

Knowledge, Awareness and Attitude towards Orthodontic Treatment among Patients Visiting the Tertiary Care Center

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ABSTRACT

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Introduction: While numerous studies have been conducted among high school students and orthodontic patients, limited research has evaluated knowledge, awareness, and attitude regarding orthodontic treatment among general patients seeking dental care. This study aimed to assess these factors among patients attending a tertiary care center.

Objective: To assess knowledge, awareness, and attitude toward orthodontic treatment among patients visiting the tertiary care center.

Method: A cross-sectional study was conducted among 303 patients attending the Department of Oral Medicine and Radiology, Kathmandu University School of Medical Sciences, Dhulikhel Hospital. Data were collected using a structured questionnaire with dichotomous (Yes/No) responses assessing knowledge, awareness, and attitude toward orthodontic treatment. Descriptive statistics, including frequency and percentage, were calculated, and Chi-square tests were applied to compare responses by gender.

Result: Majority of patients demonstrated a good level of knowledge about orthodontics and the effects of malocclusion. However, their understanding of the causes of malocclusion like genetic factors and habits like thumb sucking, tongue thrusting, and mouth breathing was moderate. Additionally, most participants had limited awareness about the importance and use of retainers following orthodontic treatment. While significant number of patients were knowledgeable and aware of orthodontic care, only few were personally motivated to undergo the treatment.

Conclusion: Although the findings were encouraging, indicating that patients had a good level of knowledge, attitude, and practice towards orthodontic treatment, there remains a need to enhance patient education on the importance of retainers and to improve motivation for undergoing orthodontic treatment.

Keywords: Attitude; knowledge; orthodontic treatment; practice.

INTRODUCTION

Malocclusion, defined as an irregularity of the teeth or a malrelationship of the dental arches beyond the accepted norm, is one of the most prevalent dental problems worldwide, along with dental caries, periodontal diseases, and fluorosis.^{1,2}

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It has a profound impact on an individual's quality of life, influencing aesthetics, speech, mastication, and psychological well-being.³ Consequently, improving public awareness

regarding malocclusion, oral hygiene, and orthodontic treatment is of significant importance.^{4,5}

Despite the long history of orthodontic practice, knowledge and awareness of malocclusion and its management remain limited among the general population, particularly in rural areas where access to specialized care is scarce. Globally, few studies have examined the knowledge, attitude, and practices (KAP) of patients toward orthodontic treatment.³ In Nepal such investigations are even more limited and available studies have focused on dentists, dental students, medical students, or patients already undergoing orthodontic therapy, populations who are inherently more familiar with the specialty.⁶⁻⁹

Awareness constitutes the foundation for developing health-related behaviors, while knowledge and attitude are central to patient compliance, decision-making, and treatment

outcomes.^{4,5} Hence, this study was designed to assess the knowledge, awareness, and attitude toward orthodontic treatment among the general population without prior exposure to dentistry or orthodontic care.

METHOD

A descriptive, cross-sectional questionnaire study was conducted at Department of Oral Medicine and Radiology, Kathmandu University School of Medical Sciences (KUSMS), Dhulikhel Hospital from July to December, 2024. The ethical approval was obtained from Institutional Review Committee of KUSMS (IRC-KUSMS 181/24). This study was targeted to individuals within the age group of 18 years and above. The convenience sampling technique was applied. The sample size was determined based on the formula $4pq/e^2$, where $p = 87.5$ based on response rate of correct answer by participants in a similar study done by D'cunha RJ et al.⁵, $e =$ margin of error as 0.05(5%), sample size calculated at 95% CI, sample size is 169. Considering the non-response rate as 20%, the final sample size 203 was obtained. However, 303 patients who met the inclusion criteria and agreed to fill the questionnaire during the research period were included in the study.

The inclusion criteria were patients of age group above 18 years, patients visiting OPD of Oral Medicine and Radiology, KUSMS, Dhulikhel Hospital and participants who gave consent to participate. The exclusion criteria were dental students, interns, post graduates and dental practitioners, individuals who underwent or are undergoing Orthodontic therapy, and those who do not return the questionnaires or incompletely filled questionnaires.

The questionnaire we provided was taken from Dhakal et al.¹⁰ The questionnaire was designed to assess respondents' awareness, knowledge, and attitude to approve orthodontic treatment. The knowledge and awareness component consisted of 14 questions, and the attitude component consisted of 10 questions. The participants were given fifteen minutes to give their responses, after which the questionnaires were taken back.

Participants were asked to mark their responses against yes and no to be the appropriate answers on the questionnaire sheet. The data was then entered in excel sheet, and descriptive statistical analysis was done using SPSS software version 23.0. Chi-square test was applied to compare awareness, knowledge and attitude based on gender.

RESULT

A total of 303 patients participated in the study. Among them, 123 (40.6%) were male and 180 (59.4%) were female, indicating a higher proportion of female respondents. The mean age of the participants was 26.67 ± 5.97 years.

Table 1 presents the overall responses regarding knowledge and awareness toward orthodontic treatment. A majority of respondents had heard about orthodontists (61.1%) and irregularity of teeth (88.8%), while 79.9% believed that dental checkups and treatment for irregularity are essential during early childhood and adolescence. However, fewer participants were aware that habits such as thumb sucking, tongue thrusting, or mouth breathing can cause irregularity (38.6%).

Similarly, Table 2 summarizes the responses regarding attitudes toward orthodontic treatment. Most participants agreed that irregular teeth can affect appearance (75.2%) and that teeth should be properly aligned for better facial aesthetics (76.6%). Nevertheless, only 29% knew that a retainer should be worn after orthodontic treatment, and less than half (46.9%) were willing to undergo orthodontic treatment if it lasted 1–2 years.

When responses were compared based on gender, some significant differences were observed (Table 3 and Table 4). Females were significantly more likely than males to believe that heredity influences the arrangement of teeth ($p = 0.014$, Chi-square test), that irregular teeth can affect speech ($p < 0.001$, Chi-square test), and that receiving braces at an earlier age improves facial appearance ($p = 0.004$, Chi-square test). For other questions, no statistically significant differences were found between males and females.

Table 1: Responses of patients regarding Knowledge and awareness towards orthodontic treatment.

S.N.	Question	Response	
		Yes n (%)	No n (%)
1	Have you heard of an Orthodontist?	185(61.1%)	118(38.9%)
2	Are you aware that orthodontist arrange irregular teeth?	197(65.0%)	106(35.0%)
3	Have you heard about the irregularity of teeth?	269(88.8%)	34(11.2%)

4	Have you noticed people having irregular teeth?	284(93.7%)	19(6.3%)
5	Do you think heredity can influence the arrangement of teeth?	119(39.3%)	184(60.7%)
6	Do you think habits like thumb sucking/tongue thrusting / mouth breathing can cause irregularity of teeth?	117(38.6%)	186(61.4%)
7	Do you think irregular teeth can affect chewing ability?	199(65.7%)	104(34.3%)
8	Do you think irregular teeth can affect speech?	159(52.5%)	144(47.5%)
9	Do you think irregular teeth can affect oral hygiene?	190(62.7%)	113(37.3%)
10	Do you think dental checkup and treatment of irregularity is essential in early childhood and adolescent?	242(79.9%)	61(20.1%)
11	Do you know crooked teeth have ill effects?	167(55%)	136(45%)
12	Have you seen people wearing braces?	275(90.8%)	28(9.2%)
13	Did you know braces at the earlier age would improve facial appearance?	185(61.1%)	118(38.9%)
14	Are you aware that few teeth may have to be removed for aligning irregular teeth?	155(51.2%)	148(48.8%)

Table 2: Responses of patients regarding attitude towards orthodontic treatment.

S.N.	Question	Response	
		Yes n (%)	No n (%)
1.	Has anyone advised you to get your teeth aligned?	134(44.2%)	169(55.8%)
2.	Do you think irregular teeth can affect appearance?	228(75.2%)	75(24.8%)
3.	Do you believe teeth should be properly aligned for a better facial appearance?	232(76.6%)	71(23.4%)
4.	Have you ever felt the need to wear braces?	82(27.1%)	221(72.9%)
5.	Do you know that orthodontic treatment is costly?	185(61.1%)	118(38.9%)
6.	Do you know you should wear retainer after orthodontic treatment	88(29.0%)	215(71.0%)
7.	Would you do orthodontic treatment if it takes 1-2 years?	142(46.9%)	161(53.1%)
8.	Will you agree, if some teeth have to be removed for orthodontic treatment?	176(58.1%)	127(41.9%)
9.	Will you wear additional retainer appliance for 6-12 months after treatment completion?	118(38.9%)	185(61.1%)
10.	Will you continue treatment if you experience slight pain, ulcerations or discomfort?	201(66.7%)	101(33.3%)

Table 3: Responses based on gender regarding Knowledge and awareness towards orthodontic treatment.

S.N.	Questions	Response of Male		Response of Female		p- value*
		Yes n (%)	No n (%)	Yes n (%)	No n (%)	
1	Have you heard of an Orthodontist?	72(58.5%)	51(41.5%)	113(62.8%)	67(37.2%)	0.457
2	Are you aware that orthodontist arrange irregular teeth?	80(65%)	43(35%)	117(65%)	63(35%)	0.994
3	Have you heard about the irregularity of teeth?	108(87.8%)	15(12.2%)	161(89.4%)	19(10.6%)	0.657
4	Have you noticed people having irregular teeth?	118(95.9%)	5(4.1%)	166(92.2%)	14(7.8%)	0.191
5	Do you think heredity can influence the arrangement of teeth?	38(30.9%)	85(69.1%)	81(45%)	99(55%)	0.014
6	Do you think habits like thumb sucking/tongue thrusting / mouth breathing	46(37.4%)	77(62.6%)	71(39.4%)	109(60.6%)	0.719

can cause irregularity of teeth?						
7	Do you think irregular teeth can affect chewing ability?	81(65.95)	42(34.1%)	118(65.6%)	62(34.4%)	0.957
8	Do you think irregular teeth can affect speech?	49(39.8%)	74(60.2%)	110(61.1%)	70(38.9%)	<0.001
9	Do you think irregular teeth can affect oral hygiene?	72(58.5%)	51(41.5%)	118(65.6%)	62(34.4%)	0.215
10	Do you think dental checkup and treatment of irregularity is essential in early childhood and adolescent?	97(78.9%)	26(21.1%)	145(80.6%)	35(19.4%)	0.718
11	Do you know crooked teeth have ill effects?	62(50.4%)	61(49.6%)	89(49.4%)	91(50.6%)	0.694
12	Have you seen people wearing braces?	107(87%)	16(13%)	168(93.3%)	12(6.7%)	0.061
13	Did you know braces at the earlier age would improve facial appearance?	63(51.2%)	60(48.8%)	122(67.8%)	58(32.2%)	0.004
14	Are you aware that few teeth may have to be removed for aligning irregular teeth?	64(52%)	59(48%)	91(50.6%)	89(49.4%)	0.801

*Chi-square test, p<0.05: statistically significant

Table 4: Responses based on gender regarding attitude towards orthodontic treatment.

S.N.	Questions	Response of Male		Response of female		p- value
		Yes n (%)	No n (%)	Yes n (%)	No n (%)	
1.	Has anyone advised you to get your teeth aligned?	56(44.8%)	69(55.2%)	78(43.8%)	100(56.2%)	0.866
2.	Do you think irregular teeth can affect appearance?	92(73.6%)	33(26.4%)	136(76.4%)	42(23.6%)	0.578
3.	Do you believe teeth should be properly aligned for a better facial appearance?	93(74.4%)	32(25.6%)	139(78.1%)	39(21.9%)	0.455
4.	Have you ever felt the need to wear braces?	38(30.4%)	87(69.6)	44(24.7%)	134(75.3%)	0.273
5.	Do you know that orthodontic treatment is costly?	75(60%)	50(40)	110(61.8%)	68(38.2%)	0.752
6.	Do you know you should wear retainer after orthodontic treatment	30(24%)	95(76%)	58(32.6%)	120(67.4%)	0.105
7.	Would you do orthodontic treatment if it takes 1-2 years?	58(46.4%)	67(53.6%)	84(47.2%)	94(52.8%)	0.892
8.	Will you agree, if some teeth have to be removed for orthodontic treatment?	70(56%)	55(44%)	106(59.6%)	72(40.4%)	0.537
9.	Will you wear additional retainer appliance for 6-12 months after treatment completion?	50(40%)	75(60%)	68(38.4%)	109(61.6%)	0.781
10.	Will you continue treatment if you experience slight pain, ulcerations or discomfort?	83(66.4%)	42(33.6%)	119(66.9%)	59(33.1%)	0.934

*Chi-square test, p<0.05: statistically significant

DISCUSSION

Malocclusion may not be a life-threatening disorder, but it can negatively affect a patient's social interactions and psychological well-being.¹⁰ The knowledge, attitude, and practice of patients towards orthodontic treatment influence compliance, which in turn determines clinical outcomes.^{11,12,13} Such awareness not only benefits patients but also helps clinicians focus on areas that patients may overlook. In our study, the number of females was higher than males, which was consistent with findings by Mathew et al. and Chaudhary

et al.^{13, 14} This may be attributed to the higher female population in the country.^{13,14,15}

Among the participants, 61.1% had heard of an orthodontist, which was lower than the report by Shrestha et al. (90.2%) but higher than that of Dhakal et al. (54.29%).^{8,10} Likewise, 65.0% knew that orthodontists treat irregular teeth, which was greater than in Shrestha et al.⁸ The questionnaire findings suggest a mixed level of awareness regarding orthodontic treatment and dental irregularities. A majority had heard of orthodontists, and 65% recognized their role in correcting irregular teeth.

Additionally, 88.8% had heard about irregular teeth, which was higher than Dhakal et al.¹⁰ These results indicate that malocclusion is a widely recognized and commonly observed concern in the community.

Only 39.3% agreed that heredity influences malalignment, a higher proportion than reported by Dhakal et al. (26.86%), Soni et al. (15%), and Essamet and Darout (26.5%).^{10,11,16} However, our results were comparable to Singh et al. (46.5%) and Shekar et al. (43.5%).^{17,18} Similarly, 38.6% agreed that habits such as thumb sucking, tongue thrusting, and mouth breathing cause malalignment. This was similar to Singh et al. (36.9%), but lower than Dhakal et al. (41.43%), Shekar et al. (52.2%), and Soni et al. (65%).^{10,11,17,18} These findings highlight a lack of awareness regarding etiological factors of malocclusion. In our study, 65.7% believed that malaligned teeth affect chewing ability, which was comparable to Dhakal et al. (70.14%), Singh et al. (70.2%), and Soni et al. (70%), and higher than Shekar et al. (58.3%).^{10,11,17,18} Likewise, 52.5% agreed that malaligned teeth affect speech, similar to Dhakal et al. (56%) and Shekar et al. (54%), but higher than Singh et al. (43.9%).^{10,17,18}

More than half of the respondents (62.7%) reported that malaligned teeth affect oral hygiene, which was consistent with Dhakal et al. (62.71%) and Singh et al. (67.7%), and higher than Shekar et al. (49.9%).^{10,17,18} This reflects a moderate understanding of the health implications of malocclusion. However, 47.5% still disagreed with its effect on speech, underscoring the need for improved education.

In total, 79.9% agreed that orthodontic treatment in childhood and adolescence is essential, which was lower than Singh et al. (90.1%) and Dhakal et al. (81.86%), but higher than Shekar et al. (58%).^{10,17,18} About 55% agreed that crooked teeth have ill effects, consistent with Dhakal et al. (51.43%).¹⁰ Encouragingly, 90.8% had seen individuals wearing braces, similar to Dhakal et al. (90.57%), indicating increased visibility and normalization of orthodontic care.¹⁰ Furthermore, 61.1% understood that early braces use improves facial aesthetics. Awareness regarding extractions in orthodontics was relatively low, with only 51.2% acknowledging this, while 58.1% expressed willingness to undergo extractions if needed.

Additionally, 73.6% believed irregular teeth affect appearance, and 76.6% considered alignment important for facial aesthetics. Despite this, only 44.2% had been advised to undergo alignment, and just 27.1% felt the personal need to wear braces. This gap between awareness and perceived necessity suggests that individuals may underestimate the significance of their dental irregularities or the benefits of treatment.

A total of 66.7% indicated willingness to continue treatment despite minor discomfort such as pain or ulcers, but only 46.9% were prepared for a treatment duration of 1–2 years. Awareness regarding retainers was notably low; only 29.0% knew about their post-treatment use, which was much lower than Chaudhary et al. (80.9%).¹⁴ Furthermore, just 39.1% expressed readiness to wear retainers for 6–12 months after treatment. These findings highlight concerns about long-term treatment compliance.

Gender-based analysis revealed overall similarity between male and female responses, with significant differences in three areas. Females showed greater awareness regarding heredity as a cause of malocclusion ($p = 0.014$), were more likely to recognize the impact of irregular teeth on speech ($p < 0.001$), and demonstrated higher awareness of the benefits of early orthodontic treatment for improving appearance ($p = 0.004$). These results align with Iranzo et al., who also reported higher orthodontic awareness among females.¹⁹

This study was limited by its single-center design and small sample size. In addition, comparisons were restricted to gender differences without accounting for age, which is another limitation.

CONCLUSION

Most patients were aware of orthodontists and the impact of irregular teeth on appearance, yet knowledge about hereditary and habitual causes of malocclusion, as well as the importance of retainers, was limited. Cost, treatment duration, and lack of awareness remain barriers to care. Females generally showed greater awareness than males. Patient education and further multi-center studies with larger sample size are recommended to address these gaps.

Conflict of Interest: None

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