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Interviews and assessments of returning non-compliant periodontal maintenance patients

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Abstract

Background: Periodontal therapy without a maintenance programme has been shown to be of doubtful value. Most studies show a low-level of compliance with periodontal maintenance therapy. Many suggestions as to the reasons for this have been put forward, but it has been difficult to confirm these, as the patients are not available to be interviewed.

Aim: To identify, interview and assess returning non-compliant periodontal maintenance patients.

Method: All patients who had undergone periodontal therapy between 1986 and 2004 but not complied with the maintenance therapy were interviewed and assessed when they later returned to the specialist office for treatment.

Results: Sixty-one patients with an average age of 56.4 years (SD 11,1) were studied. There were 18 males and 43 females. The patients were compliant for 3.4 years (SD 3.2) before leaving and returning after 5.5 years (SD 3.3) of non-compliance. Average tooth loss while non-compliant was 1.6 teeth (SD 2.8). The interviews revealed that 37 patients attended their own dentist's office exclusively for maintenance therapy, eight patients gave health reasons and seven patients lack of motivation or failure to cooperate. Thirty-six patients were re-referred by their own dentist, 13 changed dentist and were referred by this dentist, while 12 patients contacted the specialist office directly. Fifty-three patients claimed to have been fully compliant with their own dentist while non-compliant with the specialist office.

Conclusion: The main reason for non-compliance was that the patients did attend their own dentist exclusively for maintenance therapy. Tooth loss and periodontal deterioration was more marked in this group than patients who in addition attended the specialist office for maintenance therapy.

Key words: periodontal disease; non-compliance; returning for maintenance

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Periodontal therapy is successful in maintaining the vast majority of patients' teeth over time (Hirschfeld & Wassermann 1978, McGuire 1991, Fardal et al. 2004).

However, it is clear that periodontal therapy without compliance to a maintenance regimen is of doubtful value (Becker et al. 1984, Kocher et al. 2000, Checchi et al. 2002). Most reports show low levels of compliance with maintenance therapy varying from 11% to 45% (Wilson et al. 1984, Mendoza et al. 1991, Demetriou et al. 1995, Demirel and Efeodly 1995, Novaes et al. 1996, 1999, 2001, Wilson Jr. 1996, König et al. 2001).

It is not clear why patients who accept referral to a specialist clinic and undergo periodontal therapy, choose not to accept the recommended maintenance therapy. Most patients comply with the suggested periodontal therapy, which is usually lengthy and often includes surgery. In addition, patients are informed of the importance of the maintenance therapy. This type of behaviour on the patients' part is not only observed in periodontal maintenance patients. In a number of medical and dental situations where patients' compliance is important to the treatment outcome, the same phenomenon is seen.

Several theories of human cognitive behaviour have been used to explain non-compliance. The four main theories include the health belief model (HBM); the transtheoretic model (TM); the theory of reasoned action/theory of planned behaviour (TRA); and the social-cognitive theory (SC) (Revere & Dunbar 2001). The HBM focuses on an indivi-

dual's perception of the threat from a health problem. The TM is concerned with an individual's readiness to change. The TRA focuses on an individual's intention to perform a behaviour. The SC incorporates intra-personal and inter-personal factors and suggests that the benefits of behaviour must outweigh the costs. Several personal factors are emphasised in these theories including the individual's knowledge, beliefs, motivation, attitudes, developmental history, experience, skills, self-concept and behaviour. Leventhal et al. (1992) have postulated that people's behaviour in response to an illness is determined by their representation of that illness. Illness representation has a cognitive and an emotional aspect and they are constructed through direct or vicarious experiences as well as information received from the social environment and health professionals. They propose that patients will only adhere to a treatment if they believe that this treatment will have a positive effect on their health and that they have the capacity to effectively act as required.

A number of specific factors have been connected to non-compliance in periodontal maintenance therapy. These include age, gender, cultural and geographic differences, fear, self destructive behaviour, cost, socio-economic status, type of periodontal therapy and high patients turnover in dental practice (Friedson & Feldman 1958, Oppenheim et al. 1979, Gatchel et al. 1983, Farberow et al. 1986, Rizzardo et al. 1991, Demetriou et al.1995, Novaes et al. 1999).

Wilson Jr. (1996) has proposed a number of recommendations to improve compliance with maintenance in periodontal therapy. And a few studies (Matthews 2001, Ojima & Hanioka Shizukuishi 2001, Fardal et al. 2002) have shown that it is possible to achieve higher compliance rates (72–87%).

The proliferation of theories, suggestions and recommendations are likely to reflect a great variation in the reasons for non-compliance. The reasons probably include both inter-patient variations as well as variations between therapeutic situations.

It is difficult to confirm these theories and suggestions because of the very nature of non-compliance. The patients are usually not present to be interviewed about their reason(s) for non-compliance. If they can be contacted for interviews, the obvious loss of rapport between patient and the specialist may not produce reliable responses.

In a previous study (Fardal et al. 2002), it was reported that some non-compliant patients do return to the specialist practice for various reasons. If a number of these patients could be identified and interviewed, it may be possible to confirm previous suggestions and/or learn something new about the reasons for non-compliance with periodontal maintenance therapy.

The aim of this study is therefore to identify, interview and make profiles of returning non-compliant periodontal patients from a specialist periodontal practice.

Material and Methods

All patients treated by the investigator between 1 January and 31 December 2004, were assessed for inclusion in the study. From this group, patients who at one stage ceased to attend for maintenance therapy but later returned to the specialist office were included in the study.

The practice was started by the investigator in 1986 and all patients treated and maintained between 1986 and 2004 were eligible for inclusion in the study. The patients were mainly Northern Europeans and drawn from small rural Norwegian communities. The specialist practice receives referrals from general dental practitioners, community dentists and physicians in Norwegian rural communities with a total population of 25–30,000. The area has approximately 25 dentists split evenly between private practice and the community dental service. The investigator is a specialist who is certified by the Norwegian Department of Health and Social Services is the only periodontal specialist in the area, and works in two practice locations (Egersund and Flekkefjord).

All the patients had been diagnosed initially as having chronic generalised mild, moderate or severe adult periodontitis. Probing depths were measured at six locations around each tooth. Periapical and bite wing radiographs were recorded. Patients with generalised moderate pocket depths (4–6 mm) and with radiographic proximal bone loss not exceeding 1/3 of normal bone height were given the diagnosis of mild periodontitis. Patients with a mixture of moderate (4–6 mm) and deep pocket depths ($\geqslant$7 mm) and with generalised radiographic proximal bone loss of between 1/3 and 2/3 of normal bone height were diagnosed as moderate periodontitis. Patients with generalised deep pocket depths ($\geqslant$7 mm) and with proximal bone loss $>$2/3 of normal bone heights were diagnosed as severe periodontitis.

All the patients completed a similar course of periodontal treatment that included non-surgical therapy and appropriate surgical intervention. Initial therapy included oral hygiene instruction, scaling and root planing using standard curettes (Gracey and Colombia patterns). In addition, fine diamond finishing burs (Viking Dental, Waerhaug, Norway) were used to correct overhangs. In the initial phase, scaling and root planing were completed without the use of local anaesthesia. The whole mouth was treated over a series of visits at 2–4 weeks intervals. Oral hygiene was reinforced repeatedly based on individual needs. The patients received a thorough explanation of the periodontal anatomy and the disease process involved in periodontitis. Special emphasis was placed on the importance of periodontal maintenance therapy, following the initial definitive therapy.

Periodontal surgery was prescribed for patients who had sites with bleeding on probing or persistent deep pocketing at reassessment 6 weeks after the completion of initial therapy.

Based on the initial diagnoses and treatment response, the patients were designated the prognosis of good, uncertain or poor.

After the completion of cause related or corrective treatment, all patients were seen between one and three times per-year in the specialist practice for maintenance care. The maintenance visits with the specialist practitioner alternated with visits to the general dental practitioner such that all patients were seen in total between two and four times per year. Written instructions were given both to the referring dentist and the patient outlining the plans for maintenance therapy. During each maintenance visit, scaling, root planing and polishing of teeth was routinely performed according to the needs of each patient. The interval between recall visits was shortened or lengthened as appropriate according to the stability of the periodontal condition. During the maintenance period, sites with increasing probing depth were treated with repeated scaling and root planing. Subsequently, if there were clinical signs of

residual subgingival calculus or persistent inflammation surgical intervention was performed. In addition, systemic or topical antibiotic therapy was used in acute exacerbations of periodontal disease.

The patients were assessed for the following variables: age, gender, initial prognosis, whether the initial periodontal therapy was surgical or non-surgical, compliance with the initial periodontal therapy, years of complying with maintenance therapy before leaving the practice, the offices they attended, whether the compliance was full, erratic or none, number of years out of maintenance therapy, level of compliance after returning to the practice, number of teeth lost during non-compliance and which type of therapy was required on returning to practice. Based on the tooth loss, re-treatment response, and stability during maintenance therapy the patients were categorised as stable or downhill.

The patients were interviewed to determine the reason(s) for not complying with the prescribed maintenance therapy, the reason(s) for returning to the specialist practice and whether the patient was compliant with their own dentist while not compliant with the specialist practice.

Results

Sixty-one patients satisfied the inclusion criteria and they all agreed to be interviewed about their non-compliance.

There were 18 males and 43 females. Average age at assessment was 56.4 years (SD 11.1, range 36–83 years).

Average age at time of leaving the practice was 49 years (SD 11.5, range 28–79 years). There were 41 patients from the Egersund office, and 20 patients from the Flekkefjord office. This reflects the proportional time spent in the two offices by the investigator.

The dental records revealed that 60 patients received surgical therapy as part of the initial treatment, while one patient had received only non-surgical treatment.

All patients had complied fully with the initial cycle of periodontal therapy.

On completion of the initial periodontal therapy, 17 patients were given a good overall prognosis, 38 an uncertain prognosis, and six patients were given a poor overall prognosis.

The average time patients attended the specialist office for maintenance therapy was 3.4 years (SD 3.2, range 0–11 years). Thirty eight patients were fully compliant, nine patients were erratic compliers while 14 patients did not attend for any maintenance therapy, i.e., they left immediately on completion of the initial periodontal therapy.

Table 1. Treatment required by patients returning from non-compliance to the specialist office

Treatment type	Number of patients
Scaling	24
Scaling and extractions	1
Scaling and implants	2
Scaling followed by surgery	11
Periodontal surgery	22
Extractions	1

The average length of time of non-compliance before returning to the specialist office was 5.5 years (SD 3.3, range 2–15 years). On returning, 54 patients were compliant, one showed erratic compliance while six patients did not comply further.

During the time the patients were non-compliant, they lost an average of 1.6 teeth (SD 2.8, range 0–14).

Eleven of patients with an initial good prognosis were described as stable, six as downhill. Sixteen patients with initial uncertain prognosis were stable, and 22 as downhill. All six patients with initial poor prognosis were described as downhill.

The treatment carried out for the returning patients is shown in Table 1.

The interviews revealed that the main reason for non-compliance was that the patients had chosen only to attend their own dentist for maintenance care (37 patients). Other reasons included ill-health, either affecting themselves or close family (8) and a lack of motivation (7).

The reasons for non-compliance are summarised in Table 2.

Thirty-six patients were re-referred by their own dentist to the specialist practice, 13 changed dentist and were referred by the new dentist, and 12 patients contacted the office directly requesting care. Five out of the eight patients with health problems contacted the office directly.

Fifty-three patients claimed to have been fully compliant with their own general dentist's maintenance schedule, while not compliant with the specialist office. Eight patients were non-compliant with their own dentist as well. The majority of patients who were compliant with their dentist attended twice a year.

Table 2. Reasons for non-compliance with periodontal maintenance therapy

Reasons for non-compliance	Numbers of patients
General dentist maintenance care	37
Health reasons	8
Lack of motivation	7
Financial reasons	3
Fear	2
Not satisfied with treatment	2
Failed to perceive the need for ongoing treatment	1
Faulty recall procedure	1

The 61 non-compliant patients were distributed among 16 referring dentists. Two of these dentists accounted for 32 out of the 61 patients. The other dentist ranged from one to four patients.

Discussion

This study was designed to give insight into the reasons for non-compliance in a group of patients who later returned to a specialist office for therapy.

It showed that the majority of patients continued to attend their general dentist for treatment, while non-compliant with the specialist office. This went against the recommendations issued by the specialist upon completion of the initial cycle of periodontal therapy. Written information was issued both to the patients and their referring dentists concerning the shared responsibility of periodontal maintenance therapy. Interviews of these patients revealed that they were confident in their general dentists' ability to maintain their periodontal health.

It seems that some referring dentists choose not to adhere to the suggested maintenance schedule but instead inform their patients that they alone are capable of maintaining the patients' periodontal health. Some referring dentists choose to do this with only some of their patients, while others seem to do it with nearly all patients referred for periodontal therapy. In this study, two of 16 referring dentists accounted for half of the non-compliant patients.

It is also possible that the referring dentists are pressurised by the patients to carry out all of the maintenance therapy, because some patients do not want to attend two separate offices.

The reasons why some dentists refer patients to specialists but choose not to co-operate in maintenance programmes are not clear. Some general dentists may be particularly interested in periodontal maintenance therapy; some dentist may be financially dependent on this type of treatment. If, for example periodontists employ hygienists to help with the maintenance therapy, referring dentists may feel that they can perform this type of treatment equally well or better. Furthermore, if referring dentists also employ hygienists, they may feel that their own hygienist can do the maintenance therapy equally well.

Certain models can be applied to explain levels of compliance with medical and dental treatment.

The HBM proposes the following requirements for behaviour change: (1) a perception of susceptibility to disease; (2) a belief that the impact of this disease will affect him/her biologically and/or psychosocially; (3) a belief that the potential benefits of the treatment outweigh the risks of the disease and its treatment; (4) an ability to surmount barriers to treatment (Ross & Guggenheim 1983). The TM suggests that six stages of changes are involved in health behaviour: pre-contemplation, contemplation, preparation, action, maintenance and termination (Prochaska & Velicer 1997). In Leventhal et al.'s (1992) five dimensional model on self-regulation, the fifth dimension deals with adherence to treatment and home care.

The mechanisms behind the motivation and referral of patients to the periodontal specialists seem to fit in with these models. In addition, they explain the reasons for compliance/non-compliance with periodontal therapy and oral hygiene measures.

However, the theories do not seem to clearly explain the reasons why some patients stay compliant with their general dentists and not with the periodontal specialists. It is possible that more factors should be added to the psychological models to explain non-compliance with periodontal maintenance. For example, Leventhal's fifth dimension could be expanded or modified to take into account the role of the referring dentist.

A number of factors, including education and practice profile of the dentists and personal relations in the triangle between the patient; their dentist; and the specialists should be considered.

One could suggest that the referring dentist is primarily responsible for referral to the specialist and plays a crucial role in compliance with periodontal therapy and oral hygiene measures. The specialist re-inforces this information and informs the patient about the need for compliance with the periodontist during maintenance therapy. If the general dentist does not re-inforce this information or gives conflicting information, there may be a higher risk of non-compliant patients.

Interestingly a similar pattern of non-compliance can be seen in the maintenance therapy for diabetes.

A study by Varroud-Vial et al. (1999), showed that utilizing a behaviour model for promoting co-operation between the practitioner and diabetologist in the maintenance of type 2 diabetes statistically improved quality of care, standardisation of HbA1c measurements, control of blood pressure and blood lipids. Also the number of early interventions in cases of inadequate glucose control increased significantly.

There is evidence that patients who, after completing a course of periodontal therapy return to the sole care of general dentists, do not do as well in terms of periodontal stability as the patients who continue with a specialist maintenance programme (Axelsson & Lindhe 1981). The present study also suggests a higher tooth loss among this group (Fardal et al. 2004).

A number of models have been developed to educate general practitioners on when and how to refer for periodontal therapy. As periodontal therapy without systematic maintenance therapy is of doubtful value, more emphasis should be placed on this aspect of therapy.

A comparison between the present study and a previous one on re-treatment (Fardal & Linden 2005) showed that the time lapse between initial therapy and re-treatment was longer (9 *versus* 7 years) in the present study. Also higher tooth loss and poor case stability would indicate that these are two different groups of patients. Furthermore, one could assume that some of these patients are in fact non-responding cases. This means that this sample is not necessarily representative for all non-compliant patients. To further complicate the issue, most of the patients in the present study have attended their own dentists for a certain amount of maintenance therapy.

Suggestions have been made that fear may be a factor in non-compliance (Wilson 1996). This study does not support this suggestion as only two out of 61 patients gave fear as a reason. Fardal et al. (2001) reported that the majority of patients are apprehensive about starting periodontal therapy. A follow-up study showed that the discomfort experienced by these patients was no worse than for other dental therapy. In addition, Karadottir et al. (2002) reported low discomfort from periodontal maintenance treatment. The likelihood of large numbers of patients being non-compliant because of fear seems to be unrealistic. Economic reasons, and dissatisfaction with the therapy did not score highly in the present study.

The main reasons given by patients for non-compliance aside apart from having maintenance done by their general dentist were found to be ill-health and lack of motivation.

In conclusion, the main reason for non-compliance given by patients returning for treatment to the periodontal specialist was found to be their understanding that the general dentist could carry out adequate maintenance therapy. Average tooth loss amongst this group was higher than for patients who also attended the specialist periodontal office (Fardal et al. 2004). It should be underlined that the number of non-compliant patients in this practice is low (Fardal et al. 2003). The results of this study should be interpreted with care, as it is a highly select group of patients.

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Clinical Relevance

Scientific rational for study: The reasons for non-compliance with periodontal maintenance therapy are difficult to ascertain because the patients are usually not available for interview. *The aim* of this study was to identify, interview, and assess returning non-compliant patients.

Principal findings: Sixty-one patients were identified. Most non-compliant patients were attending their own dentist's office, while non-compliant with the specialist office. Whether this was their own or their dentist's choice was not established. A marked tooth loss and rate of periodontal deterioration were observed in these patients.

Practical implications: It seems that good co-operation between the referring dentist and the periodontist and re-inforcement of the specialists' recommendations for maintenance therapy by the referring dentist are key issues in improving patients' compliance.