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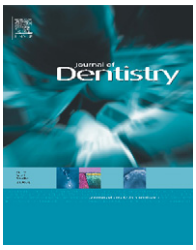

Impact of periodontitis on oral health-related quality of life

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ABSTRACT

Objectives: To investigate the impact of chronic periodontitis on oral health-related quality of life (OHRQoL) using the full version of the Oral Health Impact Profile (OHIP-49) and the Oral Health Quality of Life-UK (OHQoL-UK) questionnaires.

Methods: 89 patients with chronic periodontitis and 89 age- and gender-matched patients without chronic periodontitis were recruited. OHIP-49 and OHQoL-UK were self-completed by participants and mean scores were calculated for each item, domain and the overall summary score (additive method) for each instrument in each group.

Results: The mean age of participants was 47 ± 9 years, and the periodontitis patients had, on average, 33 ± 23 sites demonstrating probing depths ≥5 mm. OHRQoL was significantly poorer in the periodontitis patients compared to the periodontally healthy patients, when assessed by either instrument. When considering OHIP-49, fourteen of the forty-nine items indicated significantly poorer OHRQoL in the periodontitis group, and the overall OHIP-49 summary score was 48.6 ± 32.0 for periodontitis patients compared to 36.8 ± 29.8 in periodontally healthy patients ($p < 0.01$). When considering OHQoL-UK, fifteen of the sixteen items indicated significantly poorer OHRQoL in the periodontitis group, and the overall OHQoL-UK summary score was 47.1 ± 9.7 for periodontitis patients compared to 53.1 ± 11.3 in periodontally healthy patients ($p < 0.01$). Overall, those items with the greatest differences between periodontitis patients and the healthy group related to psychological concerns, halitosis, pain and aesthetics.

Conclusion: Subjects with periodontitis report substantial functional, physical, psychological, and social OHRQoL impacts.

Clinical significance: This study has identified that patients with chronic periodontitis report significantly poorer oral health-related quality of life (OHRQoL) than age- and gender-matched periodontally healthy patients, with significant functional, social and psychological impacts. Clinicians should be aware of the impacts that periodontitis may have on OHRQoL, including psychological concerns, halitosis, pain and aesthetics.

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1. Introduction

Periodontitis is a common inflammatory condition affecting the supporting tissues of the teeth, and potentially could produce impacts on individual's oral health-related quality of life (OHRQoL). A small number of studies has examined the relationship between periodontitis and OHRQoL; these have tended to focus on either the short term effects of periodontal treatment on OHRQoL,[1–7] or have been cross-sectional analyses examining the burden that periodontitis places on the OHRQoL of patients in relation to other clinical or socio-demographic factors.[8–12] These studies have generally used either of the two most frequently used instruments to assess the impact of oral conditions on OHRQoL: the shortened version of the Oral Health Impact Profile (OHIP), the OHIP-14,[13] and/or the Oral Health Quality of Life-UK instrument (OHQoL-UK).[14] In a previous study of 205 patients attending a private periodontal practice in the UK, the OHQoL-UK identified significant negative impacts of periodontal disease on OHRQoL with close associations between OHQoL-UK scores and aspects of patient's self-reported periodontal health.[15]

The OHIP and the OHQoL-UK differ in their origins and approach to assessing OHRQoL.[14,16] The full version of OHIP, OHIP-49, contains items that were derived from a large sample of elderly adults in Australia in order to form a problem-based measure. When using this instrument, subjects respond to a series of statements about problems their oral health may have caused with their everyday living.[16] On the other hand, the OHQoL-UK items were derived from a large random UK population sample and are phrased to allow responses in either a positive or negative (bidirectional) manner to a series of statements about the effect of oral health on specific aspects of respondents' daily lives.[17]

Given that OHRQoL measures are becoming more frequently used in packages of patient-reported outcome measures,[18,19] it is important to explore the impact that periodontitis might have on OHRQoL, and which instruments (and which items within the instruments) might be the most useful to assess any impacts of periodontitis on OHRQoL. Therefore, the aim of this study was to compare responses to the OHIP-49 and OHQoL-UK of subjects with periodontitis to those from subjects who did not have periodontitis in order to identify items most specific to this condition.

2. Methods

2.1. Patients

Patients with untreated chronic periodontitis (consecutive cases) were recruited from periodontology clinics in a dental hospital setting (Newcastle Dental School and Hospital, UK). A favourable ethical opinion was received from Sunderland NHS Research Ethics Committee, and all participants provided written informed consent prior to participation. All patients underwent full periodontal charting (6 points per tooth) using a manual UNC-15 probe. The inclusion criteria for a periodontitis case were that participants must be dentate (minimum 20 natural teeth), with at least two teeth in two separate sextants demonstrating probing depths of at least 6 mm (this probing depth threshold was chosen to be positively indicative of the presence of periodontitis). Age- and gender-matched control subjects were also recruited (age bands within 5 years of those of periodontitis subjects). Subjects without periodontitis were recruited from patients attending routine general dental clinics with undergraduate and postgraduate dental students in the same dental hospital setting. Inclusion criteria for these subjects were that the patient must be dentate (minimum 20 natural teeth), with all probing depths $\leq$3 mm, with no previous history of periodontitis, root surface debridement or other treatment for periodontitis.

2.2. Assessment of OHRQoL

The OHIP-49 and OHQoL-UK were used as self-complete questionnaires in this study. OHIP-49 contains 49 items, to which responses indicate the frequency of the impact on the individual, ranging from ''never'' (score 0) to ''very often'' (score 4). Summing item response codes generates both domain scores and an overall summary score for OHIP-49.[20] When using OHIP-49, a higher score indicates poorer OHRQoL.

The OHQoL-UK contains 16 items, with responses to each item indicating the impact of oral health on the individual ranging from ''very bad'' (score 1) to ''very good'' (score 5). Responses are then summed to give a total score, or can also be summed within three sub-domains (physical, social and psychological).[21] A lower score indicates poorer OHRQoL.

Study participants were issued with each instrument individually to complete at inclusion into the study prior to any dental treatment being provided. The instruments were issued to each subject in an alternating order to reduce the potential of any order effect occurring.

2.3. Data analysis

Questionnaire responses were entered into a statistical software programme for analysis by an operator blind to the clinical status of the participants. Questionnaires with $\geq$10% of responses missing were rejected. For questionnaires with <10% of responses missing, missing responses were imputed using the group mean score for that item as previously described in order to allow calculation of the domain and instrument summary scores.[22,23]

Item and domain mean scores were calculated for the two groups (periodontitis vs. no periodontitis). Poorer OHRQoL is indicated by a lower score when using OHQoL-UK, and a higher score when using OHIP-49. Therefore, when arithmetic differences between the two study groups were assessed (whether for individual item scores, domain scores, or overall summary scores), these differences were calculated by [periodontitis scores MINUS no periodontitis scores] for OHQoL-UK, and conversely by [no periodontitis scores MINUS periodontitis scores] for OHIP. This ensured that a NEGATIVE difference between periodontitis patients and the periodontally healthy patients indicated a poorer OHRQoL.

Internal consistency for each questionnaire was calculated using Cronbach's alpha. Two-tailed Spearman's Rho was used to investigate correlations between domain and summary scores and periodontal data recorded for each subject

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