

Original Research Article

Evaluation of the effect of various factors on patient compliance among patients visiting Govt. Dental College and Hospital, Srinagar

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Abstract

Background: Patient compliance plays a decisive role in the outcome of periodontal therapy. Although a number of reports have studied patient compliance and its variables during supportive periodontal therapy, there is a paucity of literature on factors affecting compliance to active periodontal therapy. Moreover, as health beliefs largely stem out of social/religious/ethnic convictions, population specific compliance studies are highly relevant. It is foreseeable, that early identification of compliance-affecting variable will enable institution of a timely and personalized patient education/ motivation programme.

Aim: To elucidate factors which affect patient compliance during active periodontal therapy in patients visiting Government dental college and hospital, Srinagar.

Materials and methods: 150 patients were included in the study for performance of active periodontal therapy (scaling and root planing) over 3-5 visits every 5 days. They were subjected to pre-validated questionnaire to assess their sociodemographic factors, oral health awareness (OHA) and treatment satisfaction (TS).

Results: Sociodemographic factors (education, employment and gender), OHA and most of all TS were found to influence patient compliance in the given population.

Conclusion: Certain sociodemographic factors have a bearing on patient compliance and may be assessed as predictors of compliance to therapy. As treatment satisfaction has a profound effect on the patient's willingness to return for treatment, it should be an objective of the overall clinical practice.

Pertinently, the crucial role of the periodontist in patient education and management should be realized and utilized to achieve predictable compliance.

Key words

Compliance, Active periodontal therapy, Sociodemographic factors, Treatment satisfaction.

Introduction

Compliance (also called adherence [1] and therapeutic alliance [2]) has been defined as “the extent to which a person’s behaviour coincides with medical or health advice” [3]. With regard to periodontics, patient compliance with oral hygiene maintenance and recall are decisive to the outcome of treatment [4]. In fact, the degree to which a given patient complies with oral hygiene instructions is of more importance than the choice of any special treatment method [5, 6]. In this regard, much attention has been given to identify the variables that affect compliance, especially during the phase of supportive periodontal therapy [7, 8, 9], and a number of factors such as social, behavioural, cultural and economic factors as well as personality traits have been identified as determinants of the compliance pattern during periodontal maintenance [10, 11]. In addition factors such as a patient’s age, gender, type of treatment and treatment satisfaction have been also shown to affect compliance [12, 13].

However, instead of the maintenance phase, it is foreseeable that identifying likely non-compliant patients at an earlier stage of initial therapy, and putting measures in place to secure their return would improve the outcome of periodontal treatment and subsequently the patient’s periodontal health. There are limited studies on compliance of patients after active periodontal therapy; there is a paucity of literature on factors which affect the compliance of patients and the role of periodontist on improving the compliance of patients [14]. Moreover, as most of these factors vary largely due to cultural and ethnical variations between communities, an elucidation of factors affecting compliance in different communities is crucial to understand and modulate the treatment approach.

Therefore, the present study was designed, with the aim of identifying the factors affecting compliance in patients visiting Government Dental College and Hospital in Srinagar, Jammu and Kashmir. Should this elucidation be made, then periodontal care could be more appropriately tailored to the individual. Greater emphasis could then be placed on those likely non-compliers towards motivation and appointment upkeep to maintain compliance during the critical phases of active and supportive periodontal therapy.

Materials and methods

A total of 150 consecutive patients visiting the Out Patient Department, Department of Periodontics, Govt. Dental College and Hospital, Srinagar, diagnosed with generalized (>30 % sites) mild to moderate chronic periodontitis were recruited in the study after fulfilling the inclusion criteria and obtaining written consent.

Inclusion criteria

- Patients requiring minimum of three appointments for consecutive periodontal therapy
- Age range of 22–55 years.
- Systemically healthy patients.

Exclusion criteria

- Patients on any medications within the last 6 months which may exert any effect on gingival health and bleeding.
- Patients with systemic diseases.
- Patients not willing to participate in the study.

Methodology

The study protocol was reviewed and approved by the institutional review board. Treatment regimen for the selected patients consisted of

scaling in the first visit and root planning in the second and third visits. All consultation and procedures were performed by a single operator. The patients were recalled 3-5 times for follow-up every 15 days and then subjected to a pre-validated questionnaire [15, 16]. Statistical analysis was done using mean, percentages, and Spearman's correlation coefficient.

The questionnaire comprising of 30 questions was designed based on the dental visit satisfaction scale by Corah, et al. [15]. The first 4 questions concentrated upon the sociodemographic data and enquiring the reason of visit, next 4 on the patients' oral awareness, 17 on the level of patients' TS, and last 5 on the reasons for noncompliance.

Questions on oral awareness had graded variables such as very important, moderately important, and not important. Scores of 3, 2, and 1 were given to every question according to the choices made. Sum of values secured by every patient at the end of these questions was calculated. This was recorded as OHA score.

From the questions on level of satisfaction achieved by the patients after undergoing periodontal treatment, 12 had graded variables from never, most of the times, sometimes, and always. Scores of 1, 2, 3, and 4 were given to those questions according to the choices made. The score obtained was recorded as TS score.

Questions on compliance enquired as to whether the instructions were followed, and whether any appointments were missed by the patient. These had variables such as never, sometimes, and always. Scores of 1, 2, and 3 were allotted as per the choices made. Number of missed appointments and reasons for noncompliance was acquired from the rest two questions.

The data were collected, tabulated, and analyzed using SPSS version 17.0. Statistical analysis was done using mean and percentages. The effect of OHA score and TS score with missed appointments was calculated using ANOVA.

Correlation between OHA score and number of missed appointments and TS score and number of missed appointments was calculated using Spearman's correlation coefficient.

Results

A total of 150 patients were included into the study of which 78 were females and 72 were males with a mean age of 39 years. 49 were uneducated, 23 with secondary education, and rest 73 were graduates. **Table - 1** presents the mean number of missed appointments as related to education. **Table - 2** represents the mean OHA scores. The question-wise mean of treatment satisfaction score is presented in **Table - 3**. **Figure - 1** shows the number of missed appointments as plotted against OHA scores. The difference in both cases was found was statistically significant ($P < 0.001$). **Figure - 2** shows the TS scores plotted against the mean number of missed appointments. The correlation between the OHA score and number of missed appointments was -0.54 ($P < 0.001$) and TS score and number of missed appointments was -0.44 ($P < 0.001$). The mean number of missed appointments in questions related to noncompliance was presented in **Table - 4**. Various reasons of noncompliance are represented in **Figure - 3**.

Table - 1: Patient socio-demographic data.

Education	No. of patients	Mean no. of missed appointments
Uneducated	49	1.8
Secondary Education	23	1.7
Graduate	78	2.1
Occupation		
Unemployed	58	1.1
Self-employed	42	0.8
Government/Private employee	50	2.2
Gender		
Male	72	1.5
Female	78	1.9

Question No.		Mean Score
05	Importance of oral health in general health	2.9
06	Importance of tooth-brushing	2.7
07	Importance of cleaning between teeth	2.2
08	Your concern for gum disease	2.1

Question No.		Mean Score
09	Was treatment atmosphere calm	3.4
10	Did the dentist understand your problem	3.6
11	Was sterilization followed	3.5
12	Was the dentist careful with instruments	2.9
13	Did the dentist minimize pain	2.8
14	Did the dentist check and record everything	3.3
15	Was the dentist efficient (did maximum in one appointment)	3.7
16	Did the dentist minimize unnecessary expense	3.8
17	Did the dentist work gently	3.1
18	Was your main problem solved	2.9
19	Were you given adequate information	3.5
20	Were you treated respectfully	3.8
21	Dentist was not in a hurry	3.1
22	Did you understand the instructions given to you	3.4
23	Was it easy to get an appointment	3.6
24	Was appointment time adhered to by dentist	3.7
25	Did the dentist answer your questions	2.8

Question No.		Mean Score
26	Did you follow the instructions given to you	1.8
27	Did you miss any appointment	1.6
28	How many appointment did you miss	1.6

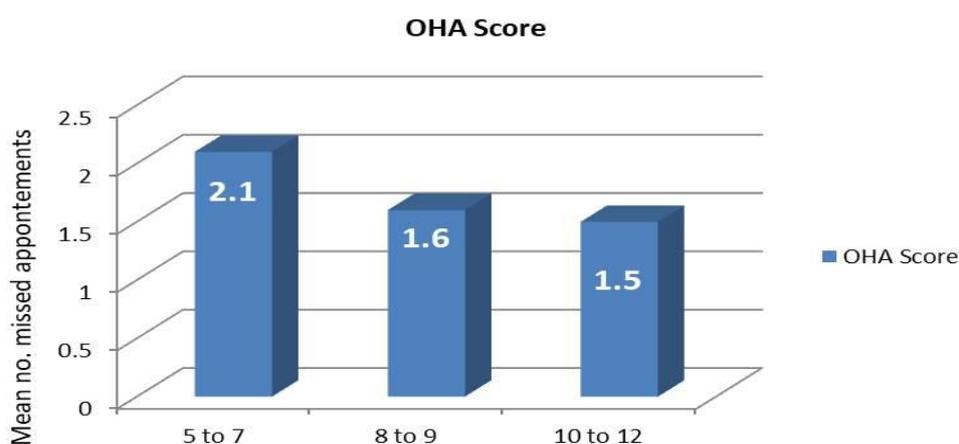


Fig. 1 OHA Score plotted against mean number of missed appointments

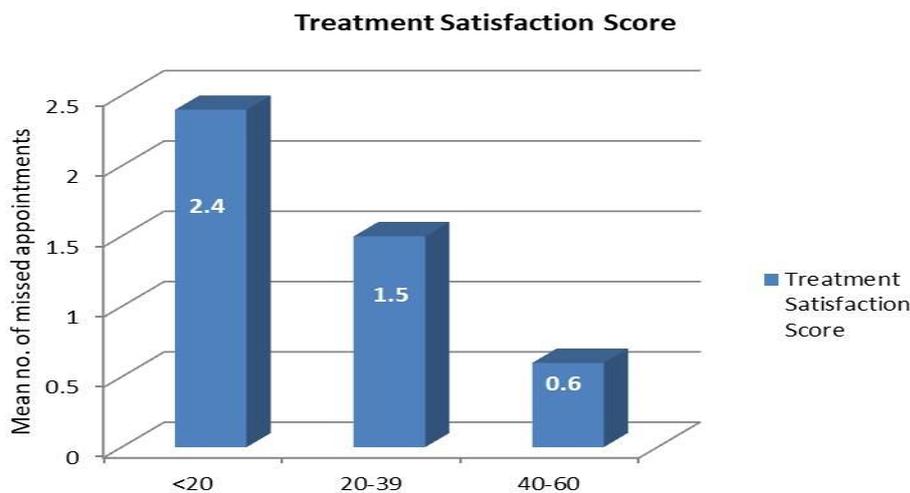


Fig. 2 TS Score plotted against mean number of missed appointments

Reasons for missed appointment

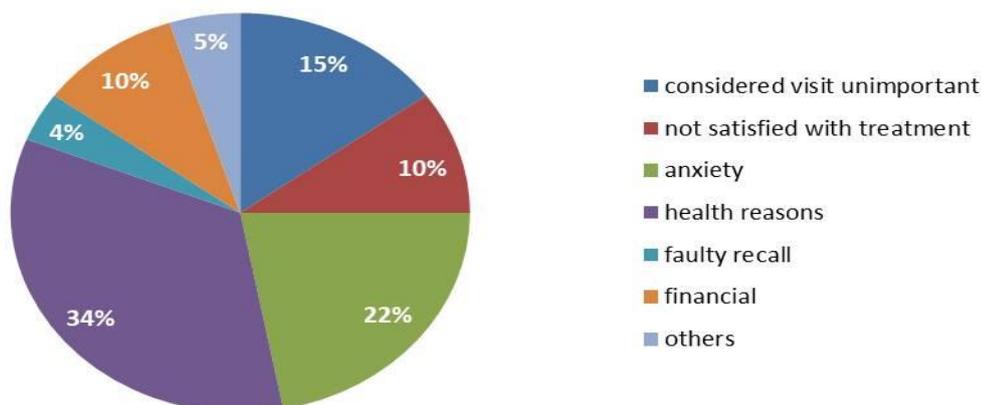


Figure – 3: Reasons for missed appointment

Discussion

The present study elucidates role of various factors on patient compliance during initial periodontal therapy, among patients visiting Government Dental College and Hospital, Srinagar. Being a central referral institute of the state, patients visiting the institution were considered to be representative of the general population. To the best of our knowledge this represents the first such report for the said community.

With regard to effect of sociodemographic factors i.e., education, urban/rural background, age, occupation and gender, it was found that

education had the most pronounced effect on patient compliance for therapy. People with secondary school level of education turned up most regularly for their appointments, whereas, graduates and uneducated people had comparable number of missed appointments (**Table - 1**). This is contrasted by results obtained by Shah, et al. [14], who found better compliance with enhanced education. Such results can be attributed to the increased strife for employment in the present study population [17], hence the inability to return for appointments during working hours. Moreover, self-employed people showed better compliance as compared to those

employed in the government or private sector (**Table - 1**), which can be similarly attributed to a priority for professional engagements. As periodontal disease is a chronic condition and its signs and symptoms are not considered alarming, patient's perception of the importance of treatment needs to be modified. Hence, the present study highlights the dire need for periodontal health education in this study population.

When considering gender as a potential predictive indicator of compliance, a review of the literature suggests that it is an unreliable predictive parameter with some studies showing females to be more compliant [18, 19], while others show no significant relationship [9]. In contrast to those previous findings, this study showed males to be slightly more compliant, as also reported by Perrel-Jones and Ireland [13]. It is likely that cultural influences, i.e., the present being a male-dominated society, play a role in the attendance of female patients for multiple recall visits. Here again the role of collective health education and motivation is underscored, which the periodontist can potentially deliver to achieve satisfactory compliance. Overall, certain sociodemographic features, i.e., education, employment and gender were found to be of implication in patient compliance, and may provide cues for the identification of potential non-compliers and initiating an early and personalized patient education-motivation regimen. In fact, it has been proposed that the socioeconomic status of the patient may dictate the best methods for improving compliance [20]. Patients of lower status may be influenced by monetary enticements, whereas higher-status patients are more apt to be motivated by education, exercise of practitioner authority, discussion and persuasion [21].

Oral hygiene awareness of the patients was assessed by questions on the perceived importance of oral health and hygiene, including interdental cleaning. It was found that irrespective of their compliance, all patients agreed oral health to be indispensable for general

health, and approved of the importance of regular tooth-cleaning. However, the concept of gum disease and its prevention was incoherent, as was the relevance of interdental cleaning (**Table - 2**). Pertinently, number of missed appointments was also higher in groups unaware of the importance of gum health and proper oral hygiene (**Figure - 1**). This emphasizes the relevance of reshaping oral health behaviours in a population apparently aware of the importance of oral health. Similar observations and recommendations for the Indian population were made by Shah, et al. [14].

Satisfying patients should be a key task for all dental providers and patient satisfaction has been shown to influence compliance and success of treatment [22]. Satisfaction after periodontal therapy varies from one person to another and may depend on various factors like disease severity and attitude of the individual [23]. In the present study, treatment satisfaction was found to be the most important variable influencing patient compliance, as reflected by the significant negative correlation found between TS and number of missed appointments (**Figure - 2**). Of all the assessed variables, patients seemed to value the experience of being treated respectfully, and minimization of 'unnecessary' expenses, in addition to adherence to proper sterilization protocol, and 'maximum' utilization of the appointment time (**Table - 3**). In a similar study by Shah, et al. [14], it was found that patients were most satisfied with the adherence of clinical personnel to sterilization protocol. It is known that having a good relation with and having confidence in the caregiver are major factors that influence treatment satisfaction [22]. Hence a good interpersonal approach and apt practice and behaviour management are important cruxes of improving treatment satisfaction and patient compliance.

Among the various reasons for non-compliance enquired for in this study, the most stated reason for missed appointment was ill health (**Figure - 3**). Other major reasons included anxiety, and perceived unimportance of the treatment (**Figure - 3**). Fear of dental treatment is an established

reason for noncompliance [24, 25]. Several approaches have been suggested to diminish this concern. Included are the use of relaxation and symbolic modelling [26], group education [27] or videotapes [28] for fear reduction, and changing the behavior of dentists toward patients [29]. The latter suggests that a system using positive reinforcement of good behaviour in children helps to improve compliance and alleviate fear. Expense could have had a bearing on lack of compliance in this study. Expense can be a disincentive in the treatment of chronic disease, as the perceived benefit of treatment is not always obvious to a patient, leading to a sense of a lack of 'value for money' [30]. This belief can be modified by proper education, motivation, and

reminders/incentives for maintaining appointments [20]. Moreover, reducing the complexity of the regimen and increasing patient's involvement in the decision making related to the treatment can be helpful in improving the patients' attitude toward the therapy [20]. Thus, the role of the periodontist is central in improving patient compliance.

Based on the present findings, a model for factors affecting patient compliance is proposed (**Figure - 4**), which integrates variables acting at multiple levels (periodontist, nature of treatment, patient) that can be identified at the outset, and modified to optimize compliance throughout treatment.

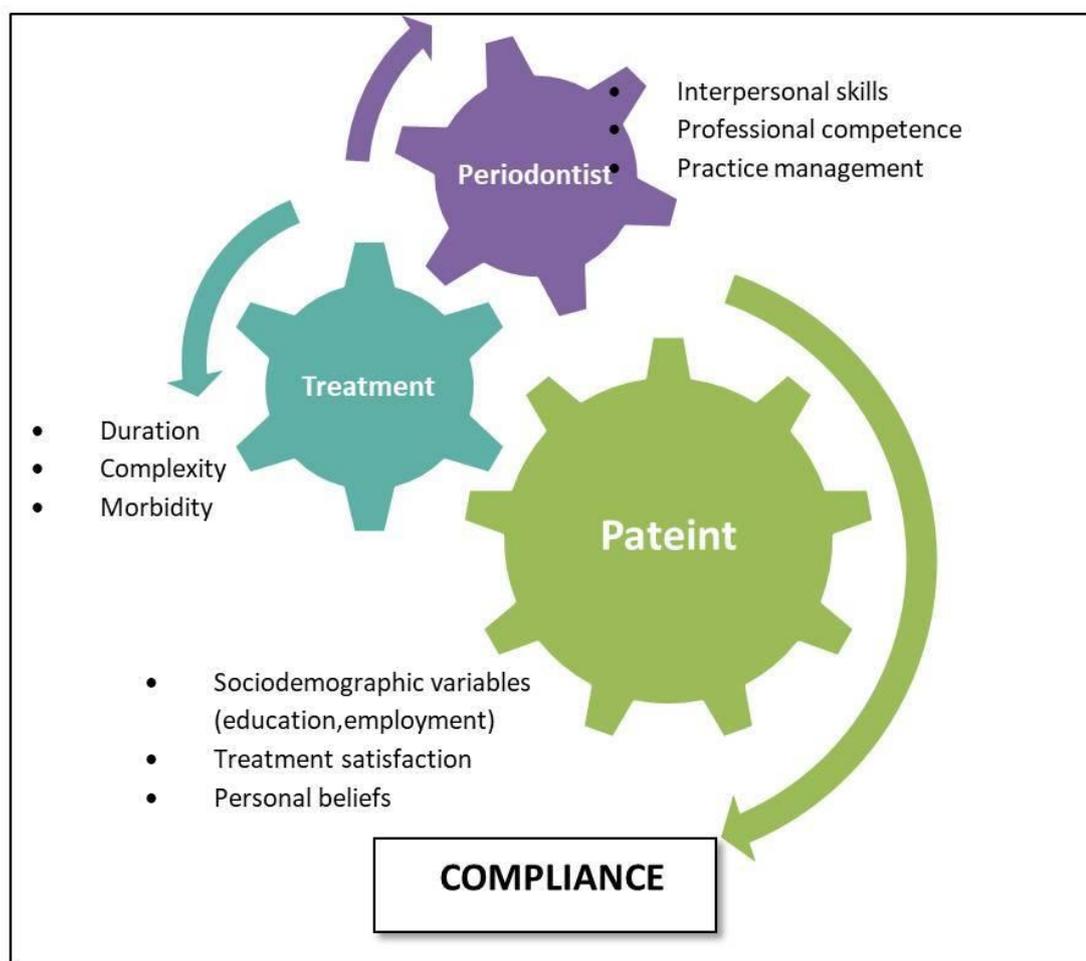


Fig. 4- Factors affecting patient compliance

Conclusion

Based on the findings of this study the following conclusions can be made:

- Sociodemographic factors, especially education and employment status can be potential predictors of non-compliant

patients, and should be identified prior to treatment, so that proper patient management can be instituted at the earliest.

- For the present study population, there is a dire need for widespread periodontal health education and motivation, which in turn can influence the perceived importance of periodontal therapy and optimize compliance.
- Achieving treatment satisfaction should be considered an objective of clinical practice and should be accomplished through multifactorial modulation.
- To this end, proper practice and patient management skills should be imparted to clinicians, in addition to upkeep of professional medical ethics.
- The evaluation of population specific factors that influence patient compliance is beneficial to enable early identification and tailored modification of potential 'non-compliance' indicators.

References

1. Turk D, Salovey F, Litt M, Gerber K, Nehenkis A, ed. Compliance - the dilemma of the chronically ill. New York Springer Publishing Co., 1986.
2. Barofsky I. Compliance, adherence and the therapeutic alliance: steps in the development of self care. *SOC Sci Med.*, 1978; 12: 369-376.
3. Haynes R. A critical review of the "determinants" of patient compliance with therapeutic regimes. In: Sackett D, Haynes R, ed. Compliance with therapeutic regimes. Baltimore: Johns Hopkins University Press, 1976.
4. Merin RL. Supportive periodontal therapy. In: Newman MG, Takei HH, Klokkevold PR, Caranza FA, editors. *Clinical Periodontology*. 10th edition, Saunders Elsevier India Pvt., Ltd.; 2007, p. 1194-205.
5. Rosling B., Nyman S., Lindhe J. The effects of systematic plaque control on bone regeneration in infrabony pockets. *J Clin Periodontol.*, 1976; 3: 38.
6. Ramfjord S. P., Morrison E. C, Burgett, et al. Oral hygiene and maintenance of periodontal support. *J Periodontol.*, 1982; 53: 26.
7. Fardal O. Interviews and assessments of returning non-compliant periodontal maintenance patients. *J Clin Periodontol.*, 2006; 33: 216–220.
8. Mendoza A R, Newcomb G M, Nixon K C. Compliance with supportive periodontal therapy. *J Periodontol.*, 1991; 62: 731–736.
9. Delatola C, Adonogianaki E, Ioannidou E. Non-surgical and supportive periodontal therapy: Predictors of compliance. *J Clin Periodontol.*, 2014; 41: 791–796.
10. Lorentz T. C., Cota L. O., Cortelli J. R., Vargas A. M., Costa F. O. (2009) Prospective study of complier individuals under periodontal maintenance therapy: analysis of clinical periodontal parameters, risk predictors and the progression of periodontitis. *Journal of Clinical Periodontology*, 2009; 36: 58–67.
11. Costa F. O., Miranda Cota L. O., Pereira Lages E. J., Vilela Camara G. C., Cortelli S. C., Cortelli J. R., Costa J. E., Medeiros Lorentz T. C. Oral impact on daily performance, personality traits, and compliance in periodontal maintenance therapy. *Journal of Periodontology*, 2011a; 82: 1146–1154.
12. Famili P., Short, E. Compliance with periodontal maintenance at the University of Pittsburgh: retrospective analysis of 315 cases. *General Dentistry*, 2010; 58: 42–47.
13. Perrell-Jones C, Ireland RS. What factors influence patient compliance with supportive periodontal therapy in a general practice setting? *British Dental Journal*, 2016 Dec; 221(11): 701.
14. Shah R, Thomas R, Bhandari S, Mehta DS. Influence of various factors on

- patient compliance after periodontal therapy: A pilot study. *J Indian Soc Periodontol.*, 2017; 21: 50-4.
15. Corah NL, O'Shea RM, Pace LF, Seyrek SK. Development of a patient measure of satisfaction with the dentist: The dental visit satisfaction scale. *J Behav Med.*, 1984; 7: 367-73.
 16. Sakalauskiene Z, Maciulskiene V, Sertvytyte A. Testing of the questionnaire on dental care satisfaction in a sample of adult patients visiting dental clinics at faculty of odontology, kaunas university of medicine. A pilot study. *Stomatologija*, 2005; 7: 84-9.
 17. Khan BA. Unemployment and Employment Pattern in Jammu and Kashmir: A Case Study of Kupwara District. *International Journal of Educational Research and Technology*, 2013; 4(1): 79-89.
 18. Novaes A B. Compliance with supportive periodontal therapy. Part 1. Risk of non-compliance in the first 5-year period. *J Periodontol.*, 1999; 70: 679-682.
 19. Demetriou N, Tsami-Pandi A, Parashis A. Compliance with supportive periodontal treatment in private periodontal practice. A 14-year retrospective study. *J Periodontol.*, 1995; 66: 145-149.
 20. Wilson Jr TG. Compliance and its role in periodontal therapy. *Periodontology*, 1996 Oct; 12(1): 16-23.
 21. Davis F. Compliance structures and the delivery of health care: the case of dentistry. *SOC Sci Med.*, 1976; 10: 329-333.
 22. Mårtensson C, Söderfeldt B, Axtelius B, Andersson P. Expectations and satisfaction with care for periodontal specialist patients. *Acta Odontologica Scandinavica.*, 2013 Jan 1; 71(3-4): 799-806.
 23. Pjetursson BE, Karoussis I, Bürgin W, Brägger U, Lang NP. Patients' satisfaction following implant therapy: a 10 year prospective cohort study. *Clinical oral implants research*, 2005 Apr; 16(2): 185-93.
 24. Klepac R. Successful treatment of avoidance of dentistry by desensitization or by increasing pain tolerance. *Behav Ther Exp Psychiatry*, 1975; 6: 307-314.
 25. Gatchel R, Ingersoll B, Bowman L, Robertson MC, Walker C. The prevalence of dental fear and avoidance: a recent survey study. *J Am Dent Assoc.*, 1983; 107: 609-610.
 26. Wroblewski P, Jacob T, Rehm L. The contribution of relaxation to symbolic modeling in the modification of dental fears. *Behav Res Ther.*, 1977; 15: 113-115.
 27. Gatchel R. Effectiveness of two procedures for reducing dental fear: group administered desensitization and group education and discussion. *J Am Dent Assoc.*, 1980; 101: 634-637.
 28. Gatchel R. Impact of a videotaped dental fear reduction program on people who avoid dental treatment. *J Am Dent Assoc.*, 1986; 112: 218-221.
 29. Melamed B, Bennett C, Jerrell G, et al. Dentists' behavior management as it affects compliance and fear in pediatric patients. *J Am Dent Assoc.*, 1983; 106: 324-300.
 30. Mendoza A R, Newcomb G M, Nixon K C. Compliance with supportive periodontal therapy. *J Periodontol.*, 1991; 62: 731-736.