

Patient Satisfaction with Orthodontic Treatment at MUHAS Dental Clinic

Linda Rubandwa¹, Ferdinand Machibya²

^{1,2}Department of Orthodontics, Paedodontics and Community Dentistry, Muhimbili University of Health and Allied Sciences, P.O.Box 65014, Dar es salaam, Tanzania

ABSTRACT

Background: Patient satisfaction is the measure of the extent to which a patient is content with the health care which they have received from their health care provider. The demand for orthodontic treatment is on the rise. Patient satisfaction is considered crucial for adherence to orthodontic treatment and is related to the stability of orthodontic treatment. **Objective:** The aim of this study was to evaluate the level of satisfaction among orthodontics patients with fixed and removable orthodontics appliances at MUHAS dental clinic. **Methodology:** A cross-sectional study was done at MUHAS dental clinic, data was collected and analysis was done by SPSS version 20.0. The study included patients undergoing orthodontic treatment using fixed appliances or removable orthodontics appliances. A sample size of 138 patients was required and convenience sampling procedure was used to get the study sample. A constructed questionnaire was used to collect data. **Results:** A total of 138 patients participated whose mean age was 24.56 ± 7.79 years with more females (53.6%) than males. The participants gave the highest satisfaction score to alignment of teeth (83.4%) and services by clinician (83.3%). There was a statistically significant association between patient satisfaction with age ($P < 0.001$), sex ($P < 0.05$), duration of treatment ($P < 0.05$), and type of appliance ($P < 0.001$). Patient satisfaction increased with duration of treatment. **Conclusion:** Factors that affect patient satisfaction with orthodontics treatment at MUHAS dental clinic include age and sex of patient, duration of treatment, type of appliance used by patient and patient doctor relationship. Patient satisfaction increased with duration of treatment.

Key words: Patient satisfaction, orthodontic appliances, orthodontic treatment.

BACKGROUND

Patient satisfaction is the measure of the extent to which a patient is content with the health care they received from their health care provider. Patient satisfaction embodies the patient's perceived need, expectations from the health system and experience of health care provider. This multi-dimensional concept includes both medical and non-medical aspects of health care. The literature review highlights

many factors that can affect patient satisfaction. These determinants can be either provider-related or patient-related. Some provider-related factors are physician's proficiency and interpersonal communication skills, behavior of hospital staff, access to care, basic facilities, and infrastructure. Patient-related factors include socio-demographic characteristics of patients, stage of their disease as well as patients' perception of a relationship, trust and feeling of being involved in decisions about their care^[1].

Address for correspondence:

Linda Rubandwa, Department of Orthodontics, Paedodontics and Community Dentistry, Muhimbili University of Health and Allied Sciences, P.O.Box 65014, Dar es salaam, Tanzania.

DOI: 10.33309/2639-8281.040105

© 2022 The Author(s). This open access article is distributed under a Creative Commons Attribution (CC-BY) 4.0 license.

Satisfaction of patients with orthodontic treatment is associated with gender, age, duration of orthodontic treatment, and an improvement in dentofacial appearance. Also, patient satisfaction is considered crucial for adherence to orthodontic treatment and is related to the stability of orthodontic treatment. Presently, there is an increased demand for orthodontic treatment in addition to high expectations for improved dentofacial appearance. Providing high standards of orthodontic treatment and achieving the highest satisfaction level should be a top priority of practicing dentists as these elements are critical to retaining the patients^[2].

It has been stated that orthodontic patients expect that the doctor-patient relationship is comfortable and warm, with a doctor who is technically competent and provides adequate information about the orthodontic problem and the procedures he or she will perform. When these expectations are not met, patients may be dissatisfied. This dissatisfaction may reduce patient compliance and eventually lead to a less than optimal orthodontic results^[3].

If malocclusions were established in the permanent occlusion, corrective treatment may be necessary. Such treatment requires removable or fixed orthodontic appliances^[4]. Removable orthodontic appliance is an appliance which can be taken out either by patient when required or for adjustment by orthodontist, while fixed orthodontics appliances cannot be removed by the patient^[5,6].

Several studies have been done to determine factors that affect the level of satisfaction among orthodontics patients that are undergoing orthodontics treatment and those that have completed orthodontics treatment in different parts of the world. While few studies have determined how patient level of satisfaction increases with more time of fixed appliance placement. However, there are still no studies on satisfaction of orthodontics patients with fixed and removable appliances in Tanzania. Thus there is a need for studies to compare the level of satisfaction in orthodontics patients with fixed orthodontics appliances and those with removable orthodontics appliances as well as determining the factors which affect the level of satisfaction in orthodontic patients using removable and fixed appliances. Hence, the aim of this study is to evaluate the level of satisfaction among orthodontics patients undergoing treatment using either fixed or removable appliances at MUHAS dental clinic.

METHODOLOGY

The study protocol was approved by the MUHAS IRB through the directorate of research and publication. The study involved 138 patients undergoing orthodontic treatment at MUHAS dental clinic, located within the Muhimbili National

Hospital (MNH) in Dar-es-salaam. The study population included patients undergoing orthodontic treatment using fixed appliances or removable appliances for three or more months at MUHAS dental clinic; whereas, patients on intention phase were excluded.

A constructed questionnaire was used to collect data. Through the questionnaire, factors that affect the level of satisfaction in orthodontics patients with fixed or removable appliances were determined. These included patient's age, gender, expectations, level of education and domicile; the clinician performing the treatment, type of appliance, duration of treatment and other factors. A five point Likert scale was used to evaluate the level of patient's satisfaction.

Data analysis was done using computer programs SPSS version 20.0 software: Whereby descriptive statistical analysis was employed to evaluate patient's satisfaction. Results were depicted in frequency tables. The student t-test (for continuous) and Chi square (for categorical) data were conducted to assess the statistical significance of the tested parameters.

RESULTS

Demographic Information of the Study Participants

A total of 138 participants completed the study, whereby the mean age of the participants was 24.56 years (SD±7.97) with orthodontic treatment duration of 2.88 years (SD±1.03). More female (53.6%) than male (46.4%) participated in the study and the age group range of 14 to 50 years. Regarding education, 47.8% of participants had secondary level of education followed by 47.1% who had tertiary level of education. Almost two third (89.9%) of participants were using fixed orthodontic appliances for treatment and 84.8% were treated by orthodontists. Table 1.

Table 1. Distribution of study participants based on demographic characteristic.

Variable	Frequency(n)	Percentage (%)
Age, mean in years 24.56(SD±7.97)		
Age group		
14-25	90	65.2%
>25	48	34.8%
Gender		
Male	64	46.4%
Female	74	53.6%
Level of education		
Primary education	7	5.1%
Secondary education	66	47.8
Tertiary education	65	47.1%

Duration of treatment Average in years 2.88 (SD±1.03)		
3 to 6 months	22	15.9%
7 to 12 months	15	10.9%
13 to 18 months	58	42.0%
More than 18 months	43	31.2%
Types of orthodontic appliances		
Fixed appliances	124	89.9%
Removable appliances	14	10.1%
Clinician		
Orthodontist	117	84.8%
Paedodontist	10	7.2%
General Dentist	11	8.0%

Patient Level of Expectation with Orthodontic Treatment

In respond to question regarding level of expectation with orthodontic treatment, participants showed high rate of expectation with smile (86.9%), self-esteem (83.4%) and facial appearance (80.5%).

Level of Satisfaction with Orthodontic Treatment and Clinic Services

A higher rate of satisfaction was found in teeth alignment (83.4%) and service by main clinician (83.3%). It was found that more than half of the participants (60.1%) were very satisfied or satisfied with chewing ability following their orthodontic treatment and only 59.4% were very satisfied or satisfied with the improvement in cleaning their teeth.

Regarding time, it was found that 10.1%of patients were very dissatisfied or dissatisfied with total treatment duration but only 3.6% were very dissatisfied or dissatisfied with number of visit per month, while 10.1% were very dissatisfied or dissatisfied with duration of each appointment and 18.1% of patients were very dissatisfied or dissatisfied with waiting time at each appointment. Moreover, 12.3% of participants were very dissatisfied or dissatisfied with the cost of treatment and

14.5% were very dissatisfied or dissatisfied with the services extended by the staff of the clinic. Regarding self-esteem, a total of 73.9% of the participants stated that orthodontics treatment had a positive influence on their self-confidence.

Doctor Patient Relationship

Two third of the participants (92.8%) stated that their clinician explained the treatment plan to them prior to the orthodontic treatment and a very high percentage of participants (96.4%) stated that the question they had during treatment were answered promptly. Over two third of the participants (97.1%) stated that the clinician was gentle while treating them.

The questions concerning clinician’s honesty, 7.2% of the participants stated that their clinician were not completely honest about total treatment time duration while 13.0% answered “sometimes”, 89.9% of the participants answered “Yes”. Regarding their clinician honest about treatment cost, while 3.6% answered “no” and 6.5% answered “sometimes”

Over two third of the participants (95.7%) were willing to recommend the clinician to other clients, while 2.9% would not recommend and 1.4% were not sure

Effects of Doctor-Patient Relationship on Patient’s Satisfaction

Considering patient satisfaction with the main clinician, most (115) participants were satisfied while 23 participants were unsatisfied with their clinician

Duration of Orthodontic Treatment and Patient Satisfaction

Considering satisfaction with orthodontic treatment duration; very strong association was found between duration of treatment and alignment of teeth (p<0.001) and improvement in mastication and cost of treatment (p<0.05) but weak association(p<0.05) in improvement of general face appearance, and there was association between duration of treatment with services provided by assistant clinician (p<0.05) but not with the main clinician, also there were no association with teeth cleaning improvement and increased confidence. Table 2.

Table 2. Distribution of participants by orthodontic treatment satisfaction and period of treatment

Variable	Category	Duration of treatment (Month)		Total	P value
		3 to 12	>12		
		N (%)	N (%)	N (%)	
Alignment of teeth	Dissatisfied or Neutral	14 (10.15)	9(6.53)	23(16.68)	<0.001
	Satisfied	23(16.67)	92(66.7)	115(83.38)	
General face Appearance	Dissatisfied or Neutral	14(10.15)	27(19.57)	41(29.73)	0.044
	Satisfied	23(16.67)	74(53.65)	97(70.33)	

Improvement in Mastication	Dissatisfied or Neutral	22(15.95)	33(23.93)	55(39.885)	0.007
	Satisfied	15(10.87)	68(49.3)	83(60.18)	
Teeth Cleaning improvement	Dissatisfied or Neutral	19(13.77)	37(26.83)	56(40.60)	0.281
	Satisfied	18(13.05)	64(46.4)	82(59.45)	
Cost of treatment	Dissatisfied or Neutral	30(21.75)	54(39.15)	84(60.90)	0.007
	Satisfied	7(5.08)	47(34.07)	54(39.15)	
Nursing services	Dissatisfied or Neutral	17(12.33)	27(19.57)	44(31.9)	0.081
	Satisfied	20(14.5)	74(53.65)	94(68.15)	
Clinic Environment	Dissatisfied or Neutral	16(11.6)	36(26.1)	52(37.70)	0.662
	Satisfied	21(15.23)	65(47.13)	5286(62.35)	
Services by assisting clinician	Dissatisfied or Neutral	15(10.87)	25(18.13)	40(29)	0.025
	Satisfied	22(15.95)	76(55.1)	98(71.05)	
Service by Main clinician	Dissatisfied or Neutral	9(6.53)	14(10.15)	23(16.68)	0.177
	Satisfied	28(20.3)	87(63.07)	115(83.38)	
Increased Confidence	Dissatisfied or Neutral	13(9.43)	23(16.67)	36(26.10)	0.243
	Satisfied	24(17.4)	78(56.55)	102(73.95)	

Level of Satisfaction and Social Demographic Characteristics.

Very stronger statistical significant association was found between the types of appliances used ($p < 0.001$), age group

and level of satisfaction ($p = 0.001$), sex ($p < 0.05$) and duration of treatment ($p < 0.05$) but there was no association between level of education and level of satisfaction ($p = 0.81$). Table 3.

Table 3. Distribution of study participants based on association between social demographic characteristics and level of satisfaction of orthodontic treatment.

Variable	Level of satisfaction		P value	
	Category	Dissatisfied		Satisfied
Age group	14 to 25	19(21.1)	71(78.9)	0.001
	26 and above	10(20.8)	38(79.2)	
Sex	Male	19(29.7)	45(70.3)	0.02
	Female	10(13.5)	64(86.5)	
Duration of treatment	3 to 6 months	11(50.0)	11(50.0)	0.02
	7 to 12 months	4(26.7)	11(73.3)	
	13 to 18 months	9(15.5)	49(84.5)	
	More than 18 months	5(11.6)	38(88.4)	
Types of appliance	Fixed appliances	21(16.9)	103(83.1)	<0.001
	Removable ortho appliances	8(57.1)	6(42.9)	

DISCUSSION

In general, high level of satisfaction with dentition following orthodontic treatment was reported on the current study, which is similar to the results of the previous studies^[7]. The present study found that 83.4% of the participants were very satisfied or satisfied with the alignment of their teeth after treatment. The results are slightly lower compared to 90.5% of patient who were very satisfied or satisfied in a study done by Norah and Alfayez^[3] and are to somewhat in accord with that of Larsson et al.^[8] who reported a satisfaction rate of 74%. Whereas, Al-omiri et al.^[9] reported that 34% of participant were satisfied with their dentition after orthodontic treatment.

However, the esthetic expectation with orthodontic treatment was higher compared to functional improvement among the participant in our study. These results were in agreement with the findings of Tung et al.^[10] which showed higher expectation on improvement of appearance, as well as Rasool^[11] who reported higher rate of expectation on appearance of teeth. According to Mahmood et al.^[12] majority of the participants were concerned about their self being and felt that orthodontic treatment would improve their dental-facial concerns which is in agreement with our study.

Previous researchers have shown that females are more dissatisfied with the appearance of their dentition than males and focus on improved appearance as a reward.^[13,14] The participants in the current study showed that females are more satisfied with dentition's appearance (58.3%) and improved general face appearance (59.3%).

Results of the present study revealed that waiting time during appointment constituted the highest factor of dissatisfaction (18.1%) for the studied group. These results are in agreement with that of previous study^[15] which can be explained by the large number of patients seen per day.

A critical role in a patient's mental satisfaction, in addition to professional performance is the patient-clinician relationship. The results of the current study showed that the factors that affected the patient satisfaction with their clinician were, explained treatment plan prior to the orthodontic treatment, gentleness of the main clinician while treating patients and clinician honesty in issue concerning cost. In this study, comprehensive discussion of treatment modalities and options with the patient was seen as an important factor for patient satisfaction. The higher satisfaction with doctor-patient relationship might be explained by the fact that the treatment will be more effective and patient will be more satisfied when the relationship is good. It has been shown by Sinha^[16] that successful orthodontic treatment is significantly related to the positive Doctor-patient relationship. The current study finding on Doctor patient relationship are in accord with those

reported by Norah.^[3] On the basis of the response received, it was clear that the patients were satisfied when they were involved in the process of treatment plan.

The current study has shown statistically significant association between age of patient, sex, duration of treatment and type of appliance used with patient overall satisfaction with orthodontic treatment. A study done by Annemieke et al.^[17] showed similar association in sex of patient and patient satisfaction, contrary results were shown in studies done by Feldmanna^[18] and Zadake et al.^[19] whereby there was no correlation between sex of patient and their satisfaction with orthodontics treatment. Studies done by Zadake et al.^[19] and Al-Omiri et al.^[20] had contrary results to age, whereby there was no correlation between age and patient satisfaction. This difference could be explained by the fact that in this study most of the participants were between 14 to 25 years, hence quicker changes after starting orthodontic treatment making it possible for them to be easily satisfied.

A study done by Lyros et al.^[21] showed similar results, whereby there was a significant association between duration of treatment and patient satisfaction. Contrary, a study by Zadake et al.^[19] showed no correlation between treatment time and patient satisfaction. In this study there was an association between the type of appliance that the patient used for orthodontic treatment and patient satisfaction. These results could be because most of the participants were using fixed orthodontic appliances which have a quicker effect than removable appliances hence it is not surprising that patient were satisfied. These results are similar to a study done by Gallegos-Delgado et al.^[22]

This study showed no correlation between patient expectations and patient satisfaction. These results are similar to studies done by Feldmanna^[18] and Li et al.,^[23] but contrary results were seen in a study done by Alnasyan et al.^[3] Where by patients were not satisfied once their expectations were not met. This difference may be because the study was done after the orthodontic treatment was completed hence patients could already see their results, while this study has been done when treatment is still in progression.

This study also showed that there were associations that were statistically significant between satisfaction of patients in alignment of teeth, general facial appearance, improvement in mastication, cost of treatment, nursing services and services by assistant clinician with duration of treatment, whereby patients who had been treated for a long period of time were more satisfied than those who had started treatment more recently. This could be because orthodontic treatment results need some time to be achieved.

CONCLUSION

In this study most of the patients were satisfied with the orthodontic treatment outcomes like alignment of teeth, improvement of general face appearance, improvement of mastication and increase in self-confidence. In addition, the patients were satisfied with the nursing services, assistant and main clinician services. Less than a half were satisfied with waiting duration during each appointment and with cost of treatment. The factors which affect patient's satisfaction with orthodontics treatment at MUHAS dental clinic include age and sex of patient, duration of treatment, type of appliance used by patient and also patient doctor relationship.

REFERENCES

- Mukhtar, F., Anjum, A., Bajwa, M. A., Shahzad, S., Hamid, S., Masood, Z. M., & Mustafa, R. "Patient Satisfaction; OPD services in a Tertiary Care Hospital of Lahore," *Prof. Med J* 2013;20:973-80.
- Aljughaiman, A., Alshammari, A., Althumairi, A., Alshammari, A., Almasoud, N., & Nazir, M. A "Patient Satisfaction with Orthodontic Treatment Received in Public and Private Hospitals in Dammam, Saudi Arabia," *Open Access Maced. J. Med. Sci.*, 2018;6:1492.
- Alnasyan NS, Alfayez NA. "Evaluation of patient satisfaction with orthodontic treatment in Qassim region," *Int. J. Med. Heal. Res. Int* 2017;3:77-82.
- Wiedel AP, Bondemark L. Fixed versus removable orthodontic appliances to correct anterior crossbite in the mixed dentition—a randomized controlled trial. *European journal of orthodontics*. 2015;37:123-7.
- Kannan MS, Mymoon M, Padmavati R. Expansion In Orthodontics-Review Article. *European Journal of Molecular & Clinical Medicine*. 2020;7:6407-12.
- Singh DP, Kaur R. Fixed functional Appliances in Orthodontics-A review. *J Oral Health Craniofac Sci*. 2018;3:001-10.
- Bos A, Vosselman N, Hoogstraten J, Prah-Andersen B. Patient compliance: a determinant of patient satisfaction?. *The Angle Orthodontist*. 2005;75:526-31.
- Larsson BW, Bergström K. Adolescents' perception of the quality of orthodontic treatment. *Scand J Caring Sci*. 2005;19:95-101.
- Al-Omiri MK, Abu Alhaija ES. Factors affecting patient satisfaction after orthodontic treatment. *The Angle Orthod* 2006;76:422-31.
- Tung AW, Kiyak HA. Psychological influences on the timing of orthodontic treatment. *Am J Orthod Dentofacial Orthop* 1998;113:29-39.
- Rasool G, Nausheen A, Hassan N, Bashir S, Raza HA. Orthodontic treatment and patient's expectations. *Pakistan Orthodontic Journal*. 2012;4:44-7.
- Awaisi ZH, Asad S, Mahmood A. Patient perception regarding impact of Orthodontic treatment. *Pakistan Oral Dent J* 2011;31.
- Sheats RD, McGorray SP, Keeling SD, Wheeler TT, King GJ. Occlusal traits and perception of orthodontic need in eighth grade students. *Angle Orthod* 1998;68:107-14.
- Zhou YH, Hägg U, Rabie AB. Patient satisfaction following orthognathic surgical correction of skeletal class III malocclusion. *Int J Adult Orthodon Orthognath Surg* 2001;16:99-107..
- Loke ST. A study of patient satisfaction with orthodontic treatment in Sabah. *Malaysian J Public Heal Med* 2002;2:42-6.
- Sinha PK, Nanda RS, McNeil DW. Perceived orthodontist behaviors that predict patient satisfaction, orthodontist-patient relationship, and patient adherence in orthodontic treatment. *Am J Orthod Dentofacial Orthop* 1996;110:370-7.
- Bos A, Vosselman N, Hoogstraten J, Prah-Andersen B. Patient compliance: a determinant of patient satisfaction?. *Angle Orthod* 2005;75:526-31.
- Feldmann I. Satisfaction with orthodontic treatment outcome. *Angle Orthod* 2014;84:581-7.
- Zadake SN, Kangane SK, Ambekar AS, Kondle M, Kalekar R. Factors Affecting Satisfaction with the Process of Orthodontic Treatment in Young Adults: A Questionnaire Study. *J Indian Orthod Soc* 2020;54:135-41.
- Al-Omiri MK, Abu Alhaija ES. Factors affecting patient satisfaction after orthodontic treatment. *The Angle Orthod* 2006;76:422-31.
- Lyros I, Pavi E, Tsolakis AI, Makou M, Kyriopoulos J. Satisfaction with Orthodontic Care Provided in a University Orthodontic Clinic. *Open Dent J* 2019;13(1).
- Gallegos-Delgado FE, Schmuck-Villarreal AE, Aguilera-Muñoz FR, Cornuy-Barozzi MA. Satisfacción del uso de ortodoncia fija, en pacientes de Valdivia y Paillaco, 2017. *Estudio observacional. Odontoestomatología*. 2018;20:54-61.
- Li W, Wang S, Zhang Y. Relationships among satisfaction, treatment motivation, and expectations in orthodontic patients: a prospective cohort study. *Patient preference and adherence*. 2016;10:443.

How to cite this article: Rubandwa L, Machibya F. Patient Satisfaction with Orthodontic Treatment at MUHAS Dental Clinic. *J Clin Res Dent* 2022;4(1):19-24. DOI: 10.33309/2639-8281.040105