



Comparative Assessment of Oral Health Related Quality-Of-Life Between Rural and Urban Chronic Periodontitis Patients.

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KEYWORDS

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ABSTRACT:

Introduction: Periodontal diseases are the outcomes of inflammatory infections, which lead to destruction of teeth supporting structures and bone resorption, further leading to pocket formation and recession and negatively influence people's oral health-related quality of life (OHRQoL). The impact on OHRQoL of periodontal conditions has been investigated lesser as compared to other oral problems. Therefore, a better understanding of subjective evaluation or perception regarding the impact of the diseases is needed, which would ensure a treatment plan that fits the patients' need and concern.

Materials And Method: A cross-sectional descriptive study was conducted among rural (50) and urban (50) population having age range between 35 and 44 years chosen from the outpatient department of a private dental college. The OHIP-14 was used for assessing OHRQoL and for recording of the oral-health status; WHO modified 2013 proforma was utilized. Chi-square, Student's t-test and multiple logistic regression analysis were employed for statistical analysis.

Result: The prevalence of LOA (94.0%), bleeding (76.0%) and pocket (78.0%) was significantly higher in the rural population as compared to urban. There was a positive correlation between gingival bleeding and presence of pockets with the mean OHIP scores. As the mean number of teeth with the gingival bleeding and pockets increased there was increase in the mean OHIP scores both in the urban and rural population.

Conclusion: The present study shows that there is a significant association between periodontal status and OHRQoL. Rural subjects had greater impact on OHRQoL than their urban counterpart. Hence there is a need for development of strategies and policies to eradicate disparities and to promote oral health status.

INTRODUCTION

The dimension of health has been considerably expanded ever since 1948, after the addition of the concept of well-being to it by WHO. As a result, oral health has now been taken into consideration for impacting general well-being of an individual.¹ Periodontal diseases are the outcomes of inflammatory infections, which lead to destruction of teeth

supporting structures and bone resorption, further leading to pocket formation and recession.² It is a complex relationship between specific microorganism of dental biofilm and the host's immuno-inflammatory response. Furthermore, a number of factors such as genetic factors, environmental factors and acquired conditions, such as smoking or systemic diseases too have an



influence.³Periodontal diseases can impact quality of life in two ways; firstly it may act as a modifying factor for an existing systemic condition and secondly clinical consequences of the disease itself can have a social, emotional and functional impact.⁴ Diagnosis of periodontal diseases is usually based on clinical and radiographical examination. However subjective evaluation of the diseases should also be done to quantify the impact of the compromised oral condition on quality of life of an individual.⁵WHO (2003) has recognized Oral Health Related Quality of Life as an important part of Global Oral Health Program. It's a multidimensional concept which evaluates oral health, functional and emotional wellbeing, expectations and sense of satisfaction of an individual.⁶ Assessment of OHRQoL is very important as it allows a transition from the traditional criteria of treating patients to an approach that focusses more on subjective experiences for defining the treatment outcomes.⁷ Several tools for evaluating OHRQoL have been designed till date for this objective, including oral impacts on daily performance (OIDP), oral health quality of life inventory (OHQoL), geriatric/general oral health assessment index (GOHAI) and oral health impact profile (OHIP). However, the psychometric properties and predictive validity of many of these evaluation tools were weak.⁸ In order to overcome this, the oral health impact profile (OHIP) was developed by Slade and Spensor to measure disability and discomfort due to oral conditions, which became the most widely used tool for assessment.⁹ The tool uses Likert scale for weighing individual items indicating the obtained score would reflect frequency as well as severity.¹⁰ The impact on OHRQoL of periodontal conditions has been investigated lesser as compared to other oral problems. Therefore, a better understanding of subjective evaluation or perception regarding the impact of the diseases is needed, which would ensure a treatment plan that fits the patients' need and concern.¹¹ Hence the present study was conducted for assessing and comparing the oral health related quality of life in patients suffering from periodontitis in rural and urban populations, using the OHIP-14 questionnaire.

MATERIALS AND METHODS

STUDY DESIGN: Cross-sectional prevalence study. The data collection was done using close ended questionnaire and oral examination.

STUDY POPULATION: The study population consisted of chronic periodontitis patients attending outpatient department of a private dental college.

Inclusion Criteria:

1. Patients with chronic periodontitis
2. Patients of both genders were included
3. Patients belonging to age group of 35 – 44 years
4. Patients giving consent for participation

Exclusion Criteria:

1. Any individual with debilitating systemic conditions, such as uncontrolled diabetes, myocardial infections, Congestive Heart Failure, Chronic Obstructive Pulmonary Disease, kidney or liver failure, or immunocompromised patients.
2. Patients below 35 years and above 44 years
3. Patients who did not give consent

ETHICAL CLEARANCE AND CONSENT: Ethical clearance was obtained from Institutional Ethical Committee of the dental college. Verbal consent was obtained from all the subjects participating in the study.

PILOT STUDY: A pilot study consisting of 20 participants was carried out to check the feasibility of the study and to access the relevance and validity of the questionnaire.

SAMPLE SIZE ESTIMATION: The sample size was estimated using the formula $n = Z^2 P(1-P)/d^2$. The sample size was estimated to be 100 based on previous literature.⁷

SAMPLING TECHNIQUE: Random sampling technique was used.

TRAINING AND CALIBRATION OF THE EXAMINER: A single examiner previously trained for the diagnosis of the periodontal disease made all examinations. The examiner was calibrated priorly to ensure uniform interpretation of the data and reliability. Duplicate examinations were conducted for the 5% of the sample at the beginning, about half way through the survey and again at the end of the survey to ensure the reliability of the examiner.

INSTRUMENTS USED : Mouth Mirror, CPITN/Who Probe, Tweezers, Kidney Trays, Cotton Holders, Mouth-Masks, Disposable, Gloves, Head cap, Green cloth, Sanitizer, Questionnaire and Pen / Pencil.

STERILIZATION PROTOCOL: Examiner abode by ideal guidelines in order to check for contamination. To



avoid repetition, multiple sets of instruments were carried along and those once used were segregated. Autoclaving for sterilization of used instruments was done. Disposable hand gloves and surgical masks were discarded appropriately, once used on a subject. Surfaces decontamination was done prior to commencement of the examination procedure.

DATA COLLECTION

PROFORMA: A pre-validated close ended questionnaire was used to record demographic details. For determining of oral-health related quality of life, OHIP 14 was used. For recording of the oral-health status; WHO modified 2013 proforma was utilized.

ORAL EXAMINATION: All patients were examined while seated on a dental chair using artificial light. Intra-oral examination of the participants was done using mouth mirror and WHO probe and Loss of Attachment, Bleeding and Pocket was recorded.

STATISTICAL ANALYSIS: Microsoft Excel 2007 was used for entering data and for data analysis, IBM SPSS 20.0 version (Chicago, Inc, USA) was used. The results are presented in frequency and percentage through graphs and tables. For descriptive statistics; Mean and SD are used. The intergroup comparison for the mean scores and frequencies between two independent groups was done using unpaired/independent t test and Chi Square test. The significance level for results was fixed for a value 5 %.

RESULTS:

A total of 100 participants suffering from periodontitis was categorized according to the region of distribution into rural and urban each having 50 participants with age ranging from 35 to 44 years. Demographic characteristics of the participants is given in Table 1.

Prevalence of LOA between the Groups: The prevalence of LOA was significantly higher in the rural population (94.0%) as compared to the urban population (72.0%). Out of 50 subjects in rural group 47 showed presence of LOA while in urban population 36 had LOA. The prevalence of LOA between the groups was found to be significant statistically.

Intergroup Comparison between the groups based on Presence or absence of Bleeding
The prevalence of the gingival bleeding was significantly higher in the rural population as compared to the urban population. Out of 100 rural and urban populations, 38 and 34 subjects showed presence of bleeding respectively. Based on the value of p the results came out to be statistically significant.

Intergroup Comparison between the groups based on Presence or absence of Pockets
The prevalence of the periodontal pockets was significantly higher in the rural population as compared to the urban population. Numerous participants in the rural group (n=39) had pockets while 31 participants in the urban group had pockets. 22.0% and 38.0% subjects in rural as well as urban population reported with absence of pockets (Table 2).

OHIP scores among study subjects: The mean OHIP scores were significantly higher for rural population when compared to its urban counterpart in terms of functional limitation, psychological disability, physical disability, psychological discomfort and physical pain, social disability and handicap (Table 3).

Prevalence of periodontitis: Among the subjects with periodontitis the males were having significantly higher prevalence as compared to females in both the urban and rural groups. Among 43 males, 31 showed higher prevalence of periodontitis while out of 57 females 36 had higher prevalence of periodontitis (Graph 1).

Table 1: Demographic Characteristics of the participants

Demographic variables	Urban (Percentage)	Rural (Percentage)
Gender		
Male	42.0%	44.0%
Female	58.0%	56.0%



Highest Level of Education		
High School and below	6.0%	42.0%
Senior Secondary	22.0%	34.0%
Bachelor's Degree	56.0%	24.0%
Master's Degree	16.0%	0.0%
Doctorate or Professional	0.0%	0.0%
Socio-economic Status		
Upper Class	4.0%	6.0%
Upper Middle	16.0%	16.0%
Lower Middle	34.0%	32.0%
Upper Lower	26.0%	26.0%
Lower Class	20.0%	20.0%

Table 2: Scores of the patients

Prevalence of LOA between the Groups				
	Absent	Present	P value	Significance
Urban	14	36	0.001	Significant
	28.0%	72.0%		
Rural	3	47		
	6.0%	94.0%		
Presence or absence of Bleeding				
	Absent	Present	P value	Significance
Urban	16	34	0.001	Significant
	32.0%	68.0%		
Rural	12	38		
	24.0%	76.0%		
Presence or absence of Pockets				
	Absent	Present	P value	Significance
Urban	19	31	0.001	Significant
	38.0%	62.0%		
Rural	11	39		
	22.0%	78.0%		

Table 3: OHIP scores among study subjects

	Groups	Mean	Std. Deviation	Std. Error Mean	P value
Q1	Urban	3.205	1.47295	.07873	0.001 (Significant)
	Rural	3.688	1.31451	.07026	
Q2	Urban	3.614	1.29018	.06896	0.037 (Significant)
	Rural	3.831	1.35106	.07222	
Q3	Urban	3.428	1.29989	.06948	0.021 (Significant)
	Rural	3.651	1.36627	.07303	
Q4	Urban	3.648	1.25053	.06684	0.006 (Significant)
	Rural	3.914	1.29958	.06947	
Q5	Urban	3.811	1.21777	.06509	0.025 (Significant)
	Rural	4.011	1.23459	.06599	

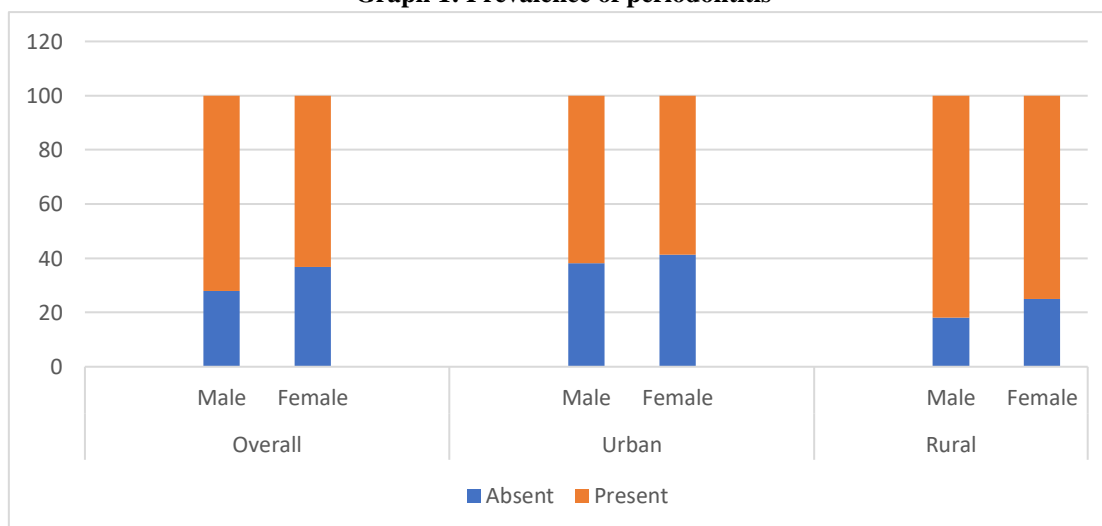


Q6	Urban	3.677	1.18795	.06350	0.031 (Significant)
	Rural	3.882	1.23488	.06601	
Q7	Urban	3.648	1.17979	.06306	0.022 (Significant)
	Rural	3.857	1.22633	.06555	
Q8	Urban	3.808	1.08675	.05809	0.001 (Significant)
	Rural	4.080	1.09408	.05848	
Q9	Urban	3.862	1.14734	.06133	0.023 (Significant)
	Rural	4.062	1.16862	.06247	
Q10	Urban	3.774	1.18148	.06315	0.008 (Significant)
	Rural	4.017	1.21582	.06499	
Q11	Urban	3.788	1.14851	.06139	0.004 (Significant)
	Rural	4.042	1.16092	.06205	
Q12	Urban	3.802	1.14981	.06146	0.009 (Significant)
	Rural	4.034	1.17956	.06305	
Q13	Urban	3.934	1.12727	.06026	0.008 (Significant)
	Rural	4.162	1.15269	.06161	
Q14	Urban	4.045	1.07494	.05746	0.002 (Significant)
	Rural	4.294	1.08742	.05813	

Table 4: Association of OHIP-14 and its domains (mean ± SD)

	FL	Pain	Psychological Discomfort	Physical Disability	Psychological Disability	Social Handicap	Handicap
Urban	6.82±2.35	7.07±2.28	7.48±2.11	7.45±1.97	7.63±2.04	7.59±2.07	7.98±1.95
Rural	7.52±2.42	7.56±2.35	7.89±2.13	7.93±1.99	8.08±2.03	8.07±2.09	8.45±1.95
P value	0.001 (Sig)	0.002 (Sig)	0.001 (Sig)	0.001 (Sig)	0.002 (Sig)	0.003 (Sig)	0.001 (Sig)

Graph 1: Prevalence of periodontitis





DISCUSSION

A significant difference exists for QoL outcomes among different clinical periodontal status. First scientific research that demonstrated the association was done by **Ng SKS et al.** which indicated the importance of understanding subjective perspective upon the clinical parameters used for diagnosing, would ensure better insight of daily life outcomes.¹² Another major contribution in this field was done by **Cunha-Cruz J et al (2007)** in which the author reported that periodontal status was not simple and linearly associated with OHRQoL, and self-assessment of oral status.¹³ The present study focused on indexed age group of 35-44 years according to WHO.¹⁴ For assessing OHRQoL for periodontal diseases of study participants, OHIP-14 was used. The questionnaire has been validated in multiple study settings worldwide; China, England, Sri Lanka and Scotland for its use on adult population. OHIP-14 consists of 7 domains and each domain was expressed with two sets of question. For appraising each question Likert scale was used; value ranging from 0-4 per question and 0-8 for each domain. The total score for OHIP-14 was obtained as a sum of individual response; which ranged between 0-56. Higher score indicated poor OHRQoL and vice versa.¹⁵

Analyzing demographic details showed that majority of study subjects were female from both urban (58.0%) and rural group (56.0%) which is similar to the study conducted by **Fotedar S et al** on OPD patients in which it was observed that usually females avail dental services more often and the gender differences are also evident in relation to treatment outcomes.¹⁶ A study conducted by **Park JB et al. (2016)** on Korean population demonstrated that oral health behaviours and also use of secondary oral hygiene products differed with the SES.¹⁷ According to a study done by **Zucoloto M L et al. (2016)**, increase in age was significantly associated with poorer OHRQoL, owing to the fact that with advance in age, impact of systemic diseases too increases¹⁸ but in our study the variations in the result might be due to the narrow age group chosen.

For assessing, the prevalence rate of periodontitis, males showed higher prevalence (72.09%) as compared to females (63.15%) similar to a study conducted by **Batra M et al (2014)**.¹⁹ The reason may be attributed to fact that both genders have differences in oral hygiene practices. Upon intergroup comparison for the gender, the OHIP score was found significantly higher in males which can be supported by study of **Sanadhya S et al. (2015)**¹⁵ and contradictory to the study done by **Caglayan F et al. (2009)**, in which the

QoL of the females tend to be easily affected by poor oral status.²⁰ For LOA, prevalence was found to be of 94.0% in rural group and 72.0% in urban group and intergroup comparison for presence of bleeding rural population had a prevalence more than urban group. Our findings are comparable to a study conducted by **Batra M et al. (2014)**.¹⁹ In the present study, a statistically significant relationship between the periodontal parameters and OHIP-14 was obtained indicating that periodontal diseases does impact the quality of life of an individual. It was seen that as mean number for teeth increased with gingival bleeding and pockets; the mean OHIP score too increased among the urban as well as rural group. This is evident with many similar studies conducted by **Ng SKS et al. (2006)**¹² and **Cunha-Cruz J et al. (2007)**.¹³ However according to a study done by **Sanadhya S et al (2015)** periodontal disease had no impact on OHIP-14 suggesting that subjective perceptions depend on multiple factors social, financial and psychological determinants of an individual.¹⁵ Upon intergroup comparison of mean OHIP scores, a significantly higher score was noticed for rural population than for urban group and for all these seven domains with functional limitation and physical disability showing highest significance that is of P value equal to 0.001 which is similar to the study conducted by **Grover V et al. (2016)**.⁸ According to findings of a cross sectional study conducted by **Gaber A et al (2016)** on Canadian population; even adjusting predisposing factors, rurality had a significantly higher association with poor OHRQoL than the urban counterpart.²¹ Urban rural inequality can be attributed to several reasons like lack of accessibility, low socioeconomic status, literacy rate, oral health behaviours and poor available infrastructure. Though policies have been developed and efforts are being taken by the Government and policy makers for the upliftment of rural regions still there is some lacking.

LIMITATION

As the age group selected for this study was particular, that is 35 to 44 years, the results cannot be generalized and as the present study follows cross sectional design, hence effect causal relationship cannot be investigated. Sample selection for the present research was done from the patients attending the OPD of dental hospital; and as OHRQoL is dependent on subjective evaluation of their condition, which might be different from general population.



CONCLUSION AND RECOMMENDATION

The present study shows that there is a significant association between periodontal status and OHRQoL. Subjects with periodontitis had poorer quality of life related to others. Moreover factors like gender, age, geographical distribution too had an impact. Rural subjects had a greater predilection for periodontal diseases which was evident from all the parameters (LOA, bleeding and pocket) assessed. Hence there is a need for development of strategies and policies to eradicate disparities and to promote oral health status, specifically for the rural dwellers. Preventive strategies should be developed for better future perspective of oral-health status. There should be a periodic assessment of the population for gathering data regarding the treatment needs of the people. More studies are advocated on general population including non-patient and targeting larger sample size with wide age range for better generalization of the results. The present study could not emphasize much on the factors involved in the urban rural disparity, hence further researches are warranted for the better understanding.

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