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Perception and Satisfaction of Orthodontic patients towards Orthodontic treatment in KIST Medical College and Teaching Hospital

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Abstract

Introduction: Dental malalignment and aesthetics can negatively affect the patients' psychology. This study aims to assess the perception and satisfaction of orthodontic patients at KIST Medical College and Teaching Hospital.

Method: A cross-sectional survey was conducted after ethical approval among patients visiting the Orthodontics Department from 01 Jun to 01 Jul 2022 at KIST Medical College, Nepal. Patients undergoing fixed orthodontic treatment, aged ≥ 16 years, who consented were included. Patients with craniofacial deformities and cleft lip, palate were excluded. Data were collected using a structured questionnaire and consecutive sampling. Analysis was done in SPSS v16, for descriptive statistics and the Pearson chi-square test for association, with significance set at $p \leq 0.05$

Result: Out of 25 patients, majority 16 (64%) were females, and most of them (48%) aged 16-20 years. Females were more likely to wait for the next appointment (45%) than males (35.6%), and more males responded to social media (31.3%) than females (1.3%), $p < 0.05$. Males (44.4%) sought treatment for bite correction, and females (38.8%) for appearance, $p = 0.022$. More males (71.1%) were satisfied with dentofacial improvement than females (36.3%) ($p = 0.027$). More females (53.3%) were willing to undergo treatment again than males (41.3%), $p = 0.037$. Significant gender differences were observed in the perception of treatment as painful and the cost.

Conclusion: We found that main reasons for orthodontic treatment were bite correction, improvement in appearance. Most perceive orthodontic treatment as a painful procedure. Most patients were pleased and satisfied with their treating doctor.

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Introduction

Malalignment of teeth is a common dental condition that affects oral health, self-esteem, and quality of life. Patients visit a dental hospital to make their smile look beautiful.¹ The main objective of orthodontic treatment is to deliver the maximum result and fulfill the patient's expectations.² Malocclusions, which are left untreated, result in an increased untoward effect on health, and psychological problems arise.³ Dental aesthetics can negatively affect the patients' psychology, and they may feel shame due to poor dental appearance.⁴ Orthodontic treatment is helpful to treat malocclusion and to improve the smile, hence contributing to building the personality and self-confidence of the patients.⁵⁻⁷

Patient satisfaction is assessed as a positive evaluation of dimensions of healthcare, yet multiple factors contribute to the satisfaction of patients.^{8,9} The role of orthodontists is to look into the possible factors and educate the patients to meet the expectations.¹⁰ Pain due to temporomandibular joint, caries, traumatic occlusion, and periodontal diseases associated with malocclusion could be managed by orthodontic treatment.¹¹ Proper understanding of the nature of malocclusion, as well as the urge for orthodontic treatment, helps in patient adherence.¹² Education, good financial status, and orthodontic awareness lead to increased orthodontic demand.¹³

Though the majority of orthodontic patients are satisfied with the treatment results, there is still room for improvement to address the minority of patients who were not satisfied with the treatment results.¹⁴

Thus, this study was undertaken to evaluate the perception and satisfaction of patients about orthodontic treatment.

Method

This was a cross-sectional study that was conducted from 01 Jun to 01 Jul 2022, at the Department of Orthodontics and Dentofacial Orthopedics in KIST Medical College and Teaching Hospital, Nepal. Ethical approval was

obtained from the institutional review committee (KIST-IRC Ref. No. 2078/79/67).

The survey included patients undergoing fixed orthodontic treatment, aged above 16 years. Patients with craniofacial deformities and cleft lip and cleft palate who refused to participate were not included in this study.

Informed consent was obtained, and confidentiality of the patients' information was ensured. A structured questionnaire was completed by the patients. For those who could not read or write, researchers assisted the patients. Consecutive sampling was used (as per hospital records of the previous year, approximately 250 patients).

The data were entered in IBM SPSS (Statistical Product and Service Solutions) v.16. The Pearson chi-square test was used to find out the association between various variables and satisfaction. The level of significance was set at $p \leq 0.05$.

Result

Out of 250 participants (there were 256 patients, of which six were excluded because of incomplete data). Nearly half (48%) were in the 16-20 years age group, 45.2% in 21-30, 5.6% in 31-40, and only 5.6% in 41-50 years. Gender-wise, 160(64%) were females, Figure 1.

Most of the participants (94.4%) had metallic braces, Figure 2.

The majority of participants had orthodontic treatment for the correction of bite (37.6%), for improvement in appearance (35.2%), and smile (22.4%). About half (51.6%) of participants used to brush their teeth twice a day before undergoing orthodontic treatment, but now 69.2% were brushing their teeth twice a day. The majority (88.2%) would suggest to their friend that they should undergo orthodontic treatment. While comparing the genders, 35.6% males and 45% females would wait for another appointment if breakage of any appliance, and this difference was found to be statistically significant, $p < 0.05$. We found a statistically significant difference between males and

females on general questions no. 2, 6, 7, and 8, Table 1.

Regarding the perception of orthodontic treatment, 34.4% agreed that orthodontic treatment was a painful procedure, whereas 1.6% strongly disagreed. Nearly half (54%) participants thought there was difficulty in eating with orthodontic fixed appliances. Only a few (8%) did not think orthodontic treatment was expensive, and 56.6% liked the idea of tele-dentistry for any queries in orthodontic treatment. We found a statistically significant difference observed between males and females with respect to perception, questions no. 1 (I am pleased with my dentofacial improvement after having braces on my teeth) and no. 3 (Do you think orthodontic treatment is expensive?), Table 2.

Regarding satisfaction with orthodontic treatment, the majority (67.2%) were pleased with the dentofacial improvement after braces. Similarly, 73.2% were pleased with the treating orthodontist regarding the counselling of the treatment. Confidence increased for 72% of participants. Nearly half (54.8%) thought that the orthodontic treatment they received could have been better, and 16% disagreed that treatment time was too long. Most (69.2%) were satisfied with the result of orthodontic treatment. For 60.8% of patients, braces gave a lot of discomfort. Significant difference was observed between males and females with respect to satisfaction, questions no. 1, 4, 5, and 10, Table 3.

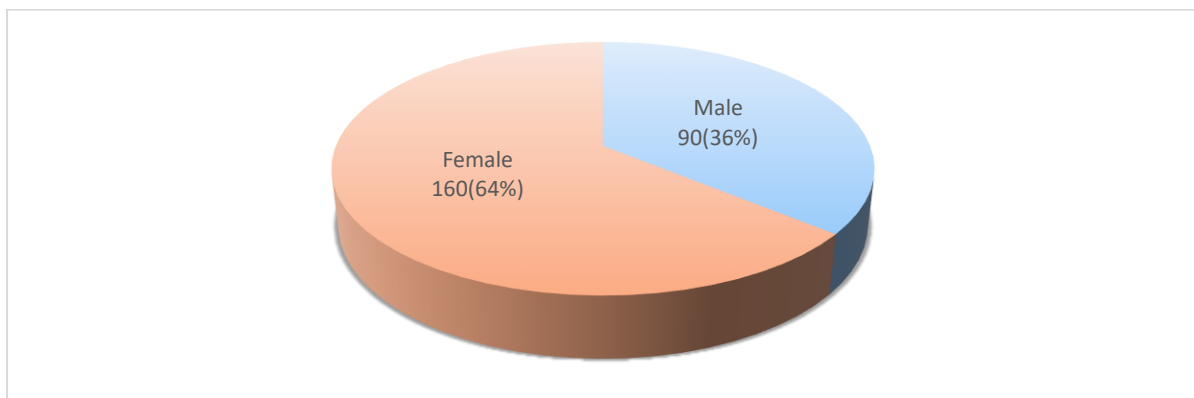


Figure 1. Gender distribution of orthodontic patients surveyed for perception towards orthodontic treatment, at KIST Medical College and Teaching Hospital (KISTMCTH), Nepal, n=250

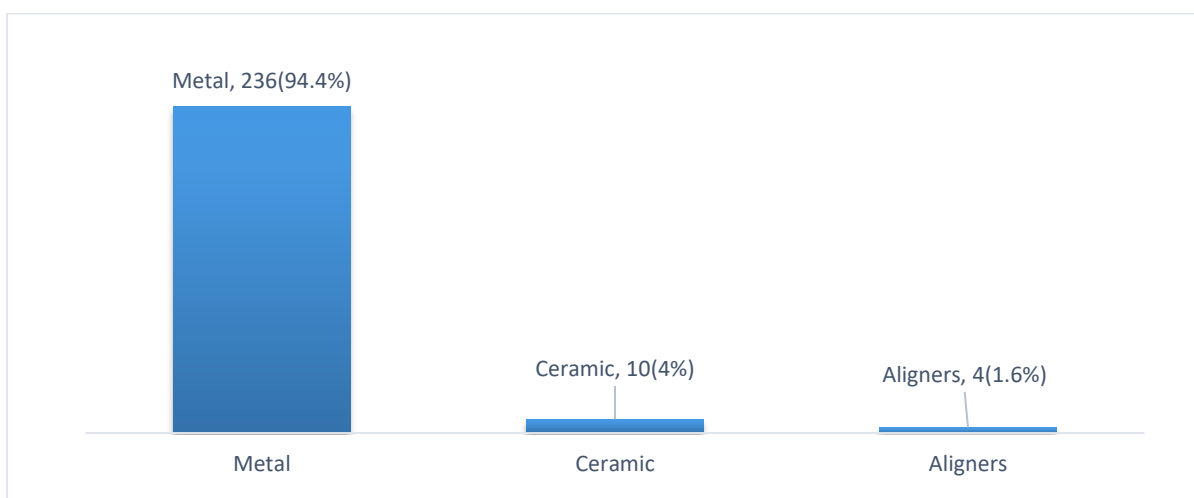


Figure 2. Distribution of orthodontic appliances worn by the patients surveyed for perception towards orthodontic treatment at KISTMCTH, Nepal, n=250

Table 1. General questions to patients in a survey for perception towards orthodontic treatment at KISTMCTH, Nepal, n=250

Questions	Options	Overall n(%)	Response Male, n(%)	Female n(%)	p-value
1. Did you wear orthodontic devices when you were younger?	Yes	59(23.6)	24(26.7)	35(21.9)	0.139
	No	187(74.8)	64(71.1)	123(76.9)	
2. Why have you undergone orthodontic treatment?	Bite correction	94(37.6)	40(44.4)	54(33.8)	0.022*
	Improvement in smile	56(22.4)	16(17.8)	40(25)	
	Improvement in appearance	88(35.2)	26(28.9)	62(38.8)	
	Oral hygiene maintenance	12(4.8)	8(8.9)	4(2.5)	
3. How many times do you brush your teeth daily?	1	35(14)	18(20)	17(10.6)	0.13
	2	173(69.2)	52(57.8)	121(75.6)	
	>2	42(16.8)	20(22.2)	22(13.8)	
4. How many times did you brush your teeth daily before you got an orthodontic device	1	105(42)	40(44.4)	65(40.6)	0.592
	2	129(51.6)	46(51.1)	83(51.9)	
	>2	16(6.4)	4(4.4)	12(7.5)	
5. How many times do you floss daily?	Do not floss	90(36)	34(37.8)	56(35)	0.685
	Rare	76(30.4)	28(31.1)	48(30)	
	1	52(20.8)	18(20)	34(21.3)	
	2	12(4.8)	2(2.2)	10(6.3)	
	>2	20(8)	8(8.9)	12(7.5)	
6. Would you suggest to your friends that they should undergo orthodontic treatment?	Yes	220(88)	84(93.3)	136(85)	0.013*
	No	26(10.4)	6(6.7)	20(12.5)	
7. How long have you been undergoing orthodontic treatment in KISTMCTH?	Less than 1 year	117(46.8)	40(44.4)	77(48.1)	0.017*
	1-2 y	52(20.8)	28(31.1)	24(15)	
	2-3 y	35(14)	10(11.1)	25(15.6)	
	>3 y	46(18.4)	12(13.3)	34(21.3)	
8. What is your favourite means to communicate with your orthodontist to inform him/her about your breakage of the appliance?	Call the dental hygienist	78(31.2)	30(33.3)	48(30)	0.001*
	Social media	14(5.6)	12(13.3)	2(1.3)	
	Call the orthodontist directly	54(21.6)	16(17.8)	38(23.8)	
	Wait for my next appointment.	104(41.6)	32(35.6)	72(45)	

Table 2. Perceptions towards orthodontic treatment of patients in a survey at KISTMCTH, Nepal, n=250

Perceptions	Options	Overall n(%)	Response Male, n(%)	Female n(%)	p-value
1. Do you think orthodontic treatment is a painful procedure?	Strongly disagree	4(1.6)	4(4.4)	0	0.000*
	Disagree	4(1.6)	24(26.7)	16(10)	
	Neutral	120(48)	34(37.8)	86(53.8)	
	Agree	74(29.6)	22(24.4)	52(32.5)	
	Strongly agree	12(4.8)	6(6.7)	6(3.8)	
2. Do you think there is difficulty in eating with an orthodontic fixed appliance?	Strongly disagree	2(0.8)	0	2(1.3)	0.808
	Disagree	36(14.4)	12(13.3)	24(15)	
	Neutral	77(30.8)	30(33.3)	47(29.4)	
	Agree	111(44.4)	40(44.4)	71(44.4)	
	Strongly agree	24(9.6)	8(8.9)	16(10)	
3. Do you think orthodontic treatment is expensive?	Strongly disagree	2(0.8)	0	2(1.3)	0.001*
	Disagree	18(7.2)	10(11.1)	8(5)	
	Neutral	111(44.4)	52(57.8)	59(36.9)	
	Agree	105(42)	26(28.9)	79(49.4)	
	Strongly agree	14(5.6)	2(2.2)	12(7.5)	
4. Do you like the idea of tele-dentistry in case of any queries provided by orthodontic department?	Strongly disagree	4(1.6)	0	4(2.5)	0.253
	Disagree	0	0	0	
	Neutral	87(34.8)	32(35.6)	55(34.4)	
	Agree	141(56.4)	54(60)	87(54.4)	
	Strongly agree	18(7.2)	4(4.4)	14(8.8)	

Table 3. Satisfaction with orthodontic treatment of patients in a survey at KISTMCTH, Nepal, n=250

Satisfaction	Options	Response			p-value
		Overall n(%)	Male n(%)	Female n(%)	
1. I am pleased with my dentofacial improvement after having braces on my teeth.	Strongly disagree	2(0.8)	2(2.2)	0	0.027*
	Disagree	12(4.8)	0	12(7.5)	
	Neutral	68(27.2)	24(26.7)	44(27.5)	
	Agree	150(60)	56(62.2)	94(58.8)	
	Strongly agree	18(7.2)	8(8.9)	10(6.3)	
2. I am pleased with the treating orthodontist regarding counselling and my treatment.	Strongly disagree	2(0.8)	0	2(1.3)	0.297
	Disagree	10(4)	2(2.2)	8(5)	
	Neutral	55(22)	24(26.7)	31(19.4)	
	Agree	159(63.6)	58(64.4)	101(63.1)	
	Strongly agree	24(9.6)	6(6.7)	18(11.3)	
3. I feel more confident after having orthodontic treatment.	Strongly disagree	2(0.8)	0	2(1.3)	1.85
	Disagree	4(1.6)	2(2.2)	2(1.3)	
	Neutral	64(25.6)	24(26.7)	40(25)	
	Agree	140(56)	44(48.9)	96(60)	
	Strongly agree	40(16)	20(22.2)	20(12.5)	
4. I think orthodontic treatment will give a promising result for my teeth	Strongly disagree	0	0	0	0.014*
	Disagree	2(0.8)	0	2(1.3)	
	Neutral	42(16.8)	14(15.6)	28(17.5)	
	Agree	150(60)	46(51.1)	104(65)	
	Strongly agree	56(22.4)	30(33.3)	26(16.3)	
5. The orthodontic staff treated me with respect.	Strongly disagree	0	0	0	0.032*
	Disagree	2(0.8)	0	2(1.3)	
	Neutral	26(10.4)	10(11.1)	16(10)	
	Agree	158(63.2)	48(53.3)	110(68.8)	
	Strongly agree	64(25.6)	32(35.6)	32(20)	
6. The orthodontic care I received could have been better.	Strongly disagree	2(0.8)	2(2.2)	0	0.396
	Disagree	32(12.8)	10(11.1)	22(13.8)	
	Neutral	79(31.6)	30(33.3)	49(30.6)	
	Agree	115(46)	40(44.4)	75(46.9)	
	Strongly agree	22(8.8)	8(8.9)	14(8.8)	
7. The orthodontic treatment fees were too pricey.	Strongly disagree	4(1.6)	0	4(2.5)	0.371
	Disagree	34(13.6)	12(13.3)	22(13.8)	
	Neutral	128(51.2)	50(55.6)	78(48.8)	
	Agree	66(26.4)	24(26.7)	42(26.3)	
	Strongly agree	18(7.2)	4(4.4)	14(8.8)	
8. The treatment took much too long.	Strongly disagree	2(0.8)	0	2(1.3)	0.269
	Disagree	38(15.2)	10(11.1)	28(17.5)	
	Neutral	64(25.6)	20(22.2)	44(27.5)	
	Agree	94(37.6)	40(44.4)	54(33.8)	
	Strongly agree	52(20.8)	20(22.2)	32(20)	
9. I am satisfied with the results of my orthodontic treatment	Strongly disagree	0	0	0	0.574
	Disagree	26(10.4)	2(2.2)	24(15)	
	Neutral	6(2.4)	22(24.4)	93(58.1)	
	Agree	71(28.4)	54(60)	14(8.8)	
	Strongly agree	147(58.8)	12(13.3)	29(18.1)	
10. If I had it to do once again, I would still want orthodontic treatment	Strongly disagree	20(8)	2(2.2)	18(11.3)	0.037*
	Disagree	43(17.2)	12(13.3)	31(19.4)	
	Neutral	73(29.2)	28(31.1)	45(28.1)	
	Agree	106(42.4)	46(51.1)	60(37.5)	
	Strongly agree	8(3.2)	2(2.2)	6(3.8)	
11. My braces gave me a lot of discomfort	Strongly disagree	2(0.8)	0	2(1.3)	0.060
	Disagree	60(24)	18(20)	42(26.3)	
	Neutral	92(36.8)	42(46.7)	50(31.3)	
	Agree	68(27.2)	18(20)	50(31.3)	
	Strongly agree	28(11.2)	12(13.3)	16(10)	

Discussion

The study indicates that most orthodontic patients were satisfied with the treatment and staff. Satisfaction appears to be influenced by communication, treatment expectations.

There are many studies which concluded that patient satisfaction is one of the major factors in dental treatment. Patient satisfaction may vary according to the dental procedures carried out.¹⁵ Health care professionals accepted that maintaining cooperation with the patients for successful treatment is significant.¹⁶ Patients may be disappointed when their expectations are not fulfilled.¹⁷

The present study revealed important insights into patients' perception and satisfaction with orthodontic treatment at KISTMCTH. A key finding was the difference in motivation for treatment between genders; most males (44.4%) sought treatment for functional improvement (bite correction), and the majority of females (38.8%) were motivated by aesthetics. This difference was found to be statistically significant ($p=0.022$). This suggests that psychosocial factors, particularly concern for appearance, may be stronger determinants of treatment-seeking behaviour among females. Such gender-based differences are not universally reported.¹⁸ These discrepancies could be attributed to cultural and social expectations, where females may experience greater societal emphasis on appearance compared to males.

Regarding satisfaction with orthodontic treatment, the majority of males (71.1%) were pleased with dentofacial improvement after having braces than females (36.3%), and was found to be statistically significant at $p=0.027$. Females were more ready to undergo orthodontic treatment (53.3%) than males (41.3%) if they had to do it again, which was statistically significant ($p=0.037$). Also, the majority of females were optimistic about the result of orthodontic treatment, and they were much more satisfied with the staff in the orthodontic department than males, and this

result was found to be statistically significant with $p<0.05$, whereas another study found no correlations between sex and satisfaction of the treatment.¹⁹

Pain perception is also an important consideration. About one-third (34.4%) regarded orthodontic treatment as painful, and significant gender differences were observed in how this was perceived. A study found that being well-informed about treatment and being respectful added quality of care in the treatment of patients.²⁰ However, another study found no definite outcome between orthodontic treatment and patient satisfaction.²¹ In our study, 69.2% of the patients were satisfied with their treatment, 28.4% were neutral, and 2.4% were not satisfied.

In the present study, 41.6% of the patients would wait for the next appointment if there was any breakage of the appliance, 31.2% of the patients would call the dental hygienists directly, 21.6% would call the orthodontists directly, and only 5.6% would use social media. While comparing the genders, females would wait for the next appointment more than males (females 45%, males 35.6%). Also, males would respond to social media more than females (males 31.3%, females 1.3%). This gender difference was found to be statistically significant, $p<0.05$.

Another notable finding was the overwhelming preference (94.4%) for metal braces compared to ceramic braces or aligners. Cost appears to be the dominant factor influencing this choice, which contrasts with studies from high-income settings where aesthetic appliances are more commonly selected. This difference underscores the influence of socioeconomic context on treatment choices and highlights the importance of offering cost-sensitive options in resource-limited settings.

Other factors that were considered in this study included flossing, difficulty in eating, discomfort, counseling, and recommendation of orthodontic treatment with their friends,

which were found to be not significant when comparing the genders.

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Conclusion

The study indicates that most orthodontic patients were satisfied with their treatment experience and the care provided by orthodontic staff. Patient satisfaction appears to be influenced by effective communication, treatment expectations, and engagement throughout the orthodontic process. Emphasizing these factors can help optimize treatment outcomes and patient experience. Further research involving larger and more diverse patient populations is recommended to confirm and expand these findings.

Author contribution

Concept and design: RS, GA; Literature search: GA, SM; Data collection: RS, GA; Data analysis and interpretation: SM; Drafting of manuscript: ALL; Critical revision of manuscript: ALL; Final approval of the version to be published and accountability: All

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Conflict of interest

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Supplementary material

Data and supplementary material that support the findings of this study are available from the corresponding author upon reasonable request.

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