

# Evaluation of level of satisfaction in orthodontic patients considering professional performance

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## Abstract

**Objective:** Considering the increasing professional concern in conquering new patients and maintaining them satisfied with treatment, this study aimed to evaluate the level of satisfaction of patients in orthodontic treatment, considering the orthodontist's performance. **Methods:** Sixty questionnaires were filled out by patients in orthodontic treatment with specialists in orthodontics, from Curitiba, Paraná State, Brazil. The patients were divided into two groups. Group I consisted of 30 patients which considered themselves unsatisfied and changed orthodontists in the last 12 months. Group II consisted of 30 patients which considered themselves satisfied, and were in treatment with the same professional for at least, 12 months. **Results and Conclusion:** After statistical analysis, using the chi-square test, it was concluded that the factors statistically associated to patient's level of satisfaction considering the orthodontist's performance were: professional degree, professional referral, motivation, technical classification, doctor-patient personal relationship and interaction. For orthodontic treatment evaluation, the factors that determined statistical differences for patients' level of satisfaction were: the number of simultaneously attended patients and the integration of the patients during the appointments.

**Keywords:** Patient satisfaction. Orthodontics. Professional-patient relationship.

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## INTRODUCTION

Considering the growing concern of professionals in acquiring new patients and keeping them satisfied with the carried out orthodontic treatment this study aimed to identify the main factors responsible for the satisfaction of patients in treatment in relation to professional performance.

In orthodontics, there is emerging interest in the study of patient expectations and satisfaction.<sup>25</sup> However, it is difficult to quantify them, due to the need of evaluating patients' opinions and to the long-term nature of orthodontic treatment, and the results which involve complex functional and aesthetic components. What then would be the patients' perceptions that would influence their satisfaction with orthodontic treatment and also with the professional's performance? This is an important issue to unravel the psychological universe of the patient, responsible for his/her integration or not to the clinical environment.

According to Bos et al<sup>6,7</sup> professionals agree on the importance of gaining and maintaining patient's cooperation to ensure treatment success. When the patient's expectations are not understood, there may be dissatisfaction, loss of motivation and even giving up orthodontic treatment.<sup>14</sup> Was the professional / patient relationship the most important motivating factor to ensure patient satisfaction?

For Sinha et al,<sup>29,30</sup> the lack of professional efficiency in exposing the problems inherent to the case could lead to a mismatch of information. Professionals should focus more on the quality of care, their personalities, their attitudes and professional competence, so that at the end of orthodontic treatment, the objectives achieved would be the patient's personal satisfaction and the orthodontist's professional satisfaction.<sup>2,3</sup>

When a professional acts calmly, assuring safety to the patient, he/she will rely on the chosen

professional. It is necessary to provide adequate information about treatment, show interest in helping the patient to gain his/her satisfaction.<sup>6</sup>

## Orthodontics and Quality of Life

Orthodontic treatment, more than improving the quality of life, can bring physical, psychological and social changes.<sup>5,12,17</sup> Few studies explore such issues, as well, as the pain and discomfort that may occur during treatment, and how it may affect patients' quality of life. A better understanding of the impact of orthodontic treatment on quality of life is important for many reasons.<sup>23</sup>

According to Zhang et al,<sup>33,34</sup> when patients are aware of the treatment consequences, such as discomfort, they develop more realistic expectations, which may help them to encourage cooperation during treatment. In addition, the patient can make a more detailed analysis of the benefits and effectiveness of orthodontic treatment.<sup>8</sup>

## Professional / Patient relationship

The dialogue with the patient favors the understanding of their reactions during orthodontic treatment. To this end, the professional should try a variety of strategies to achieve the desired level of patient cooperation.<sup>13,18,19-22</sup> For Turbill et al,<sup>31</sup> the treatment goals should be detailed to motivate patients and to avoid patient dissatisfaction. The professional should use a vocabulary that can be understood by patients and their caregivers.

Thus, in this study, using a questionnaire, the factors related to the level of satisfaction of patients in orthodontic treatment were determined, in relation to the orthodontist and the treatment itself.

## MATERIAL AND METHODS

There were few professionals who allowed the use of the questionnaire to their patients in Curitiba (Paraná State, Brazil): In average 35

patients were interviewed for each professional. Other professionals were interviewed, but did not allow access to their patients. In this way, three hundred and twenty questionnaires filled out by patients in orthodontic treatment starting at 16 years of age, in Curitiba were analyzed. This age limit was determined due to the capacity to formulate questions and patient maturity in this study. The maximum age of sample participants was 43 years and the mean age of patients was 28 years.

Patient choice to answer the questionnaires was random, in the office of ten specialists in orthodontics, which allowed access to their patients. Among professionals, participants were six male and four females. For a better understanding of the results, the questionnaire was divided into two parts (Table 1):

- » Assessment regarding the professional—a total of eleven questions that were related specifically to the analysis of the patients interviewed in relation to the professionals who treated them. At no time any comment from the interviewer was performed about the professional.
- » Assessment regarding orthodontic treatment—a total of six questions that were related to the expectations and guidance of orthodontic treatment by the clinician. To ensure confidentiality of the sample components, questionnaires were delivered in an envelope without any identification and sealed after completion.

### Sample

For analysis and comparison of results, the sample was divided into two groups:

- » GROUP 1 (dissatisfied): Included 30 patients who considered themselves dissatisfied with the performance of the professional who did the previous treatment, and for this reason they moved to another professional. These patients answered the

questionnaire in accordance with the professional and prior treatment. No reference was made to the current treatment. This group included 18 females and 12 males, ages ranged from 16 to 40 years.

- » GROUP 2 (satisfied): This group was initially composed of 290 patients in orthodontic treatment, but to obtain a statistical parity, invalid questionnaires were eliminated (filled out incorrectly or incompletely), and 30 questionnaires were randomly selected. These patients were undergoing orthodontic treatment for over a year with the same professional. In this group only patients satisfied with treatment participated. Those patients who were more than a year in treatment, but dissatisfied with the professional, did not participate of the sample. This group included 16 females and 14 males, ages ranged from 16 to 43 years.

### Data collection

The questionnaire allowed each patient to check one of three alternatives for each of the 17 questions. The patients filled out the questionnaire in the waiting rooms of orthodontics clinics. They were aware that the information collected was confidential (Consent Statement) and would be unavailable to anyone except to the researchers. The questions are presented in Figure 1.

### Statistical analysis

Descriptive analysis of data was presented with charts and graphs. To test the established hypothesis, the nonparametric test Chi-Square was used. The significance level was established at 5% (0.05).

### RESULTS

Tables 1 and 2 (evaluation on the professional) and 3 and 4 (evaluation in relation to orthodontic treatment) described the obtained results.

FIGURE 1 - Questionnaire given to patients.

Age: _____ Sex: _____	
1) Are you in orthodontic treatment for over a year?	a) yes b) no
2) Are you satisfied with the choice of your orthodontist?	a) yes b) no
3) Have you been transferred or changed your orthodontist in the last 12 months?	a) yes b) no
3.1) The transfer occurred because you were unhappy with the professional?	a) yes b) no
Answer the questions below according to your experience with your orthodontist. If you answered YES on question 3, answer according to your experience with the previous orthodontist	
4) What is the financial aspect that influenced your decision to choose the orthodontist?	a) high cost of orthodontic treatment b) low cost of orthodontic treatment c) the cost of treatment did not influenced
5) The environment of the office (waiting room, clinic) influenced the choice of orthodontist?	a) yes b) no
6) The title of the orthodontist (specialist, master or PhD), influenced the choice of the professional?	a) yes b) no
7) Would you recommend your orthodontist to your friends, relatives?	a) yes b) no
8) Who does your clinical care?	a) the orthodontist b) the assistants
9) Are you motivated by your orthodontist (hygiene, use of accessories)?	a) yes b) no
10) How do you rate the information that your orthodontist transmits to you?	a) educational b) punitive c) rude
11) How do you feel during the consultations?	a) integrated to the office environment b) not integrated c) do not care about this relationship
12) How many patients are treated simultaneously during their consultations?	a) one b) two c) more than two
13) Does your orthodontist recognize you by the name?	a) yes b) no c) sometimes
14) Have you had any financial problems with your orthodontist?	a) yes b) no
15) When you have any criticisms or suggestions to your orthodontist:	a) my orthodontist never accepts my criticism and suggestions b) I have no opportunity to make comments and suggestions c) I am free to make criticisms and suggestions
16) How do you rate your personal relationship with your orthodontist?	a) very good b) good c) poor
17) How do you rate your orthodontist technically?	a) good b) very good c) poor

TABLE 1 - Percentage distribution of study groups in relation to the professional.

DATA		GROUP 1 (dissatisfied) (n=30)		GROUP 2 (satisfied) (n= 30)		TOTAL (n=60)	
		NO	%	NO	%	NO	%
Satisfied with the professional's choice?	yes	0	0	30	100	30	50
	no	30	100	0	0	30	50
Transferred professional?	yes	30	100	0	0	30	50
	no	0	0	30	100	30	50
Influence of titles on professional choice?	yes	17	56.7	27	90	44	73.3
	no	13	43.3	3	10	16	26.7
Recommend the professional?	yes	0	0	30	100	30	50
	no	30	100	0	0	30	50
Are you motivated by the professional?	yes	9	30	26	86.6	35	58.3
	no	21	70	4	13.4	25	41.7
Information supplied	educational	17	56.7	23	76.6	40	66.6
	punitive	8	26.7	5	16.6	13	21.6
	rude	5	16.6	2	6.8	7	11.8
Professional recognize you by the name?	yes	21	70	28	93.3	49	81.6
	no	9	30	2	6.7	11	18.4
Existence of financial problem with the professional?	yes	11	63.3	3	10	14	23.4
	no	19	36.7	27	90	46	76.6
Criticisms or suggestions	The orthodontist never accepts	7	23.3	1	3.4	8	13.3
	I have no opportunity to present	18	60	4	13.3	22	36.7
	I have freedom to present	5	16.7	25	83.3	30	50
Relationship with the professional	very good	0	0	20	66.6	20	33.3
	good	4	13.3	10	33.4	14	23.4
	bad	26	86.7	0	0	26	43.3
Technical rating	good	12	40	18	60	30	50
	very good	2	6.7	12	40	14	23.3
	bad	16	53.3	0	0	16	26.7

TABLE 2 - Test result used in comparison of groups with respect to the professional.

Questions	Test result	Table value
Professional's titles	8.523	p<0.05
Would you recommend the professional	60	p<0.05
Do you feel encouraged?	19.817	p<0.005
The information transmitted	2.878	p>0.1
The professional recognizes the name	5.455	p>0.1
Had financial problems	5.962	p>0.1
The professional accepts criticism and suggestions	26.823	p<0.005
Personal relationship with the professional	48.571	p<0.005
Technical classification of professional	24.343	p<0.005

TABLE 3 - Percentage distribution of study group with respect to orthodontic treatment.

DATA	GROUP 1 (n=30)		GROUP 2 (n= 30)		TOTAL (n=60)	
	NO	%	NO	%	NO	%
Are you in orthodontic treatment for over a year?						
• yes	30	100	30	100	60	100
• no	0	0	0	0	0	0
Financial aspect that influenced the choice of professional						
• High cost of treatment	2	6.7	4	13.4	6	10
• Low cost of treatment	8	26.7	2	6.6	10	16.7
• The cost did not influence	20	66.6	24	80	44	73.3
The office environment has influenced the decision choice						
• yes	16	53.3	23	76.6	39	65
• no	14	46.7	7	23.4	21	35
How do you feel during consultations						
• Integrated to the environment	4	13.3	25	83.3	29	48.3
• not integrated	18	60	1	3.3	19	31.7
• doesn't care	8	26.7	4	13.4	12	20
How many patients are seen during the consultations?						
• one	5	16.7	16	53.3	21	35
• two	19	63.3	12	40.1	31	51.6
• more than two	6	20	2	6.6	08	13.4
Clinical work done by:						
• orthodontist	16	53.3	22	73.3	38	63.3
• dental assistants	14	46.7	8	26.7	22	36.7

TABLE 4 - Test results used in comparison of groups with respect to orthodontic treatment.

Questions	Test result	Table value
Cost of treatment	4.631	p>0.5
Office's environment	1.795	p>0.5
How do you feel during the consultations	31.750	p<0.005
How many patients are treated	9.343	p<0.05
Who does clinical care	2.583	p>0.1

## DISCUSSION

In discussing this study, the questions with statistically significant results were considered, analyzing and formulating plausible conclusions when comparing patients who

considered themselves satisfied, and patients who thought they were dissatisfied with the performance of the orthodontist. For a better use of data obtained in this study, the results were discussed in topics.

### Academic degrees

Regarding the academic degrees of the professional, statistically significant differences were observed between groups. More than half of the professionals chosen by the dissatisfied patients had an extensive resume. The results suggest that not only a large curriculum ensures patient satisfaction. Other factors are involved, especially the ability to have a good relationship with the patient.

According to Richter et al,<sup>24</sup> and the results achieved, another factor responsible for the patient to stay in treatment with the same professional is his/her satisfaction with the treatment. Valle<sup>32</sup> determined that patients value the professional expertise and are seeking information against being fooled by professionals without adequate training.

### Professional recommendation

Considering professional recommendation statistically significant differences were found between groups. Table 2 showed the distrust of patients who consider themselves unhappy, to recommend the professional to friends and relatives, doubting the benefits and results achieved by the treatment they could provide. On the other hand, it is clear that the patients who considered themselves happy would recommend the professional to friends and relatives. Thus, it is noted that patient satisfaction was also determined by the indication of the professional to friends and relatives. For Morgenstern et al,<sup>20</sup> a survey of students and teachers of orthodontics, the main referral source for patients are the patients themselves (89.3%).

### Nature of the provided information

Regarding the nature of the information provided, there were no statistically significant differences between groups. The majority of respondents in this study (both those who considered themselves satisfied as those who

considered themselves dissatisfied) claimed to have received educational information by the clinician. This means an average of great concern of professionals in guiding patients during orthodontic treatment.

The transmission of knowledge is an obligation of the professional, but according to our results, it is not a determinant of patient satisfaction. Patients prefer to receive educational information, which influenced the cooperation during treatment. Gerbert et al,<sup>15</sup> assessed professional qualities that patients value. The authors showed that the technical competence, friendliness, courtesy and ability to inform patients about procedures, were very well evaluated by patients.

### Patient care

One of the simplest characteristics of human relationships is the recognition of another person by name. In this study, the professional recognized most patients by name in both groups. This suggests that the professional / patient relationship is improving today, despite the presence of clinics that offer various professionals, in which the patient is treated by different people or in an environment where two or more patients are treated simultaneously.

Although no statistical difference was observed between groups, the numerical difference was seen in patients who thought they were dissatisfied. Almost a third of these patients reported that professionals do not recognize them by name. For Cruz and Cruz<sup>11</sup> probably this is due to the large turnover of patients present in these professionals' clinics, making difficult the task of differentiating them, especially when one considers the large clinics, which are currently booming. When patients realize that health professionals have forgotten his/her name, they become disappointed, less satisfied, and collaborate less with the instructions required. For Sinha et al<sup>29</sup> the psychological impact of a

dissatisfied patient may present itself through higher anxiety, less cooperation and eventually poor orthodontic results.

### **Financial aspect**

For most patients who consider themselves unhappy, the cost of treatment did not influence the professional's choice. Supposedly, for these patients, the professional choice could satisfy their aesthetic, functional and emotional needs, related to orthodontic treatment. However, most of these patients were not successful with the professional's choice, so they transferred to another specialist.

Informally, it is observed in clinical practice that patients with financial problems becomes disinterested in collaborating with the professional. Similarly, the orthodontist also is discouraged to give his utmost in the consultation. This ultimately compromises the outcome of orthodontic treatment.

Other factors such as failure to communicate with patients, lack of integration in the office setting due to little time for consultation or impatience of the professional, were probably responsible for the dissatisfaction and transfer of these patients. To Atta<sup>4</sup>, in orthodontics, the tendency is for professionals to treat more patients in less time and at a lower cost, but with favorable results to the professional and patient. The efficiency in clinical care allows the maximization of financial revenue to the professional.

### **Professional / Patient interaction**

Regarding the acceptance by the professional of criticism and suggestions, there were statistically significant differences between groups. In this study, among patients who thought they were dissatisfied, 60% had no freedom to express opinions and suggestions. This suggests a failure of communication that existed in more than half of the professionals who had transferred patients. This fact serves

to alert professionals to spend more time cultivating a personal relationship with the patient.

The present study showed that the ability to hear and accept patients' suggestions, plus the technical skill of the professional, was important in gaining patient satisfaction.

Chakraborty et al<sup>10</sup> studied the preferences of patients and determined that preferred professionals responded to questions from patients, asking about uncertainty, helping to overcome them. The communication skills were considered important in ensuring patient satisfaction. In this study, the ability of professionals to accept criticism and suggestions also was one of the determinants of patient satisfaction.

### **Patient's personal relationship with the professional**

Considering the personal relationship between patient and professional, statistically significant differences were found between groups. In the study, almost 90% of patients who thought they were dissatisfied (Table 1), had a bad relationship with the professional staff, and no patient reported having a very good relationship. These data suggest that patient satisfaction is strongly related to good personal relationship with the professional.

Abrams et al<sup>1</sup> determined that the patient does not realize that he is receiving a high-level treatment simply by observing the technical quality of the professional. The critical factor, an indicator of quality of care for the patient, is the psychological attention given to him (a good personal relationship with the professional and the patient).

### **Technical classification of professional**

Concerning the classification of the professional technique, statistically significant differences were found between groups. In this study, more than half of the patients who considered themselves unhappy classified the professional as technically poor, however, these patients



may have been influenced by other factors to make such a classification.

Often the lack of attention given to the patient, plus the difficulty in expressing his opinion regarding the treatment and sense of lack of adaptation during the consultations, can lead to this sort of professional classification. The technical classification of the professional was one of the determinants of patient satisfaction.

For Nanda and Kierl,<sup>21</sup> patients need to choose professionals who treat them with kindness, friendship and expertise. Burke and Croucher<sup>9</sup> conducted a patient survey to assess the criteria of good dental practice. The most important factors were determined by explanation of the procedures to the patient in the first place, sterilization and sanitation in second place and professional skills in third place. The factors that less influenced the patients were modern equipment and office setting (decor).

### Patient motivation

Considering the motivation of patients statistically significant differences were found between groups. In the present study, Table 2 showed that patient satisfaction in orthodontic treatment also depends on the motivation given by the professional. Among patients who considered themselves dissatisfied, 70% were not motivated. These professionals are not complying with their obligations, that are motivation, guidance and patient encouragement.

The importance of this factor was evident as a determinant of patient satisfaction, as nearly 90% of patients who considered themselves satisfied endorsed the actions of the chosen professionals.

The concern of the professional to ensure the welfare of the patient is vital to gain him. Sinha et al,<sup>29</sup> determined that when the professional does not motivate the patient, making negative criticism, he is negatively impacting on patient adherence to treatment.

### Integration of the patient during consultations

There were no significant differences between groups, considering the integration of patients during consultations. In this study, 60% of dissatisfied patients felt displaced during the consultations, which suggests that these professionals often performed automated procedures, not worried about clarifying the doubts and anxieties, maintaining a poor personal relationship, resulting in an unhappy patient.

Agreeing with Valle,<sup>32</sup> we observed that orthodontic patients are aware of what occurs in the clinic and are demanding on the quality and reliability of professionals in the area.

### Number of patients treated simultaneously

Considering the number of patients seen at the same time statistically significant differences were observed between groups. In this study, more than half of the patients who thought they were dissatisfied was served concurrently with another patient in the clinic, this seems to suggest that the lack of attention given to the patient, due to the extra volume of patients, also contributes to patient dissatisfaction. It was evident that one of the factors responsible for patient dissatisfaction is the lack of individual attention in attendance.

The patient demands attention, needs explanation about the progress of treatment, has doubts and insecurities that need to be addressed by the professional.

For Cruz and Cruz,<sup>11</sup> with the growing number of orthodontic offices with various dental chairs, the professional eventually raises the number of patients instead of the quality of care.

Thus, there is devaluation of the patient/professional involvement and patient satisfaction with the professional's performance. Orthodontic patients are demanding and require individual attention from professional, otherwise they seek another professional opinion.

### Office environment

Taking as reference authors as Hans and Valiathan,<sup>16</sup> we observed that in the absence of a manual for assessing the quality of orthodontic appointment, patients rely on the office setting, personality and his professional team to make the choice of the specialist, although the office environment is not one of the factors related to patient satisfaction in this study.

In this study, more than half of the dissatisfied patients said that the office atmosphere was important in the choice of professionals. These patients reportedly sought aesthetic, functional and psychological benefits, when choosing the professional, based in the office setting. However, their expectations were not recognized by these professionals, who have invested in decorating the environment, new equipment and devalued the cultivation of communication skills with patients, failing to encourage, motivate and answer their questions.

### Concluding remarks

Based on the results presented and discussed, it became evident that patients' satisfaction in relation to professional performance depends essentially on the good relationship with the

professional staff of the patient. When present, the good relationship ensured the integration of the patient in the clinical setting, settling patients' doubts, provides the referral of the professional to the patient's relatives and friends.

Professional success can be measured by the level of patient satisfaction, not only in relation to results achieved with changes of occlusion in a systematic and effective treatment, but also addressing expectations. The path to excellence is the knowledge accumulated over time applied in full, with willingness.

### CONCLUSIONS

With respect to this research, it was possible to draw the following conclusions:

- » The factors that were related to the level of patient in relation to the orthodontist, were: academic degree, professional referral, motivation, technical classification, professional/patient interaction and personal relationship with the patient.
- » Considering the factors related to the orthodontic treatment, those that presented significant differences were: number of patients treated simultaneously and integrating the patient during consultations.

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