

PATIENT COMPLIANCE LEVELS ATTAINED WITH SUPPORTIVE PERIODONTAL THERAPY OVER A FIVE-YEAR PERIOD IN A PERIODONTAL PRIVATE PRACTICE IN JOHANNESBURG, SOUTH AFRICA

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Objectives: The aim of this study was to investigate the level of compliance attained by patients who are involved in supportive periodontal therapy in a private periodontal practice in Johannesburg, South Africa.

Materials and Method: This retrospective study encompassed a five year period of supportive periodontal therapy. A random selection of 304 clinical records of patients who had completed active periodontal treatment was used. Patients were grouped according to gender, age, socio-economic class, type of periodontal disease, the type of treatment rendered, and level of compliance attained. Compliance was classified into four categories based on attendance: complete compliance, partial compliance, erratic and non-compliance.

Results: Only 20.72% of all patients belonging to our sample population achieved complete compliance. In the gender groups, 24.11% of male patients and 17.79% of female patients were in complete compliance. Older patients had a higher tendency to adhere to the supportive periodontal therapy programme compared to younger patients. In the socio-economic groups, skilled manual workers demonstrated the highest complete compliance rates (22.86%). When compliance was related to the type of periodontal disease it was found that individuals with chronic periodontitis had higher levels of complete compliance, than those suffering from aggressive periodontitis. Patients receiving plaque control instructions and scaling only, were the most compliant.

Conclusion: The results in this study are in agreement with similar studies and confirm a poor complete compliance with supportive periodontal therapy. When the various categories were assessed, individuals in the age category ≥ 61 years were significantly more compliant.

Key words: SPT, Compliance, Chronic periodontitis, Socio-economic, Age

Introduction

Supportive periodontal therapy (SPT) is defined as a continuing, periodic assessment and prophylactic treatment of the periodontal structures, permitting early detection and treatment of new and recurring periodontal lesions (AAP, 1992).

The goals of SPT are aimed at preventing or minimizing the recurrence and progression of periodontal disease in individuals

previously treated for gingivitis and periodontitis and to prevent or reduce the incidence of subsequent tooth loss (AAP, 1989, 2003).

It has been demonstrated that patients who are compliant with their SPT recall programme have a better periodontal prognosis than those who are non-compliant (Axelsson and Lindhe, 1981a; Becker et al., 1984; Cortellini et al., 1994, 1996).

An inherent difference of host susceptibility to periodontal disease among individuals exists. This can be modified by a variety of environmental, behavioural and site specific risk factors. Therefore the frequency of SPT should be tailored to individual requirements. Moreover since periods of periodontal disease activities cannot be predicted, it is essential that individuals with periodontitis attend a 3-monthly interval SPT programme as a general guideline (Axelsson and Lindhe 1981a, b; Ramfjord et al., 1975). However, a small percentage of patients will still experience further progression of attachment levels in spite of proper SPT (Hirschfeld and Wasserman, 1978).

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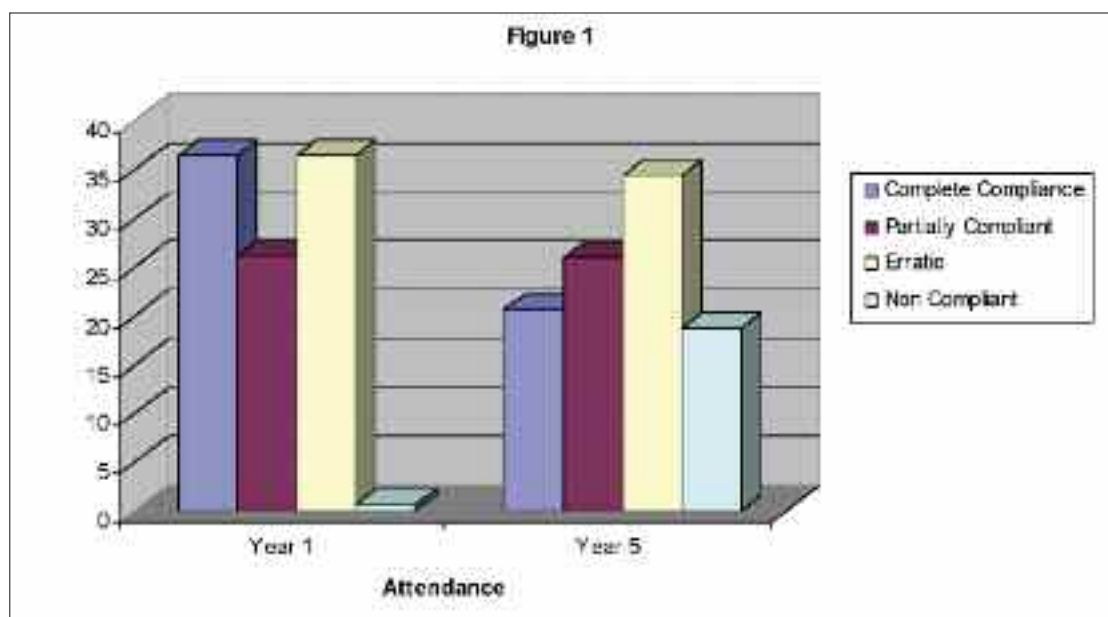


Figure 1: Cumulative percentage of patients who attended SPT over the 5 year study.

The aim of this study was to investigate the degree of compliance achieved by patients with periodontal disease, who had received periodontal treatment and had subsequently entered into a SPT programme in a private periodontal practice in Johannesburg, South Africa; and to determine if gender, age, socio-economic status, type of periodontal disease and the treatment modality had any influence on the level of compliance achieved.

Materials and Methods

This retrospective study was designed according to the methods described by Demetriou et al. (1995). The study covered a period of 5 years of SPT, on patients treated in a private periodontal practice in Johannesburg, South Africa. Patients whose SPT programme was interrupted due to relocation, severe illness or death were excluded from the study.

Patients were advised on the nature of periodontal disease, the reasons for treatment and the importance of SPT as ongoing therapy. Numerous techniques, each reinforcing the other, were used. Initially in an introductory letter and later in an informative pamphlet describing the nature of periodontal disease. In addition, verbal communication emphasising the importance of the SPT phase continued in a discussion fashion during the examination and treatment planning phase and repeated as necessary during the treatment phases.

Three hundred and four (304) clinical records of patients who had completed active periodontal treatment were used in this study. These records were selected randomly. Patients were classified according to gender, age, socio-economic class, the type of periodontal disease, the type of treatment rendered, and the level of compliance.

The socio-economic status of patients was categorized as I, II, III and IV. Category I comprised professionals and business executives, category II comprised other white collar workers such as those engaged in trade and other non-manual occupations, category III comprised skilled manual workers and category IV comprised pensioners. In the case of non-working wives, the spouse's occupation was used to establish the category.

Since the present classification for periodontal disease was only established in 1999 by the International Workshop for a Classification of Periodontal Diseases and Conditions, data from this retrospective study, was evaluated and readapted to the current periodontal classification system. The periodontal diseases were classified into chronic periodontitis or aggressive periodontitis according to the International Workshop for the Classification of Periodontal Disease and Conditions (Consensus Report, 1999a, c).

The type of periodontal treatment provided was classified into 3 groups: patients receiving plaque control instructions and scaling only (Group A), patients receiving plaque control instructions, scaling and root planing (Group B), and patients receiving plaque control instructions, scaling and root planing as well as periodontal surgery (Group C). In all cases the most complex treatment modality determined the group type.

The intervals between SPT visits were determined by the Probing Depth Index for Clinical Use (Buskin unpublished data) and the Plaque Control Index (Buskin, 1977). These indices formed part of the established routine of six-monthly periodontal screenings. All patients were scheduled to attend SPT at three monthly intervals for the first year after completion of their active periodontal treatment. Thereafter the SPT interval would depend on the recordings obtained from the Probing Depth

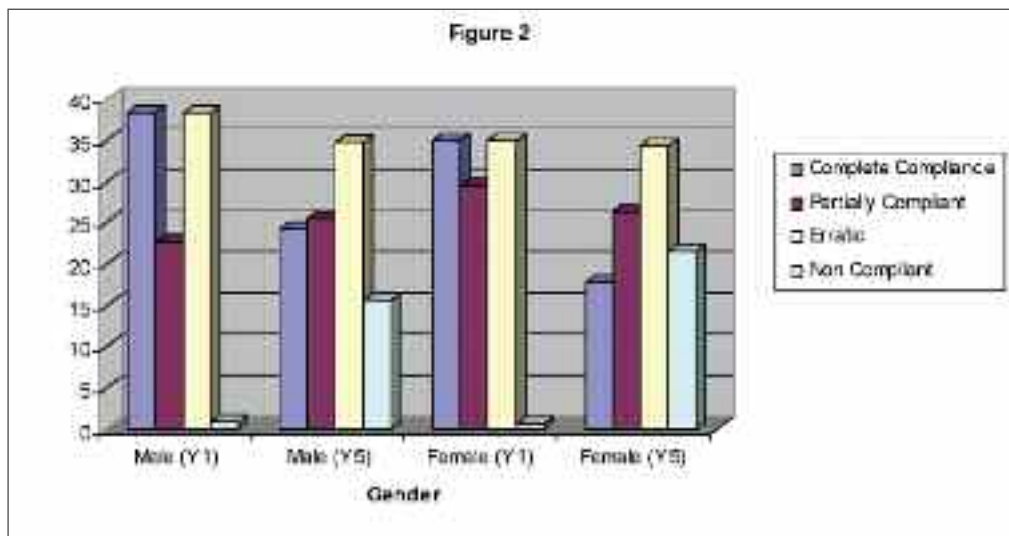


Figure 2: Cumulative percentage of patients who attended SPT over the 5 year study compared together with gender.

Index for Clinical Use (Buskin unpublished data) and the Plaque Control Index (Buskin, 1977).

The rate of compliance was expressed as a percentage, and compliance was classified according to four categories based on the patient attendance rates: complete compliance (85% - 100% attendance), partial compliance (60% - 84% attendance), erratic (20% - 59% attendance), and non-compliance (0% - 19% attendance).

The statistical analysis required the identification of the type of treatment provided (Group A, B and C) in accordance with the supportive periodontal treatments administered to the patients. Demographic characteristics were summarized by descriptive statistics. Chi-squared procedures were used to evaluate compliance rates as a function of the type of periodontal treatment, gender, type of periodontal disease, socio-economic groups and age categorized into groups ≤ 40 years, 41- 60 years and ≥ 61 years. All statistical procedures

were conducted on SAS, and p values ≤ 0.05 were considered significant. A logistic regression analysis was used to compare the association between compliance and data gathered on the variable factors in the study.

Results

On completion of the first year of SPT, 36.51% of individuals had complied completely, 26.32% complied partially, 36.51% were erratic in their compliance and 0.66% were non-compliant. At the end of the five-year period there was a significant decrease in the complete compliance category to 20.72% and an increase in the non-compliance category to 18.75%. The partial compliance category decreased to 25.99% and the erratic category decreased by 1.97% to 34.54% (Figure 1).

The 304 subject study sample consisted of 141 males and 163 females. Males were more compliant than females

Table 1: Logistic regression analysis with compliance as dependent variable and predictor variables, as well as the first order interactions

Logistic Regression Analysis for Year 5			
Effect	DF	Wald Chi-Square	Pr > ChiSq
Gender	1	0.0004	0.9843
Socio-Economic	3	4.0194	0.2594
Gender * Socio-Economic	3	4.4949	0.2127
Procedure	1	0.0951	0.7578
Gender * Procedure	1	0.0528	0.8182
Age	2	6.1142	0.0470

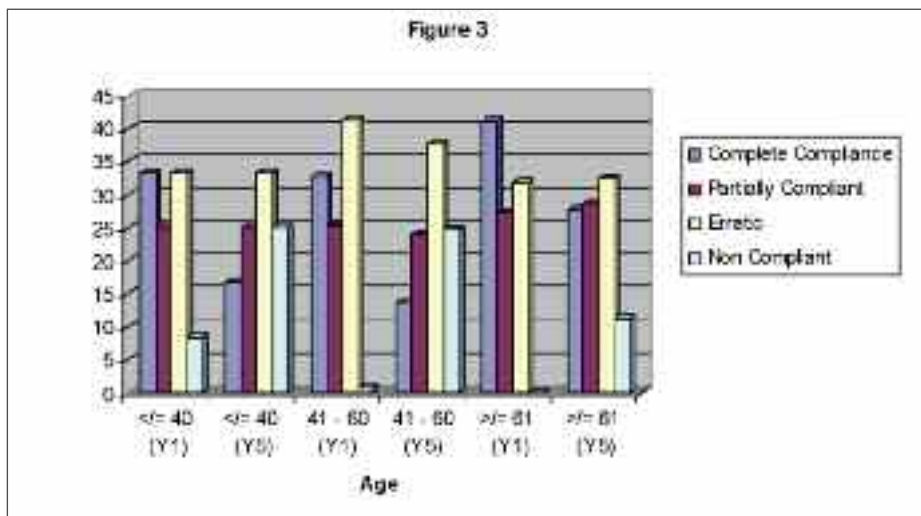


Figure 3: Cumulative percentage of patients who attended SPT over the 5 year study compared together with age.

throughout the study. After year one 38.30% of males and 34.97% of females showed complete compliance. After five years the same trend continued with 24.11% males in complete compliance compared to 17.79% females (Figure 2).

Older patients had a higher tendency to adhere to the SPT programme compared to young patients, with a significant difference between the ≤ 40-year age category and the ≥ 61-year age category in year 5 (Figure 3). The ≥ 61 year age category had the best complete compliance rate of all groups evaluated.

Compliance was evaluated in relation to the type of treatment performed. After the first year, 100% complete compliance rate was observed in treatment group A,

39.33 % in treatment group B and 34.74% in treatment group C. At the end of the five year period, attendance with the recommended SPT appointments in group A was equally distributed between the complete compliance group and partial compliance group. In subjects that had undergone surgical intervention, the complete compliance rate had declined by 15.02% to 19.72%, barely 1% better than the non-compliant category (Figure 4).

When comparing individuals by socio-economic status, skilled manual workers had the highest level of complete compliance and this tendency was consistent throughout the five-year period. Only 3.23% of pensioners were in complete compliance at the end of the five-year period (Figure 5).

The majority of individuals in our sample study presented with chronic periodontitis (98.20%). When compliance was related to the type of periodontal disease, higher levels of complete compliance was evident in individuals with chronic periodontitis (36.95%) than those with aggressive periodontitis (22.22%) after the first year. At the end of the five year period, individuals with chronic periodontitis had a complete compliance rate of 21.02% compared to 11.11% of individuals

with aggressive periodontitis (Figure 6).

A logistic regression analysis was conducted with compliance as dependent variable and predictor variables: gender, socio-economic, procedure and age, as well as the first order interactions gender * socio-economic and gender * procedure (Table 1).

The analysis showed that age was the only statistically significant predictor of compliance (p=0.047). The three age categories were subsequently compared pair-wise (Table 2). The two age categories 41-60 and ≥ 61 were the only two categories that differed significantly (p=0.0172), and individuals in the age category ≥ 61 years were significantly more compliant than individuals in the age category 41-60 years (OR = 1.884, CI = 1.119 – 3.172).

Discussion

Long-term studies of compliance with SPT demonstrate a trend of decreasing compliance as the observation period increases (Konig et al., 2001). Demetriou et al., (1995) found a compliance rate of 27.4% after 14 years, Konig et al., (2001) a 25% compliance rate after 10 years, Wilson et al., (1984), a 16% compliance rate after 8 years, Checchi et al., (1994) a 30% compliance rate after 5 years and Mendoza et al., (1991), a 36% compliance rate after 4 years.

In this study a cumulative complete compliance rate of 20.72%, after 5 years was observed. Complete compliance levels decreased steadily from the first to the fourth year (Figure1). This is less than the complete compliance levels achieved in other studies investigating SPT compliance rates (Demetriou et al., 1995; Konig et al., 2001; Wilson et al., 1984; Checchi et al., 1994; Mendoza et al., 1991).

Ojima et al., (2001) found that patients who have been compliant for the first two years of supportive periodontal care will remain compliant in the long term. However, in this study an 11.18% decline in complete compliance was observed from

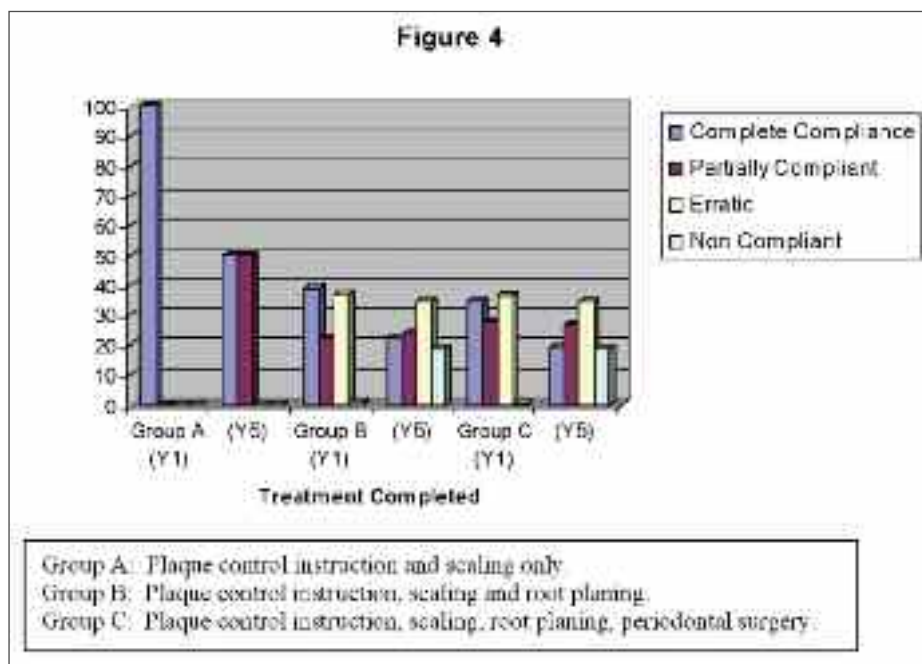


Figure 4: Cumulative percentage of patients who attended SPT over the 5 year study compared together with type of treatment carried out.

the second to the third year of SPT.

Ojima et al., (2001) further observed that an equal level of compliance existed between males and females. Demetriou et al., (1995) found that there was a tendency for females to be more compliant with their attendance than males, and suggested the reason may be that females were more concerned with their appearance. In addition, the fear of losing their teeth due to ongoing periodontal disease would motivate females to adhere more religiously to the SPT recommendations when compared to males. In this study although more females sought treatment for periodontitis than males, 24.11% of males achieved complete compliance at year five compared to

17.79% of females. This is in contrast to other reports in the literature (Novaes et al., 1999; Ojima et al., 2001).

A review of previous studies comparing the type of periodontal disease and compliance rates with SPT have shown contradictory results. Investigations carried out by Wilson and co-workers (1984), indicated that patients with mild periodontal disease adhered better to their recommended SPT appointments compared to patients with severe periodontal disease. On the other hand, Demetriou et al., (1995) demonstrated that patient compliance was independent of periodontal disease severity, and in a later study Novaes et al., (1996) showed that the highest percentage of individuals who

Table 2: Logistic regression analysis showing that age was the only statistically significant predictor of compliance

Logistic Regression Analysis for Year 5						
Contrast	Type	Row	Wald Chi-Square	Pr>ChiSq	OR	CI
Significant						
41-60 vs ≥ 61	EXP	1	5.6783	0.0172	1.884	1.119-3.172
Non-significant						
≤ 40 vs ≥ 61	EXP	1	1.3246	0.2498		
≤ 40 vs 61-60	EXP	1	0.0304	0.8617		

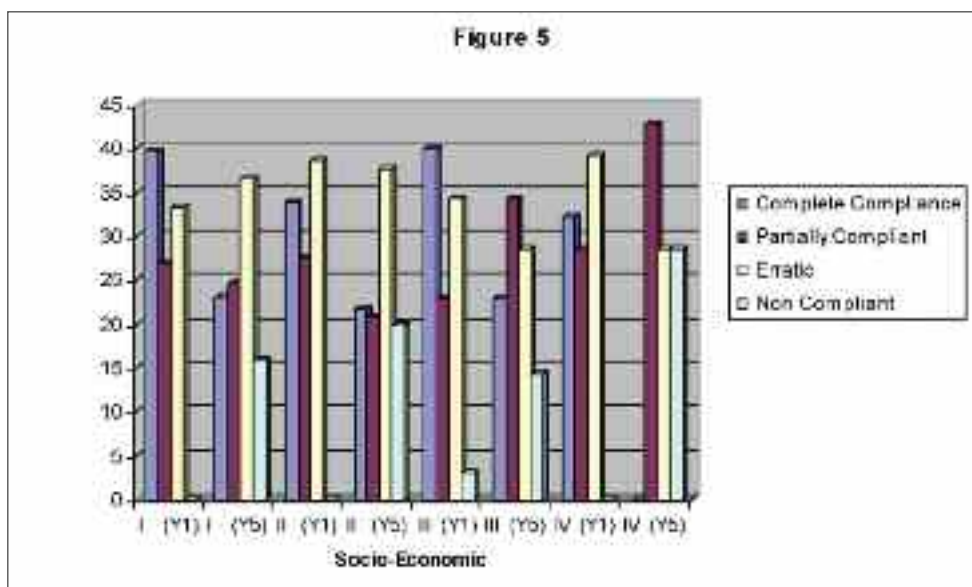


Figure 5: Cumulative percentage of patients who attended SPT over the 5 year study compared together with the socio-economic status.

did not adhere to their SPT programme, were those belonging to the group of patients presenting with early periodontal disease. In this study, individuals presenting with chronic periodontitis complied more favorably with their recommended SPT appointments than individuals with aggressive periodontitis.

The finding in this study, that individuals of ≤ 40 years were marginally more compliant with their recommended SPT appointments compared to the 41 to 60 year age group, was in contrast to other similar studies carried out (Mendoza et al., 1991, Novaes et al., 1999). However, the observation that age as a sole factor appears to contribute significantly to the compliance of patients in supportive care was in agreement with the study of Ojima et al., (2001).

Different trends between compliance with SPT and the type of periodontal treatment carried out have been reported. Wilson and co-workers (1984) observed over an eight-year study, that patients who received periodontal surgery tend to return more frequently for their supportive care when compared to those who only received non-surgical treatment. In contrast to these results, Demetriou and co-workers (1995) found that patients who had higher compliance rates were more likely to have received only scaling and root planing in their active periodontal treatment which is in agreement with this study. This differs from the perception that one would expect patients, who had endured painful surgery, put more time, effort and financial resources into surgical treatment, to be more compliant (Demetriou et al., 1995).

Various studies assessing compliance with supportive care have included socio-economic status as a factor contributing to

attendance with supportive care (Wilson et al., 1984; Mendoza et al., 1991; Demetriou et al., 1995). The expense of SPT treatment has been suggested as an obstacle to long-term compliance. According to Mendoza et al., (1991), 60% of patients considered SPT too expensive, and Wilson et al., (1984) demonstrated that patients belonging to a high socio-economic group with tertiary education were more compliant. In contrast, in this study, skilled manual workers belonging to a lower socio-economic level demonstrated a marginally higher compliance rate than individuals belonging to a higher socio-economic group.

At present, SPT is the only treatment modality available to ensure that the success obtained by active periodontal treatment is maintained, and that any further disease progression is intercepted in time, and treated appropriately. Observations from various studies over the last three decades have all revealed the importance of supportive periodontal therapy in maintaining periodontal health and the inevitable failure or less than favorable outcomes in its absence (Axelsson and Lindhe, 1981a; Becker et al., 1984; Cortellini et al., 1994, 1996). However, in spite of this, only a minority of patients comply fully with SPT programmes.

Conclusion

At the end of this five-year retrospective study, only 20.72% of all patients in this study sample had achieved complete compliance. These results are in agreement with other studies confirming a poor complete compliance rate with supportive care in private periodontal practice.

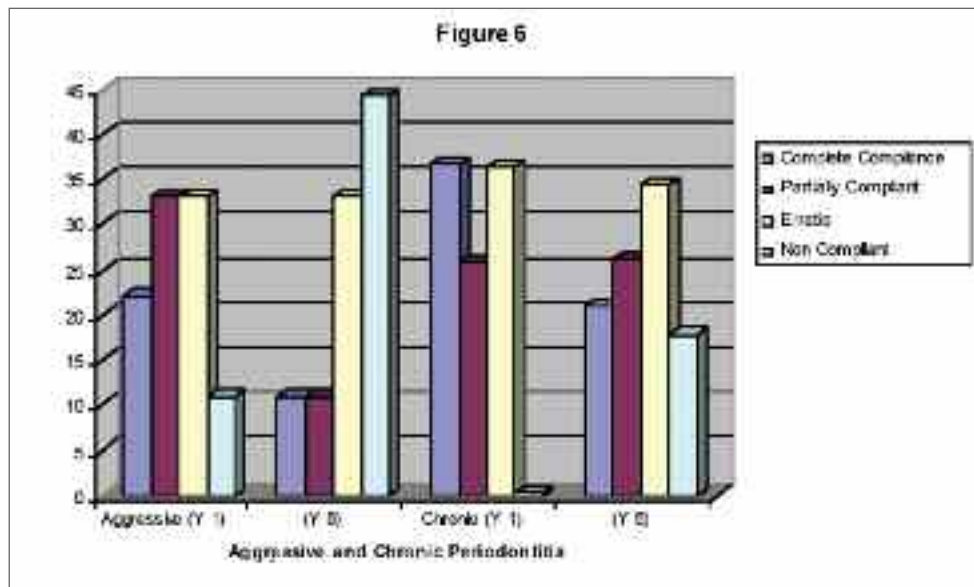


Figure 6: Cumulative percentage of patients who attended SPT over the 5 year study compared together with the diagnosis.

Further encouragement and motivation of patients and improvement of the clinician – patient relationships are needed in order to maintain appropriate compliance rates. Research into patient characteristics, behavioral traits and distribution of information are required to improve the poor attendance that presently exists amongst individuals attending private periodontal practices.

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