exact test was applied to find relationship between periodontal health status and functional, emotional and social aspects of well-being of life. Whereas logistics regression was applied to find association between dependent (clinical periodontal parameter) and independent variable (socio demographics and other variables from OHRQOL as significant from chi square). <0.001 P value was scrutinized as statistical notable for the study variable.

RESULTS

This research was conducted to determine the clinical periodontal status and its effect on Quality Of Life (QOL) of patients visiting dental OPD. An aggregate of 320 participants were enlisted in fulfilling the inclusion/exclusion criteria (Table 1).

Table 1 demonstrates frequency (n) and percentages (%) of

Table 1: Sociodemographic data of patients visiting dental OPD.

Variable	Response option	Frequency (n)	Percentage (%)
Age	<25 years	57	17.8
	26-35 years	116	36.3
	36-45 years	89	27.8
	46-55 years	39	12.2
	56-65 years	14	4.4
	>66 years	5	1.6
Total		320	100
Gender	Male	174	54.4
	Female	146	45.6
Total		320	100
Educational status	Illiterate	13	4.1
	Primary education	19	5.9
	Secondary education	77	24.1
	Intermediate	65	20.3
	Graduation	115	35.9
	Post-graduation	31	9.7
Total		320	100

Monthly income	No income	7	2.2
	<10,000 rupees	60	18.8
	10,000-20,000 rupees	90	28.1
	21,000-30,000 rupees	34	10.6
	31,000-40,000 rupees	21	6.6
	41,000-50,000 rupees	102	31.9
	>50,000 rupees	6	1.9
Total		320	100

independent variable inquired through questionnaire for each individual. Among the age range of 20-70 years, majority were males 54.4% with 36.3% were between ranges of 26-35 years. It was found that 35.9% of the population were graduate from local institutions and 24.1% had completed their secondary education. Whereas, only 4.1% were found to be illiterate. Regarding the monthly income of individual, 31.9% had Rs. 41,000-50,000 as their regular earnings and 28.1% had Rs. 10,000-20,000 as their monthly salary (Table 2).

Table 2 demonstrates relationship between demographic and sociological variable like age, gender, educational status and monthly income on responses of Oral Health Related Quality of Life Questionnaire (OHRQOL). Positive association ($p<0.001$) was found between age and facial appearance stating that with increasing age the facial supporting structure degenerates leading to a weak muscular organization of supporting tissue. It was found evident that sound and healthy teeth can have a positive effect ($p<0.001$) on individual disposition and personality on the basis of gender. Moreover, infectious and painful teeth does effect ($p<0.001$) both the gender in performance of their work and general health. Education

Table 2: Relationship between independent variable and responses from Oral Health Related Quality Of Life (OHRQOL) questionnaire. <0.001 p-value

Demographic and sociological characteristics	Response option (likert scale)	OHRQOL	Pearson chi-square value
Age	Score 1 (very bad effect) Score 2 (bad effect) Score 3 (no effect) Score 4 (good effect) Score 5 (very good effect)	Does teeth and overall facial structure effects your facial appearance and health?	0.001*
Gender	Score 1 (very bad effect) Score 2 (bad effect) Score 3 (no effect) Score 4 (good effect) Score 5 (very good effect)	Does presence of healthy teeth can bring a good change in your personality?	0.023*
		Does pain and infection in teeth effects your work life and general health?	0.013*
Educational status	Score 1 (very bad effect) Score 2 (bad effect) Score 3 (no effect) Score 4 (good effect) Score 5 (very good effect)	Does loss of teeth or any problem in teeth alter your confidence?	0.001*
		Does pain and infection in teeth effects your work life and general health?	0.001*
		Does pain and infection in teeth can bring a negative impact on your personal relationship with your spouse?	0.048*
	Score (very poor effect) Score (poor effect)	Do teeth effect your speech?	0.04*
		Does smiling and laughing with teeth can have an effect on your overall health?	0.001*
Monthly income	Score (not any effect) Score (good effect) Score (excellent effect)	Does loss of teeth or any other problem in teeth alters your sleep?	0.006*
		Does loss of any tooth Or some tooth disease effects your mood and overall performance?	0.008*

plays a vital role in building self-confidence and communicating with other people. Significant association were found when lack of education affects individual assurance (p<0.001) and bringing a negative impact relating with family and relatives (p<0.001). Lack of awareness and inadequate monetary funds does have negative impact on individual's functional aesthetics with loss of teeth (p<0.001) and poor oral health status (p<0.001) and attaining a low-social profile (p<0.001) due to poor facial appearance (Table 3).

Table 3 shows the positive relationship between demographic variables like age, gender and monthly income on periodontal status of patients visiting dental OPD. Considering age, all the four periodontal indices *i.e.* plaque index, gingival index, clinical attachment loss and periodontal pocket depth were found to be significant (p<0.001, 0.001, 0.001, 0.001) respectively. Affirming that with increasing age and lack of oral hygiene the periodontium health is compromised causing poor impact on individual functional emotional and social aspect of life. Regarding gender it was found that males lack awareness of maintaining oral hygiene therefore it

Table 3: Relationship between demographic variables and periodontal indices. <0.001*p-value

Demographic characteristics	Response Option	Dependent Variable	Pearson chi square value
Age	Normal 0.1-0.9 Mild 1.0-1.9 Moderate 2.0-2.9 Severe 3.0-3.9	Plaque index	0.001*
	Normal 0.1-0.9 Mild 1.0-1.9 Moderate 2.0-2.9 Severe 3.0-3.9	Gingival index	0.001*
	1-3 mm 4-5 mm 6-8 mm 9-11 mm >12 mm	Clinical attachment loss	0.001*
	Mild >1-3 mm Moderate >3-5 mm Severe >5-7 mm	Periodontal pocket depth	0.001*
Gender	Normal 0.1-0.9 Mild 1.0-1.9 Moderate 2.0-2.9 Severe 3.0-3.9	Plaque index	0.106
	Normal 0.1-0.9 Mild 1.0-1.9 Moderate 2.0-2.9 Severe 3.0-3.9	Gingival index	0.608
	1-3mm 4-5mm 6-8mm 9-11mm >12mm	Clinical attachment loss	0.034*
	1-3mm 4-5mm 6-8mm 9-11mm >12mm	Primer name	Primer name
Monthly income	Normal 0.1-0.9 Mild 1.0-1.9 Moderate 2.0-2.9 Severe 3.0-3.9	Plaque index	0.048*
	Normal 0.1-0.9 Mild 1.0-1.9 Moderate 2.0-2.9 Severe 3.0-3.9	Gingival index	0.019*
	1-3 mm 4-5 mm 6-8 mm 9-11 mm >12 mm	Clinical attachment loss	0.129
	Mild >1-3 mm Moderate >3-5 mm Severe >5-7 mm	Periodontal pocket depth	0.007*

out-burst on periodontal ligaments hence waning the supporting structure of periodontium and compromising periodontal health (Table 4).

Table 4: Association of gender with periodontal status using binary logistics.

Independent variable	Response option	Dependent variable	P value
Gender	Normal 0.1-0.9 Mild 1.0-1.9 Moderate 2.0-2.9 Severe 3.0-3.9	Plaque index	0.113
	Normal 0.1-0.9 Mild 1.0-1.9 Moderate 2.0-2.9 Severe 3.0-3.9	Gingival index	0.297
	1-3 mm 4-5 mm 6-8 mm 9-11 mm >12 mm	Clinical attachment loss	0.01*
	Mild >1-3 mm Moderate >3-5 mm Severe >5-7 mm	Periodontal pocket depth	0.032*

Table 4 demonstrates significant association of gender on periodontal health using binary logistics. It was found evident that clinical attachment loss and periodontal pocket depth were associated with gender asserting with increasing age the periodontal ligaments loose its elasticity and firmness ($p<0.001$) causing formation of periodontal pockets ($p<0.001$) and degeneration of periodontal fibers and ligament.

DISCUSSION

The effect of oral health on the standards of living was found to be immense 90% (290/320) for the present study. It was apparent that the oral health status affected individual's standards of living in one or more means, symptoms produced by the condition of oral health is recognized to influence the quality or standards of living. This lures awareness to the effect t of periodontal diseases on standards of daily life. Disparities in Oral Health Related Quality of Life (OHRQOL) with respect to individual's signs and symptoms related with diseases of the periodontium were ostensible. Occurrence of ''pain, infection and swelling of gums'', ''weak facial musculature'', ''gingival recession'', ''mobile teeth'', ''drifting-teeth'', ''halitosis'' and ''tooth pain'' were also correlated with reducing the life quality. In addition, Oral Health Related Quality of Life (OHRQOL) was also related to clinical periodontal status. Clinical attachment loss in patients and more of deep periodontal pockets had bad oral health-related life quality (OHRQOL). Hence, to conclude that the general oral health-related standards of life count is subtle to health of periodontium as self-declared and examined clinically.

Standards of living are progressively conceded as a logical, relevant and notable index of service need and intrusion consequences in present-day public health research and practice [20]. QoL measures related to health, including subjective as well as objective evaluations, are specifically practical for assessing attempts to stop incapacitating persistent illness and evaluating its efficacy. This resulted towards an upsurge in the utility of patient-centered oral condition, primarily endeavoring to calculate the influence on QoL by oral health. More than 80% of the participants signed in for not visiting a dental health care provider since a year, excluding those who went to look for the management of a particular dental problem. This highlighted that majority of the subjects studied were irregular attenders, this is in context to pervious reports also. It's anticipated that coarsely identical percentage of the subjects measured with loss of periodontal attachment did not get their periodontal diseases treated or managed properly. Experiences of swelling of gums, soring of gums, gingival recession, mobile teeth, bad odor, and tooth pain were correlated with increased effect. Condition of oral health was habitually regarded as influencing quality of life as it affected feeling led to physical pain (by making food uncomfortable to eat) and resulted in physical disability (by interrupting meals) [21]. This draws focus to the impact of condition of periodontium on everyday life and its significance for overall QoL as evident from the results of the present study. Periodontal condition clinically was significantly correlated to QoL with respect to oral health. Patients with complete oral cavity mean CAL above 4-5 mm perceived that their community-based functions and gross contentment with life would not be notably pretentious because of their oral condition.

Comparatively less consumption of prevention and conservation of dental health care in the local community indicates the due importance of oral health in respect to socio-demographic. The subjects with good condition of the periodontium, i.e., with low history of damage to the periodontium, were more prone to an improved QoL, and conversely [22,23]. The tool showed invidious rationality in recognizing subjects with self-proclaimed symptoms linked with diseases of periodontium and subjects with collective periodontal destruction as clinically evident in the results displayed in Table 3. These results have substantial consequences for the application of patient-led personalized end results as impartial parameters of periodontal disease clinically in planning, provision and assessment, with evaluation of treatment care. This tool needs to be incorporated in periodontitis in order to access if successful therapist-centered results co-relates with patient-led personalized end results [24]. Better acknowledgement of the contrast in oral health that exists between periodontally healthy compared to periodontally ill- patients beyond parameters clinically is key since it will give an intuition in results of patients' everyday life and QoL with respect to periodontal problems encapsulating the requirement for inscribing these discrepancies [25].

The discovery of the present study indicated that 74% of the subjects turned up to have either better or poor oral condition in response to a question with regard to an insight of the conditions of oral cavity affecting their general health as a whole. About three-fourth of the community of subjects reporting more than one persistent unfavorable effects in their standard of life caused by gums, teeth and overall periodontal condition. These stats had similar estimates from national surveys in the UK [26] and Australia [27], where 46% and 48% of adults reported at least one quality of life related to oral health adverse impact occurring rarely or frequently. Commonly reported problems were three such as pain swollen and infected gums, weak facial musculature, speech problem, loss of teeth lack of sleep and negative influence on personality and relation with spouse distressing their social life. These results proposed that not only functional capacities, but also good experiences of life, such as social interaction and relaxation, can be influenced with oral health status of patients suffering periodontally [28].

The solidity of this research included variation of patients, who visited across the south of Karachi. In addition, positive association

between clinical attachment loss and periodontal pockets with personalized counts emphasized the significance of using individual oral health evaluation in the clinical practice as a substantial patient end-results and its impact on the patient functional, emotional and social well-being. Therefore, the interrelation of particular features of oral health-related quality of life and persistent periodontal disease+ termed the condition as a "silent disease" suggesting for a dose response association between Quality of Life (QoL) and severity of periodontal disease.

CONCLUSION

To conclude, there is a noteworthy dissimilarity between oral health related QoL in primarily non-regular attendee participants with dissimilar status as judged using OHRQOL. Those with more desirable periodontal conditions i.e. with possible history of periodontal razing were more likely to have a good Qol. Significant awareness exists in the dissimilarity in oral health that exists between periodontally fit versus periodontally compromised patients over clinical boundaries as it will provide an intuition into the outcome of periodontal complications for patients and QoL, along with the necessity for addressing these differences.

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