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Original Research

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Oral Health-Related Quality of Life and Severity of Periodontal Disease

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Abstract:

Objectives: Oral health-related quality of life (OHQoL) is a multidimensional concept which considers various aspects of life including functional factors, psychological factors, social factors, and experience of pain/discomfort in relation to oral conditions. The aim of this study was to assess the impact of severity of periodontal disease and educational level on OHQoL in patients referring to Yazd Dental University and Khatamolanbia Clinic.

Materials and Methods: This cross-sectional study was performed on 145 patients attending Yazd Dental University and Khatamolanbia Clinic. OHQoL was measured with OHQoL-UK questionnaire. This measure was based on the UK public’s perceptions of the key areas of OHQoL. It includes a series of items about the impact of oral health on specific aspects of daily living and orofacial conditions. The quality of life (QoL) is a multidimensional subjective construct connected with impact of health and disease on daily performances. Oral diseases are among the most common diseases that could not dissociate from general conditions with regards to impacts on QoL. Measurement of the impact of oral conditions on QoL is an important part of healthcare; patient-centered outcomes are likely to be more relevant to patients than traditional clinical measures of disease. Oral health-related QoL (OHQoL) considers various aspects of life including functional, psychological, social factors, and experience of pain/discomfort in relation to orofacial conditions.

Results: This study included 145 adults (61 men and 84 women) aged between 17 and 70 years. There was a statistically significant association between the severity of periodontal disease and OHQoL scores (P < 0.05). The mean QoL score was significantly lower in patients with severe periodontitis than in patients with mild periodontitis specifically with regard to psychological factors (P < 0.05). As well, patients with better educational level have higher mean QoL score that was statistically significant (P = 0.0001).

Conclusion: According to the effect of severity of periodontal disease on QoL, required intervention should be done for early diagnosis and treatment to improve QoL as a result.

Key Words: Clinical attachment level, periodontal disease, quality of life

Introduction

Periodontitis is a common inflammatory disease caused by specific bacterial complexes in the dental plaque biofilm. Affecting supporting structures of the teeth may lead to loss of the periodontal ligament and alveolar bone. Pocket formation and/or gingival recession are characterized clinically. Only 5-15% of the general population is affected by severe periodontitis which potentially has a negative impact on patient’s OHQoL. Subjective OHQoL should be measured to assess periodontal treatment efficacy, as shown in Saito et al. study which conventional non-surgical periodontal therapy ameliorated QoL in the Japanese patients.

There are a variety of methods for measuring OHQoL. Among them, the OHQoL-United Kingdom (OHQoL-UK) is one of the most common instruments to evaluate the effect of oral conditions on QoL. This measure was based on the UK public’s perceptions of the key areas of OHQoL. It includes a series of items about the impact of oral health on specific aspects of daily lives with either a positive or negative (bidirectional) aspect. In Needleman et al. study, negative impacts of periodontal disease on aspects of daily living and health-related QoL were shown using mean OHQoL-UK scores.

Since no studies have used OHQoL-UK questionnaire in Iran, and the relationship between periodontal disease and QoL have not yet been evaluated by this questionnaire in this society, the aim of this study was to assess the impact of severity of periodontal disease on OHQoL in patients referred to Yazd Dental University and Khatamolanbia Clinic using OHQoL-UK questionnaire.
Materials and Methods

The study was carried out on patients referring to Yazd Dental School and Yazd Khatam al-Anbia Clinic. Patients without any systemic diseases included to the present study. Regarding the statistically significant level of $P \leq 0.05$ and 80% statistical test power, 150 samples were required based on the standard questionnaire and $\delta = 0.3$ obtained from previous studies. The participants were informed about the purpose of the study, and informed consent was obtained.

This study was approved by the Ethics Committee of Yazd Shahid Sadoughi Dental School and consisted of two parts: A self-reported questionnaire enquiry and clinical examination. The impact of oral health on the patients’ life quality was assessed using the OHQoL-UK questionnaire that was translated into Persian. The translation process involved forward translation from English into Persian and then the backward translation from Persian into English. It was compared with the original text and its consistency was confirmed by two periodontology specialists. To check the reliability of the Persian version, 30 patients were studied in a pilot study. The OHQoL-UK questionnaire contains 16 items within 4 domains (symptoms, physical, psychological, and social dimensions). Scores were derived from response categories to each question: “Very bad (Score 1), bad (Score 2), ineffective (Score 3), good (Score 4) and very good (Score 5).” Summing up responses from each of the 16 items can, therefore, produce overall OHQoL-UK scores ranging from 16 (representing poorest OHQoL possible) to 80 (best OHQoL possible). Internal consistency was assessed using Cronbach’s reliability coefficient reported between 0.60 and 0.77 in regard to different questions. In addition to the OHQoL-UK questionnaire, subjects completed a self-administered questionnaire which requested information about personal history and educational level.

Then, each patient underwent a periodontal examination including periodontal attachment levels with Williams’ periodontal probe as part of his or her routine assessment by one clinician collaborating on the study. The severity of chronic periodontitis was classified based on the amount of clinical attachment loss (CAL) as follows: Mild = 1 or 2 mm CAL; moderate = 3 or 4 mm CAL; and severe ≥5 mm CAL.28 Then, each participant was given instructions regarding dental treatment needs. Data were analyzed via the statistical package SPSS 18.0 using ANOVA. $P \leq 0.05$ was considered statistically significant.

Results

Among 150 completed questionnaires, 5 questionnaires were excluded due to incomplete information. The questionnaires were responded by 61 men (42.07%) and 84 women (57.93%) in the age range of 17-70 years.

Of the 145 participants, 27.02% had mild periodontitis, 36.48% had moderate periodontitis, and 36.48% had severe periodontitis. There was a statistically significant association between the severity of periodontal disease and OHQoL scores ($P < 0.05$). By increasing periodontal attachment loss, the mean QoL score of patients decreased which was statistically significant in regard to psychological aspect ($P < 0.05$), though mean QoL score was not statistically significant in three other aspects (symptoms: $P = 0.155$, physical: $P = 0.117$, social: $P = 0.062$). The mean QoL score was significantly lower in patients with severe periodontitis than in patients with mild periodontitis specifically with regard to psychological factors ($P < 0.05$) (Table 1).

Within 145 patients participating in this study, 50% were less than diploma, 34% were less than bachelor’s degree and 16% were bachelor’s degree and higher. Patients with better educational level have higher mean QoL score ($P = 0.0001$) which was statistically significant in regard to all aspects (symptoms: $P = 0.049$, physical: $P = 0.001$, psychological: $P = 0.001$, social: $P = 0.0001$). Mean QoL score of the patients with less than diploma degree was reported lower than other groups ($P < 0.05$). As well, patients with better educational level have higher mean QoL score that was statistically significant ($P = 0.0001$).

Discussion

The present study was conducted on 145 subjects with the purpose of assessing the impact of periodontal status on the OHQoL, using one of the frequently used, widely available, widely validated, and user-friendly questionnaire, the OHQoL-UK.

<table>
<thead>
<tr>
<th>OHQoL-UK questionnaire domains</th>
<th>Severity of periodontal disease</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptoms</td>
<td>Mild</td>
<td>9.0000</td>
<td>0.96077</td>
<td>0.155</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>9.0545</td>
<td>1.02593</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Severe</td>
<td>8.6852</td>
<td>1.14635</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>8.9060</td>
<td>1.06125</td>
<td></td>
</tr>
<tr>
<td>Physical</td>
<td>Mild</td>
<td>22.3250</td>
<td>2.46397</td>
<td>0.117</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>22.3818</td>
<td>2.17799</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Severe</td>
<td>21.5185</td>
<td>2.47051</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>22.0537</td>
<td>2.38176</td>
<td></td>
</tr>
<tr>
<td>Psychological</td>
<td>Mild</td>
<td>22.2000</td>
<td>1.95067</td>
<td>0.034</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>21.2037</td>
<td>2.27687</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Severe</td>
<td>21.0370</td>
<td>2.38678</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>21.4122</td>
<td>2.27357</td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>Mild</td>
<td>16.1250</td>
<td>2.22097</td>
<td>0.062</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>16.1818</td>
<td>2.13516</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Severe</td>
<td>15.2407</td>
<td>2.41798</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>15.8255</td>
<td>2.29197</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>Mild</td>
<td>69.6500</td>
<td>5.89894</td>
<td>0.041</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>68.8333</td>
<td>5.95819</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Severe</td>
<td>66.4815</td>
<td>7.08371</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>68.1959</td>
<td>6.47513</td>
<td></td>
</tr>
</tbody>
</table>

OHQoL: Oral health-related quality of life, OHQoL-UK: Oral health-related quality of life-United Kingdom
validated instruments, OHQoL-UK questionnaire which measures both the positive and negative aspects of the relationship between periodontal health and QoL.\textsuperscript{15,31}

There have been several clinical studies about the impact of periodontitis on OHQoL. Since they have used a range of methods defining periodontal status and assessing OHQoL, comparing their results is difficult.\textsuperscript{9,15,20,21,29-32} It was indicated the relationship between severe or moderate periodontitis and OHQoL in most of the observational studies\textsuperscript{16,18,31,33-37} but it was shown no direct association between periodontal status and mean OHIP score in Mariño et al. study.\textsuperscript{38}

In Durham et al. study,\textsuperscript{39} patients with chronic periodontitis have significantly poorer OHQoL compared to periodontally healthy patients, specifically in functional, physical, psychological domains. In Ng and Leung\textsuperscript{40} and Al Habashneh et al.\textsuperscript{33} studies, the impact of periodontal diseases on patient QoL was moderate in physical pain and psychological disability domains. The severity of periodontal disease was not significantly associated with functional limitation subscales in the study conducted by Al Habashneh et al.,\textsuperscript{33} which was in contrast with studies by Ng and Leung\textsuperscript{40} and Araújo et al.\textsuperscript{31} In the current study, there was a statistically significant association between the severity of periodontal disease and OHQoL score specifically with regard to psychological factors ($P < 0.05$). Lawrence et al.\textsuperscript{34} found that there was a significant impact of periodontitis on OHQoL prevalence and severity, but not its extent.

The early stages of periodontitis indicating few symptoms have a lower impact on QoL compared with other oral diseases and conditions.\textsuperscript{40} As it is shown in the current study, the mean QoL score was significantly lower in patients with severe periodontitis ($P = 0.05$) than in patients with mild periodontitis but not than moderate periodontitis.

The generic OHQoL measure is sensitive to periodontal health, both self-reported and clinically observed.\textsuperscript{41} The prevalence of impact was high when the effect of oral health on the QoL was evaluated by the OHQoL-UK measure. The instrument indicated discriminative validity in recognizing self-reported symptoms and clinical evidence of periodontitis.\textsuperscript{15} Thus, it would seem to be the stronger candidate for a short and easily applicable OHQoL measure for periodontitis.

In Moeintaghavi et al. study, participants with elementary school education levels had greater oral impacts on daily performances scores than participants with more than an elementary school education indicating their poor oral health which is in agreement with our study.\textsuperscript{49} As well, in Slade et al. study, it was found that educational status had noticeable impacts on OHQoL.\textsuperscript{37}

The first limitation in the current study is that patients presenting for an initial periodontal examination have frequent problems related to teeth, gums and denture that may affect OHQoL measurements. Another limitation is the cross-sectional nature of the study, in which exposure and outcome are determined simultaneously, and the time sequence is often difficult to define. In addition, the people perceptions of QoL may change over time and an information bias may exist in this type of study.

However, since the study participants were chosen from patients referred to our Department of Periodontology, they had more oral-health complaints compared with a normal population which might limit the generalizability of our results.

Since using different OHQoL instruments may have yielded different results, it might be better to identify the most effective instrument for investigating the impact of periodontal diseases on OHQoL.

Periodontal disease had a negative impact on QoL, and this impact was greater in patients with severe periodontal disease. These findings have significant implications for the use of OHQoL measures as objective clinical parameters in preventive programs, periodontal disease assessment, treatment, and subsequent evaluation of periodontal care. In addition, oral health educations should be considered in general health promotion programs to improve the QoL.

Acknowledgments
The authors would like to thank patients’ Research Committee of Yazd Dental School and Khatamolanbia Clinic, specially thank to all patients who participated in this study. The present project was funded by Yazd Shahid Sadoughi University of Medical Sciences.

Conclusion
The mean QoL score was significantly lower in patients with severe periodontitis than in patients with mild periodontitis. As well, patients with better educational level have higher mean QoL score. According to the effect of severity of periodontal disease and educational level on QoL, required intervention should be done for early diagnosis and treatment to improve QoL as a result.

References


