Journal of Clinical Periodontology
Official Journal of The European Federation of Periodontology
Founded by the British, Dutch, French, German, Scandinavian, and Swiss Societies of Periodontology

J Clin Periodontol 2009; 36: 413–418 doi: 10.1111/j.1600-051X.2009.01384.x

Journal of Clinical Periodontology

Psychosocial impact of periodontal disease and its treatment with 24-h root surface debridement

Adrian K. Jowett[1], Marian T. S. Orr[2], Andrew Rawlinson[1] and Peter G. Robinson[3]

[1]Department of Adult Dental Care, School of Clinical Dentistry, University of Sheffield, Sheffield, UK; [2]Department of Restorative Dentistry, Charles Clifford Dental Hospital, Sheffield Teaching Hospitals NHS Trust, Sheffield, UK; [3]Department of Oral Health and Development School of Clinical Dentistry, University of Sheffield, Sheffield, UK

Jowett AK, Orr MTS, Rawlinson A, Robinson PG. Psychosocial impact of periodontal disease and its treatment with 24-h root surface debridement. J Clin Periodontol 2009; 36: 413–418. doi: 10.1111/j.1600-051X.2009.01384.x.

Abstract

Aim: To assess the impact of periodontal disease and treatment with 24-h root surface debridement on the oral health-related quality of life of patients (OHQoL).

Methods: Two cohorts were recruited: 20 patients with moderate to advanced periodontal disease and 16 dentally healthy patients. Patients with periodontal disease were treated with 24-h root surface debridement. OHQoL was assessed, using Oral Health Impact Profile-14, during the initial assessment and by a telephonic interview daily for 7 days for both groups. OHQoL was also assessed at review for the treated cohort. The number of impacts each patient experienced ''occasionally'' or more often was analysed by non-parametric tests.

Results: Patients with periodontal disease reported significantly more impacts on their quality of life than dentally healthy patients ($p < 0.05$). After root surface debridement the impact was significantly reduced ($p < 0.05$) and sustained at review ($p < 0.05$); however, the impact on quality of life was still greater than that experienced by the dentally healthy cohort ($p < 0.05$).

Conclusions: Patients with periodontal disease have worse OHQoL than healthy patients, but this impact can be partly ameliorated by periodontal treatment. This implies that periodontal disease is not ''silent'' and that conventional non-surgical treatment provided in a secondary referral centre can be effective from patients' perspectives.

Key words: OHIP-14; periodontal disease; periodontitis; quality of life

Accepted for publication 06 January 2009.

Dentistry has typically focused on assessments of oral health relevant to the therapists rather than the patients' experience of their disease. Patients' assessments are especially important in chronic periodontitis in which their concerns may differ from the traditional clinical endpoints (Ng & Leung 2006). Over the last decade, patient-centred evaluation tools have been developed and validated to assess patients' subjective oral health in terms of how it affects their daily activities, inter-personal relationships and psychological well-being (e.g. Slade 1997, McGrath & Bedi 2002). Many of these tools measure what is termed ''Oral health-related quality of life'' (OHQoL), which has been defined as ''the extent to which oral disorders affect functioning and psycho-social well being'' (Locker & Allen 2007). In addition to being important outcomes in their own right, the psychosocial experience of oral conditions also plays a role in whether patients seek treatment and follow advice, and could thus influence the planning and process of treatment (Ng & Leung 2006).

The Oral Health Impact Profile-14 (OHIP-14) (Slade 1997) is a well-validated measure of OHQoL that detects dysfunction, discomfort and disability attributable to oral conditions based on the World Health Organisation's ''disease-impairment-disability-handicap'' model. It may thus indicate the impact of periodontal disease on a patient's well-being. OHIP-14 is the short form for the oral health impact profile (Slade & Spencer 1994, Slade 1997). It takes

Conflict of interest and sources of funding statement

The authors declare that there are no conflicts of interest in this study. This research was supported by a research grant from the School of Clinical Dentistry, University of Sheffield.

the form of an interview schedule or a questionnaire that enquires how often the mouth, teeth or dentures have affected 14 aspects of daily life over the last 6 months. Participants respond on a Likert scale from ''never'' to ''very often''. Both measures have been used extensively in a range of descriptive, analytical and evaluative studies (Kelly et al. 2000, Allen et al. 2006, Baker et al. 2008) and have been validated for use in a number of countries including the United Kingdom and Canada (Locker et al. 2001, Robinson et al. 2003).

The clinical signs of early chronic periodontitis, including clinical attachment level, probing pocket depth and bleeding upon probing, are largely invisible to patients (Tervonen & Knuuttila 1988) and thus chronic periodontitis is often considered to be symptom-free in its early stages. As the disease progresses some patients report symptoms of pain, tooth drifting and mobility, but it has been suggested that most affected people underestimate the severity of the disease (Tervonen & Knuuttila 1988) and it is thus said to be a ''silent'' disease (U.S. Department of Health and Human Services 2000).

Recent studies (Needleman et al. 2004, Ng & Leung 2006, Cunha-Cruz et al. 2007) of patients with chronic periodontitis have reported impacts upon physical comfort or other domains of everyday life. It is less clear at what point patients are affected by chronic periodontitis. In one study where chronic periodontitis affected fewer than nine teeth, Cunha-Cruz et al. (2007) reported that patients did not report any effect on their quality of life, even if therapist-centred measurements (pocket depth) were indicative of ''severe'' disease. In contrast, Needleman et al. (2004) found a more linear relationship between impact on quality of life and the number of affected teeth. However, one of the affected domains in this study was ''finance'' and these patients were highly selected in that they were referred to a fee-paying specialist practice, unlike other studies undertaken on broad cross-sections of volunteers (e.g. Ng & Leung 2006). There may also be a cultural aspect to patients' perceptions of how disease impacts their quality of life: Western studies (Needleman et al. 2004, Cunha-Cruz et al. 2007) found that patients reported an adverse influence of periodontitis on social aspects of their life, whereas a study of Chinese volunteers (Ng & Leung 2006) found little social impact even where disease led to pain. Other factors may also explain these discrepancies such as the qualities of the measure in use.

The effect of periodontal therapy is equally unclear: Needleman's (2004) cross-sectional study comparing patients' OHQoL found that maintenance-phase patients reported significantly less impact on their OHQoL than those presenting for treatment, but this does not directly show that periodontal treatment improves OHQoL and again may reflect the costs of active treatment. Longitudinal studies of the relationship between periodontal treatment and OHQoL have shown varied results. Surgical treatment alone (Ozcelik et al. 2007) appeared to have no effect, whereas surgical treatment supplemented with Emdogain resulted in an improvement in QoL as indicated by OHIP-14 responses (Ozcelik et al. 2007). Non-surgical treatment has been found to have either no significant effect (Bajwa et al. 2007) or a beneficial effect (Ozcelik et al. 2007). Whether positive effects can be attributed to a reduction in disease or that patients believed that having an intervention was beneficial (Bajwa et al. 2007) or improved the appearance of their teeth (Fisher et al. 2005) is unclear.

The effect of treatment may also be influenced by the form of treatment provided. While the aim of all treatments is to reduce bacterial and toxin load and pocket depth and improve clinical attachment level, protocols for pocket debridement are highly variable. Treatment may be non-surgical or surgical and in the latter case may be supplemented by procedures intended to facilitate re-attachment (Esposito et al. 2005). Non-surgical root surface debridement may be provided over multiple treatment episodes, or within a 24-h period as part of a whole-mouth disinfection regime (Quirynen et al. 2006); however, no regimen provides a clinically significant benefit over the other (Lang et al. 2008). Furthermore, antibiotics including metronidazole, amoxicillin or tetracycline may be given topically or systemically as adjuncts to root surface debridement (Walker & Karpinia 2002), although the evidence for their efficacy is weak (Herrera et al. 2008). Such a variation makes comparison of treatment efficacy difficult even when therapist-centred measurements are used and thus have rarely been attempted in the field of OHQoL assessment (Ozcelik et al. 2007).

The aims of this study were to elucidate these problems. First, to undertake a cross-sectional comparison of the OHQoL of a cohort of patients attending a secondary referral centre for treatment of moderate to advanced periodontal disease, with a cohort of patients with no diagnosed oral disease. Second, to assess the immediate- and medium-term effects of a single mode of periodontal treatment on OHQoL. The working hypotheses are thus that patients referred for treatment of periodontal disease report an adverse impact on their OHQoL and secondly that this can be improved by full-mouth non-surgical root surface debridement undertaken within a 24-h period.

Methods

The research project was independently approved by the South Sheffield Research Ethics Committee (reference SSREC/03/154) and conducted in accordance with the World Medical Association Declaration of Helsinki.

Sample

Patients referred for specialist periodontal treatment at the Charles Clifford Dental Hospital, Sheffield, United Kingdom, were screened for their suitability to be included in the study cohort of the project. The inclusion criterion was a Basic Periodontal Examination (BPE) code 3 or 4 (ie probing depths >4 mm) in at least one sextant on clinical examination.

Control subjects were identified from patients attending the Dental Practice Unit at the Charles Clifford Dental Hospital, Sheffield, United Kingdom, for a routine 6-month review. The inclusion criterion was a maximum of BPE code 2 (i.e. probing depth $\leqslant 3$ mm) in any sextant.

Patients were excluded from both treatment and control cohorts if they were below 20 years of age, wore a denture or an orthodontic appliance, had active caries or other oral diseases, had absent incisor, canine or pre-molar teeth, presented with systemic illnesses such as diabetes, rheumatoid arthritis or were taking multiple medications.

Eligible patients were invited to participate and written consent was obtained from the volunteers. Twenty patients were recruited into the study cohort and 16 were recruited into the control cohort (Fig. 1).

The patients' age, gender and domicile postcodes were obtained from their

hospital records. The GeoConvert tool (http://geoconvert.mimas.ac.uk/) was used to link patients' postcodes with their Index of Multiple Deprivation 2007 score (Noble et al. 2008) as a measure of socioeconomic deprivation.

Interventions

At the first visit, the OHIP-14 was administered verbally by the examining dentist. All the patients were given a prompt card for the possible responses to the questions (Fig. 2).

The study cohort patients were provided with root surface debridement within a 24-h period under local analgesia, by a single staff hygienist. According to departmental procedure, patients were given a 0.2% chlorhexidine rinse before debridement. Debridement was performed by hand and using ultrasonic instrumentation. On completion of debridement, 0.2% chlorhexidine was used to irrigate pockets delivered via a blunt needle. Patients were also given oral hygiene advice appropriate to their needs.

The control cohort patients were provided with scaling and/or oral hygiene advice depending on their BPE score.

For each of the 7 days after periodontal treatment in the study cohort, and after the examination in the controls, the OHIP-14 was administered over the telephone by the same trained dental nurse, with the patients using the prompt card.

After a review period of between 2 and 10 months the study cohort patients were reviewed and the OHIP-14 was administered verbally by the examining dentist for the final time.

The number of impacts each participant experienced ''occasionally'' or more often was recorded as a count between 0 and 14. The difference in the number of impacts affecting the study and control cohorts was compared with each time point (i.e. on presentation and at each day of the 7-day period) with the Mann–Whitney *U*-test. All data available at a given time point were used even if a patient was subsequently lost from the project. Longitudinal changes in subjects' responses within cohorts were made using the Wilcoxon paired test using data from all the patients participating in the project at the analysed stages. A p-value <0.05 was considered to be statistically significant. Statistical analysis was performed using ANALYSE-IT for Microsoft Excel version 2.00 (http://www.analyse-it.com/).

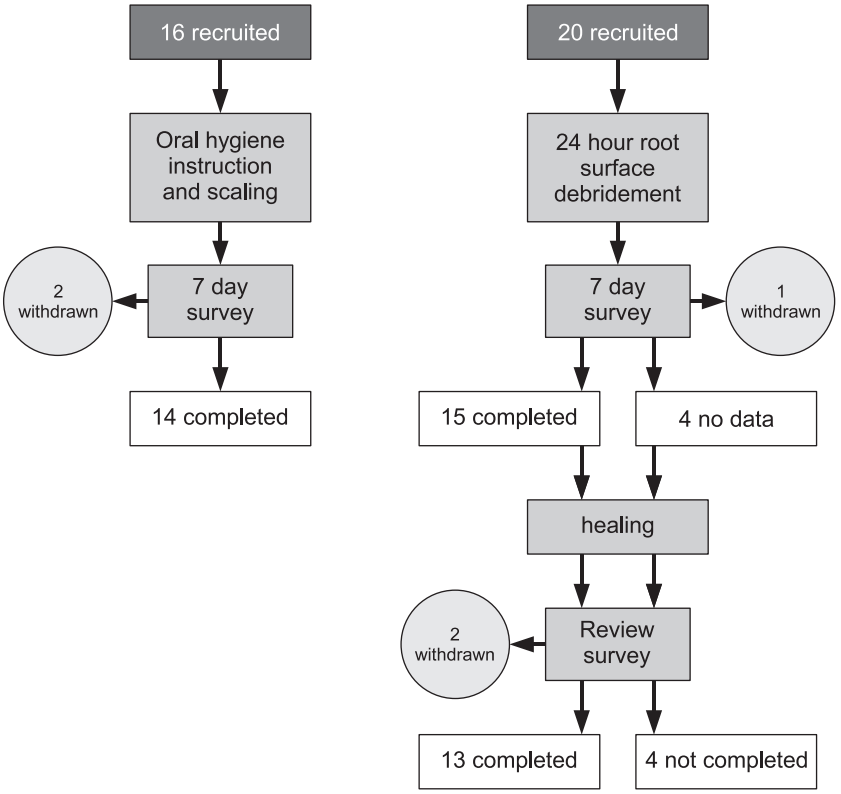

Fig. 1. A flow chart showing patient retention during the research project.

Quality of Life Measure Applied to Periodontal Diseases and the Outcome of Periodontal Therapy: A Pilot Study: **Response Prompt Card**

Never Hardly ever Occasionally Fairly often Very often

Fig. 2. Prompt card given to all patients to facilitate their answers to the OHIP-14.

Results

As detailed in Fig. 1, 14 control cohort patients and 13 study cohort patients completed all aspects of the project, although a further four study cohort patients completed the OHIP-14 on review. Although there were more women in the study than the control cohort (14 out of 20 compared with eight out of 16, respectively), the two cohorts were similar with respect to other demographic characteristics. For instance, the mean ages in the study and control cohorts were 41.0 years (range 26–53 years) and 39.5 years, (27–61 years), respectively. The IMD scores in the two cohorts were 27.1 (SD = 17.6) and 29.5 (SD = 19.7).

OHIP-14 scores for both cohorts throughout the study are summarized in Fig. 3. At baseline the median number of impacts in the study and control cohorts were 0.5 (90% CR = 5.9) and 5 (90% CR = 7.5) ($p<0.05$ Mann–Whitney *U*-test), respectively.

Nineteen per cent (3/16) of the control patients were administered a single session of oral hygiene advice and 81% (13/16) were provided with a scale and polish, followed by oral hygiene advice. The control patients did not show any significant change in their OHQoL during the weeklong assessment period (Fig. 3). After receiving non-surgical periodontal treatment the study cohort reported a reduced impact on their OHQoL (median number of impacts = 3, 90% CR = 6, $p<0.05$ Wilcoxon paired test). During the assessment week there was a reduction in the median number of responses of ''occasionally'' or more

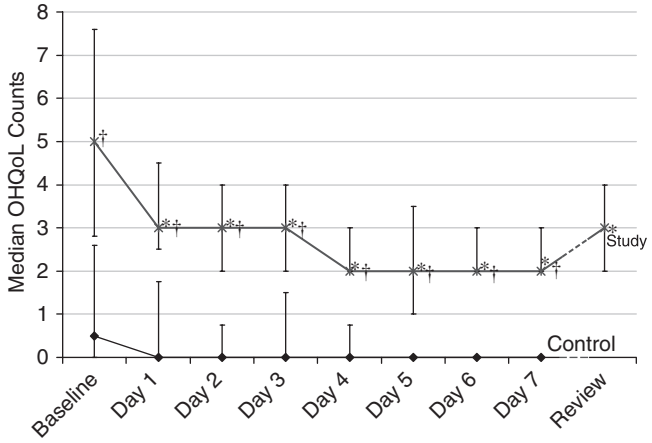

Fig. 3. Median impact counts with 25th and 75th percentiles for OHQoL response counts thresholded at ''occasionally'' plotted for each time point. †$p < 0.05$ when compared with the control group, Mann–Whitney *U*-test. *$p < 0.05$ when compared longitudinally with baseline, Wilcoxon paired test.

frequent in the control cohort, but this was not statistically significant. OHQoL (as indicated by higher OHIP-14 scores) remained significantly worse for patients receiving treatment for periodontitis throughout the study.

At the final review appointment, the study cohort patients reported an improvement in their OHQoL compared with their baseline (median number of impacts = 3, 90% CR = 5.8, $p < 0.05$ Wilcoxon paired test), although there was still a greater impact than experienced by the control cohort at baseline ($p < 0.05$ Mann–Whitney *U*-test).

Thus, the data suggest that both working hypotheses can be accepted: patients referred for treatment of periodontal disease report an adverse impact on their OHQoL and secondly, this is improved at least temporarily by full-mouth non-surgical root surface debridement undertaken within a 24-h period.

Discussion

Over the last 15 years, there has been increasing interest in how periodontal disease and its treatment affect the well-being of patients (Matthews & McCulloch 1993). A systematic review of non-surgical periodontal treatment has demonstrated its effectiveness in reducing clinical signs such as bleeding on probing and pocket depth (reviewed by Suvan 2005, Lang et al. 2008), but only a limited number of publications (e.g. Needleman et al. 2004, Ozcelik et al. 2007) describe how periodontal care may address patients' experiences.

Recent data suggest that patients are adversely affected by periodontal disease: cross-sectional studies (Ng & Leung 2006, Cunha-Cruz et al. 2007) have shown that the loss of clinical attachment can impact OHQoL, but the effect of treatment was not ascertained. Conversely, Needleman et al. (2004) reported that although a substantial proportion of a patient group referred for periodontal treatment perceived that their oral health adversely affected their OHQoL, a similar proportion reported that their oral health had a good effect. However no control group was presented for comparison.

We therefore selected two patient cohorts attending the Charles Clifford Dental Hospital: a cohort referred for specialist periodontal treatment and a control cohort attending for a routine review. Their demographic data are similar. The control cohort reported negligible impacts on their OHQoL. Conversely, patients referred for periodontal treatment perceived a significant negative effect on their OHQoL in agreement with previous findings (Ng & Leung 2006, Cunha-Cruz et al. 2007).

During a 7-day follow-up period the control cohort showed no change in their OHQoL, which is not surprising as they reported very few impacts at baseline. Conversely, the treated study cohort showed a rapid improvement. Previously, Ozcelik et al. (2007) reported a similar immediate beneficial effect of non-surgical periodontal treatment. It is difficult to imagine that any resolution of the disease has occurred within this time and so the benefit may be due to the patients' acknowledgement of improved oral hygiene, oral freshness or a positive placebo effect due to intensive attention by the therapist. By contrast, both surgical periodontal treatment (Ozcelik et al. 2007) and surgical tooth extraction (McGrath et al. 2003) resulted in worsening in patients' OHQoL during the first few days after the treatment, presumably due to post-operative trauma. It is surprising, but reassuring, that even acute and intensive non-surgical treatment does not have these adverse effects. Instead, these findings demonstrate that it is possible to tailor a treatment plan to minimize impacts on patients' well-being. A systematic review (Eberhard et al. 2008) has recently indicated that 24-h root surface debridement yields outcomes similar to quadrant-wise debridement but increases the efficiency of the treatment (Koshy et al. 2005). As our data indicate that patient-centred evaluations indicate short- and medium-term benefits from root surface debridement, these types of outcomes should be included in future trials of periodontal treatment. Similar calls have been made for evaluations of dental care for many years (Sheiham et al. 1982).

At the review appointment the patients in the study cohort still demonstrated a significant improvement in their OHQoL. It is notable that although the improvement in OHQoL for the study cohort was consistent, the impact on QoL was always significantly worse than that for the control cohort. Even where the treatment is successful with regard to an improvement in clinical signs of periodontal pathology, there are likely to be outcomes such as cervical sensitivity, gingival recession and loss of papillae, which may affect patients. At 3-month follow-up data were obtained from 85% (17/20) of the study cohort. It is possible that the three subjects who withdrew were dissatisfied with their treatment, and had the OHQoL data been obtained, the outcome of the study might have been different. While it is impossible to predict the OHQoL of the lost subjects it is notable that at baseline their OHQoL were not significantly different from the remainder of the sample (data not shown, $p > 0.95$, Mann–Whitney test). Likewise, the subjects who were not surveyed during the 1-week follow-up (4/20) had median OHQoL counts at medium-term review similar to those who were assessed (data not shown, $p > 0.55$, Mann–Whitney test).

Although non-surgical periodontal treatment is known to have a positive

quantitative clinical response (Suvan 2005, Lang et al. 2008), these data show that there are also subjective benefits to the patient. Such a response may well encourage further patient success through their commitment to oral hygiene regimens, which is known to be essential for a sustained clinical improvement (Axelsson & Lindhe 1981, Gaunt et al. 2008). These data also provide further evidence that periodontal disease adversely affects OHQoL as treatment of the condition had a beneficial effect.

Like all research, the methods used in this study warrant some consideration. For example, there may have been different responses to OHIP-14 according to its mode of administration (Robinson et al. 2003). This may have slightly affected the responses within groups over time, although the changes in the study group were considerable and there were no changes in the control group. The differences between groups would not have been affected at all in this way.

One justification for the method of administration in this study was the low loss to follow-up. Unlike Bajwa et al. (2007), where only 43% of patients responded by post for follow-up, this study achieved 75% (15/20) attendance for the 1-week follow-up period and 85% (17/20) attendance at review. It seems likely that patients are more motivated to answer the telephone or attend for a review with a consultant than post a questionnaire.

It is also interesting that a measure with a 6-month reference period should respond so rapidly to treatment, and it is difficult to ascertain whether treatment so changed patients' perceptions of their oral health that they placed less emphasis on its impact in the previous few months.

With any clinical study, an important aspect is the degree to which the results can be generalized to a population. It would be entirely appropriate to consider that the treated cohort were representative of patients with significant periodontal disease that had been given a secondary referral.

One final consideration in this study is the sample size. The study was planned as a pilot in the absence of any data for power calculations, which are essential in the interpretation of neutral findings. However, the positive findings for both *a priori* hypotheses, the excellent response rate and consistency of data lend credence to the findings.

In summary, patients referred for treatment of periodontal disease have worse OHQoL than disease-free dental patients. This impact was partly, and rapidly, ameliorated by non-surgical periodontal treatment. These data confirm contemporary findings that periodontal disease is not ''silent'' and indicate that conventional non-surgical treatment can be effective from patients' perspectives.

Acknowledgement

We are grateful to Lindsey Holland for conducting the telephonic interviews.

References

Allen, P. F., Thomason, J. M., Jepson, N. J., Nohl, F., Smith, D. G. & Ellis, J. (2006) A randomized controlled trial of implant-retained mandibular overdentures. *Journal of Dental Research* **85**, 547–551.

Axelsson, P. & Lindhe, J. (1981) The significance of maintenance care in the treatment of periodontal disease. *Journal of Clinical Periodontology* **8**, 281–294.

Bajwa, A., Watts, T. L. P. & Newton, J. T. (2007) Health control beliefs and quality of life considerations before and during periodontal treatment. *Oral Health and Preventive Dentistry* **5**, 101–104.

Baker, S. R., Gibson, B. & Locker, D. (2008) Is the oral health impact profile measuring up? Investigating the scale's construct validity using structural equation modelling. *Community Dentistry and Oral Epidemiology* **36**, 1–10.

Cunha-Cruz, J., Hujoel, P. P. & Kressin, N. R. (2007) Oral health-related quality of life of periodontal patients. *Journal of Periodontal Research* **42**, 169–176.

Eberhard, J., Jervøe-Storm, P.-M., Needleman, I., Worthington, H. & Jepsen, S. (2008) Full-mouth treatment concepts for chronic periodontitis, a systematic review. *Journal of Clinical Periodontology* **35**, 591–604.

Esposito, M., Grusovin, M. G., Coulthard, P. & Worthington, H. V. (2005) Enamel matrix derivative (Emdogain®) for periodontal tissue regeneration in intrabony defects. *Cochrane Database of Systematic Reviews*, Issue 4. Article No., CD003875 doi: 10.1002/14651858.CD003875.pub2.

Fisher, M. A., Gilbert, G. H. & Shelton, B. J. (2005) Effectiveness of dental services in facilitating recovery from oral disadvantage. *Quality of Life Research* **14**, 197–206.

Gaunt, F., Devine, M., Pennington, C., Vernazza, C., Gwynnett, E., Steen, N. & Heasman, P. (2008) The cost-effectiveness of supportive periodontal care for patients with chronic periodontitis. *Journal of Clinical Periodontology* **35** (Suppl. 8), 67–82.

Herrera, D., Alonso, B., León, R., Roldán, S. & Sanz, M. (2008) Antimicrobial therapy in periodontitis: the use of systemic antimicrobials against the subgingival biofilm. *Journal of Clinical Periodontology* **35** (Suppl. 8), 45–66.

Kelly, M., Steele, J. G., Nuttall, N., Bradnock, G., Morris, J., Nunn, J., Pine, C., Pitts, N., Treasure, E. & White, D. (2000) *Adult Dental Health Survey: Oral Health in the United Kingdom 1998*. London: TSO.

Koshy, G., Kawashima, Y., Kiji, M., Nitta, H., Umeda, M., Nagasawa, T. & Ishikawa, I. (2005) Effects of single-visit full-mouth ultrasonic debridement versus quadrant-wise ultrasonic debridement. *Journal of Clinical Periodontology* **32**, 734–743.

Lang, N. P., Tan, W. C., Krähenmann, M. A. & Zwahlen, M. (2008) A systematic review of the effects of full-mouth debridement with and without antiseptics in patients with chronic periodontitis. *Journal of Clinical Periodontology* **35** (Suppl. 8), 8–21.

Locker, D. & Allen, F. (2007) What do measures of 'oral health related quality of life' measure? *Community Dentistry and Oral Epidemiology* **35**, 401–411.

Locker, D., Matear, D., Stephens, M., Lawrence, H. & Payne, B. (2001) Comparison of the GOHAI and OHIP-14 as measures of the oral health-related quality of life of the elderly. *Community Dentistry and Oral Epidemiology* **29**, 373–381.

Matthews, D. C. & McCulloch, C. A. (1993) Evaluating patient perceptions as short-term outcomes of periodontal treatment, a comparison of surgical and non-surgical therapy. *Journal of Periodontology* **64**, 990–997.

McGrath, C. & Bedi, R. (2002) Impact of oral health on quality of life in Britain: population based norming of the UK oral health related quality of life measure. *British Dental Journal* **193**, 521–524.

McGrath, C., Comfort, M. B., Lo, E. C. & Luo, Y. (2003) Can third molar surgery improve quality of life? A 6 month cohort study. *Journal of Oral and Maxillofacial Surgery* **61**, 759–763.

Needleman, I., McGrath, C., Floyd, P. & Biddle, A. (2004) Impact of oral health on the life quality of periodontal patients. *Journal of Clinical Periodontology* **31**, 454–457.

Ng, S. K. S. & Leung, K. (2006) Oral health-related quality of life and periodontal status. *Community Dentistry and Oral Epidemiology* **34**, 114–122.

Noble, M., McLennan, D., Wilkinson, K., Whitworth, A., Barnes, H. & Dibben, C. (2008) *The English Indices of Deprivation 2007*. West Yorkshire: Communities and Local Government Publications.

Ozcelik, O., Haytac, M. C. & Seydaoglu, G. (2007) Immediate post-operative effects of different periodontal treatment modalities on oral health-related quality of life: a randomized clinical trial. *Journal of Clinical Periodontology* **34**, 788–796.

Quirynen, M., De Soete, M., Boschmans, G., Pauwels, M., Coucke, W., Teughels, W. & van Steenberghe, W. (2006) ''Benefit of ''one-stage full-mouth disinfection'' is explained by disinfection and root planing within 24 hours: a randomized controlled trial. *Journal of Clinical Periodontology* **33**, 639–647.

Robinson, P. G., Gibson, B., Khan, F. A. & Birnbaum, W. (2003) Validity of two oral health-related quality of life measures. *Community Dentistry and Oral Epidemiology* **31**, 90–99.

Sheiham, A., Maizels, J. E. & Cushing, A. M. (1982) The concept of need in dental care. *International Dental Journal* **32**, 265–270.

Slade, G. D. (1997) Derivation and validation of a short-form oral health impact profile. *Community Dentistry and Oral Epidemiology* **25**, 284–290.

Slade, G. D. & Spencer, A. J. (1994) Development and evaluation of the oral health impact profile. *Community Dental Health* **11**, 3–11.

Suvan, J. E. (2005) Effectiveness of mechanical nonsurgical pocket therapy. *Periodontology 2000* **37**, 48–71.

Tervonen, T. & Knuuttila, M. (1988) Awareness of dental disorders and discrepancy between 'objective' and 'subjective' dental treatment needs. *Community Dentistry and Oral Epidemiology* **16**, 345–348.

U.S. Department of Health and Human Services. (2000) Oral health in America: a report of the surgeon general, Rockville, MD, U.S. Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health.

Walker, C. & Karpinia, K. (2002) Rationale for use of antibiotics in periodontics. *Journal of Periodontology* **73**, 1188–1196.

Address:
Adrian K. Jowett
Department of Adult Dental Care
School of Clinical Dentistry
University of Sheffield
Sheffield, S10 2TA
UK
E-mail: a.k.jowett@sheffield.ac.uk

Clinical Relevance

Scientific rationale for study: There is conflicting evidence of whether chronic periodontal disease impacts on patients' OHQoL and whether 24-h root surface debridement has a beneficial effect from the patients' perspective.

Principal findings: Moderate to advanced chronic periodontal disease has an adverse impact on OHQoL. Patients' quality of life improved after 24-h root surface debridement, which was sustained in the medium term.

Practical implications: Periodontitis is not ''silent'', but immediate and medium-term improvements in quality of life may reassure and motivate patients.