Copyright by Quintessence Not for Publication

Health Control Beliefs and Quality of Life Considerations Before and During Periodontal Treatment

A. Bajwa[a]/T. L. P. Watts[a]/J. T. Newton[b]

Purpose: Previous studies have indicated that health beliefs are related to the periodontal disease status and treatment behaviour of patients. However, it is possible that treatment may affect a patient's health beliefs and thus complicate this issue. The present study therefore looked for changes in health control beliefs and oral health impacts in patients undergoing periodontal treatment in a dental school.

Materials and Methods: Questionnaires assessing dental multidimensional locus of control (LOC) and oral health impact profile (OHIP) were posted to subjects due to attend for initial periodontal consultation and were returned by 127 patients who attended. Repeat questionnaires were sent to all subjects 6 months later when they had received some oral hygiene instruction, scaling and root planing, and 55 were returned.

Results: Comparison of data for those subjects who completed both questionnaires showed no difference in LOC but showed a trend ($p = 0.065$) towards reduced OHIP (i.e. improved oral health-related quality of life).

Conclusions: These subjects apparently did not alter their health control beliefs about periodontal disease as a result of treatment, but there may have been an improvement in their oral health-related quality of life. Further studies are required to confirm these possibilities.

Key words: locus of control, oral health impact profile, periodontal treatment, quality of life

Oral Health Prev Dent 2007; 2: 101-104.

Submitted for publication: 15.12.05; accepted for publication: 28.06.06.

There is increased interest in the use of patient-centred treatment outcomes in periodontology, rather than outcomes limited to the traditional surrogate measurements used by periodontal researchers (Hujoel et al, 1997a, 1997b, 1998). Such patient-centred outcomes include tooth mortality, aesthetics, perceived comfort and quality of life.

A change in patient attitude and behaviour is desirable when periodontitis is treated. Oral hygiene education is central to the initial stage of treatment, and patients routinely have their plaque control checked and reinforced at these visits. While scaling and root planing are in progress, patients are constantly reminded of the need for maintaining excellent plaque control, and where appropriate, of the need for smoking cessation. Because of this operator-patient interaction, individuals may move to a more internal set of control beliefs, and also experience a more comfortable mouth and improved oral health-related quality of life. There is currently little evidence of this aspect of the effectiveness of periodontal treatment.

[a] *Department of Periodontology and Preventive Dentistry, King's College London Dental Institute at Guy's, King's & St Thomas' Hospitals, London, UK*

[b] *Department of Dental Public Health, King's College London Dental Institute at Guy's, King's & St Thomas' Hospitals, London, UK*

Reprint requests: *Dr TLP Watts PhD, MDS, BDS, FDSRCPS, Department of Periodontology and Preventive Dentistry, Floor 21, Guy's Tower, King's College London Dental Institute at Guy's, King's & St Thomas' Hospitals, Guy's Campus, London SE1 9RT, UK.*
Tel: +44 (0)20 7188 4945. Email: trevor.watts@kcl.ac.uk

Copyright for personal use only
Not for publication

Quality of life related to dental factors has been measured by a number of instruments, among them the oral health impact profile (OHIP). This was based on an oral health model suggested by Locker (1988), and initially validated as a 49-question scale (Slade and Spencer, 1994). A shorter form of the instrument was developed with two items from each of the original seven domains of the scale (OHIP-14), and validated by Slade (1997). It has been widely used in dental research, including the decennial UK Adult Dental Health Survey (Kelly et al, 1998).

Health locus of control (LOC) is an 18-item scale (Beck, 1980) intended to assess the extent to which individuals perceive themselves to be in control of the factors that affect their level of health. If they consider their own behaviour determines their health, they have an internal LOC; if factors or forces outside their control are responsible, their health LOC is external. This is a well-established concept arising from the work of Rotter (1966), and has been used in dental research. For instance, Mangelsdorff and Brusch (1978) found an external LOC suggested a greater need for periodontal treatment.

The present study was designed to examine the health control beliefs of patients referred for periodontal treatment in a university clinic in respect of health LOC and dentally related quality of life, and to see whether those beliefs underwent significant change when treatment was in progress. In short, does early non-surgical periodontal treatment change the way patients think about their disease, and does it change the impact of that disease upon their everyday lives?

MATERIALS AND METHODS

Patients aged 20–60 years with untreated periodontitis who had been referred to the Department of Periodontology and Preventive Dentistry at Guy's Hospital were sent an invitation to participate in the study prior to their visits for initial periodontal assessment. Each was given an information sheet and a consent form in accordance with the hospital ethics committee guidelines. After giving informed consent in the department, they completed LOC and OHIP-14 questionnaires.

The maximum score for each of the three LOC scales is 36, and the questions are arranged in a random order, each with six levels of agreement for the subject to choose from. For the OHIP-14, there are 14 questions, each with five levels of agreement for the subject to choose from, giving a maximum score of 70.

Six months after the first visit, the same questionnaires were sent to all participating patients with a stamped, addressed envelope, and subjects were asked to return these by post. Attendance in the department was assessed from hospital records to ensure that subjects had received some treatment.

The system of initial treatment for periodontitis in the department follows a pattern of an initial appointment for assessing and modifying oral hygiene procedures, followed by appointments for scaling and root planing, usually with local anaesthesia. At each of those appointments, oral hygiene also is checked and encouraged, and further advice given. If patients are smokers, they are advised to cease, and given encouragement to do so. Very occasionally, a tooth with hopeless prognosis may be extracted while the local anaesthetic is in place for root planing. The main emphases of treatment are for patients to learn to control plaque and smoking, while the operator also removes calculus and subgingival plaque. After a suitable interval for tissue organisation (usually 2 months), a reassessment is performed for further treatment decisions. The whole treatment may take from 6 months to 1 year, depending on teaching appointment availability. Six months was chosen as a suitable study intervention point when subjects would have received part of their course of non-surgical treatment, but no further treatment.

Data from subjects who returned two sets of questionnaires were analysed with the Wilcoxon two-sample test for paired and ranked statistics.

RESULTS

A total of 127 patients (39% male) attended at the first visit and agreed to participate. However, only 55 (32% male) returned a second questionnaire posted to them 6 months later. For several subjects, questionnaires were not fully completed, and missing data are tabulated in Tables 1 and 2.

The LOC scores for both visits are shown in Table 1. For internal and 'chance' LOC, data appear similar to the population means, but the 'powerful others' LOC is reduced in comparison with healthy adults and also chronic disease patients. There is little change in LOC mean scores for the periodontal patients before and after treatment. When the 54 subjects returning complete data were compared at both occasions, respective p levels for internal, 'chance' and 'powerful others' LOC scores were not significant.

In Table 2, OHIP-14 data are shown. There was a trend ($p = 0.065$) towards significant reduction in the

Copyright Not for the essence

Table 1 Data on locus of control before and 6 months after periodontal treatment

	Internal LOC		Chance LOC		Powerful others LOC	
	Before	Before/after (responders)	Before	Before/after (responders)	Before	Before/after (responders)
Valid number	115	54 54	115	50 50	123	53 53
Missing number	12	73 73	12	77 77	4	74 74
Mean (SD)	25.3 (4.4)	24.6 25.3 (4.4) (4.5)	17.8 (5.4)	17.8 18.3 (5.3) (4.9)	16.0 (5.6)	14.9 16.4 (5.1) (5.8)
p		0.36		0.93		0.39
Comparison of population means:						
Healthy adults		25.55		16.21		19.16
Chronic disease patients		25.78		17.64		22.54

Table 2 OHIP-14 scores before and 6 months after periodontal treatment

	OHIP-14 before		OHIP-14 after
	full sample	sub-sample	
Valid number	123	54	54
Missing number	4	73	73
Mean (SD)	2.3 (3.2)	1.85 (3.0)	1.5 (2.7)
% Of respondents showing some impact	55.3%	55.6%	59.3%
Comparison data from UK Adult Dental Health Survey (Kelly et al, 1998):			
% Showing some impact	51%		

mean score when the 54 subjects giving complete data were compared at both occasions. A greater score on the OHIP-14 is a measure of lower oral health-related quality of life, and therefore a reduced score implies an improvement in the latter. However, this sub-group had a lower initial mean score (1.85; SD 3.0) than the total pre-treatment group.

DISCUSSION

The mean internal and 'chance' LOC scores for subjects were similar to population means for healthy individuals and for people with chronic diseases. These did not appear to change as a result of receiving periodontal treatment, and there was no apparent sub-group bias in the second questionnaire responders. The 'powerful others' scores appeared lower in this sample than in population means for healthy and for chronically diseased subjects. It is possible that this reflects the widely held belief that periodontal diseases are largely controllable and preventable by good plaque control. Patients are sometimes more inclined to blame themselves for periodontal ill health, particularly when they understand what a dentist or hygienist tells them.

The findings of this study, though of interest, are necessarily limited because only half of the subjects returned the second questionnaire. There is a possible indication of responder bias in that the initial OHIP-14 score for the second questionnaire responders was only 70% of the initial score for the whole group. It might be argued that these responders were relatively satisfied individuals with a lower impact of oral health problems on quality of life than the whole group. However, if this is so, then the further trend towards a

Copyright by Quintessence Not for Publication

reduction of this sub-group's OHIP-14 scores after experiencing some treatment is of some interest, because it is more difficult to reduce lower scores to the extent of higher scores in such studies (floor effect). There is also a possibility that the drop-outs, with higher initial OHIP-14 scores, lost interest because they did not experience improvement during early treatment.

There is limited previous evidence that dental treatment can improve quality of life, in welfare recipients in California (Hyde et al, 2006), and also in children and their families (Filstrup et al, 2003; Anderson et al, 2004). However, although it is known that periodontal conditions may have an impact on quality of life (Needleman et al, 2004), there currently does not appear to be evidence of any effect of periodontal treatment. This is clearly an area in which further research is required.

If the trend in OHIP-14 reduction was related to subjects' participation in non-surgical periodontal treatment, the causal factors may be sought in the increased comfort, reduced experience of gingival bleeding and pleasant feeling of clean teeth that patients often remark on. It is also possible that this early feedback may reinforce the patients' beliefs that their periodontal disease is going to be cured as a result of treatment. Future studies may explore whether the apparent trend towards improved quality of life is a genuine result of periodontal treatment, and if so, what the reasons are for this.

Within the limits of this study, there may be a trend towards improved quality of life in patients who have commenced periodontal treatment. However, there is no evidence of any shift in patients' locus of control beliefs. It is, in any case, important to develop more indicators of patient-based health outcomes in periodontics, so that the effectiveness of treatment may be established in ways that patients can better appreciate.

REFERENCES

1. Anderson HK, Drummond BK, Thomson WM. Changes in aspects of children's oral-health-related quality of life following dental treatment under general anaesthesia. Int J Paediatr Dent 2004;14:317-325.
2. Beck KH. Development and validation of dental locus of control scale. J Prev Dent 1980;6:327-332.
3. Filstrup SL, Briskie D, da Fonseca M, Lawrence L, Wandera A, Inglehart MR. Early childhood caries and quality of life: child and parent perspectives. Pediatr Dent 2003;25:431-440.
4. Hujoel PP, Leroux BG, DeRouen TA, Powell LV, Kiyak HA. Evaluating the validity of probing attachment loss as a surrogate for tooth mortality in a clinical trial on the elderly. J Dent Res 1997a;76:858-866.
5. Hujoel PP, Loe H, Anerud A, Boysen H, Leroux BG. Forty-five-year tooth survival probabilities among men in Oslo, Norway. J Dent Res 1998;77:2020-2027.
6. Hujoel PP, Powell LV, Kiyak HA. The effects of simple interventions on tooth mortality: findings in one trial and implications for future studies. J Dent Res 1997b;76:867-874.
7. Hyde S, Satariano WA, Weintraub JA. Welfare dental intervention improves employment and quality of life. J Dent Res 2006;85:79-84.
8. Kelly M, Steele J, Nuttall N, Bradnock G, Morris J, Nunn J et al. Adult Dental Health Survey: Oral Health in the United Kingdom 1998. London: The Stationery Office, 2000.
9. Locker D. Measuring oral health: a conceptual framework. Community Dent Health 1988;5:5-15.
10. Mangelsdorff AD, Brusch WA. Locus of control as a predictor of dental care requirements. J Prev Dent 1978;5:29-30.
11. Needleman I, McGrath C, Floyd P, Biddle A. Impact of oral health on the life quality of periodontal patients. J Clin Periodontol 2004;31:454-457.
12. Rotter JB. Generalised expectancies for internal versus external control of reinforcement. Psychol Monographs 1966;80:1(No. 609).
13. Slade G. Derivation and validation of a short form oral health impact profile. Community Dent Oral Epidemiol 1997;25:284-290.
14. Slade G, Spencer AJ. Social impact of oral disease among older adults. Aust Dent J 1994;39:358-364.