



Knowledge and Attitude Towards Orthodontic Treatment among High School Students of Biratnagar

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ABSTRACT

Introduction: Orthodontic treatment aims to improve esthetics, function, and the structural balance of the stomatognathic system, thereby enhancing the self-esteem of the patients. This study was conducted with the aim of assessing the orthodontic treatment knowledge and attitude among high school students of Biratnagar.

Materials and Methods: This was a descriptive, cross-sectional, questionnaire-based study carried out among 1,111 high school students. The questionnaire included 14 closed-ended questions assessing orthodontic knowledge and 10 closed-ended questions for assessing orthodontic attitude. The mean knowledge and attitude were calculated and compared between the students from government and private schools.

Results: The mean knowledge scores for private and government school students were 8.68 and 9.05, respectively. The mean attitude scores were 4.63 for private school students and 4.58 for government school students. A statistically significant difference ($p < 0.001$) was observed in knowledge scores between the two groups, with government school students demonstrating a higher mean rank (587.3) compared to private school students (448.7). However, no significant differences were noted between them when orthodontic attitude were assessed ($p = 0.592$).

Conclusion: Government school students had significantly higher orthodontic knowledge as compared to the private school students; however, no significant difference was found in orthodontic attitude between the groups.

Keywords: Attitude, High school students, Knowledge, Orthodontic treatment.

INTRODUCTION

Orthodontic treatment aims to improve esthetics, function, and the structural balance of the stomatognathic systems, thereby enhancing the self-esteem of the patients. Orthodontic patients most

often are high school students in the early permanent dentition. As high school students fall under a suitable age group to undergo orthodontic treatment, they are utmost taken care of by their parents, who bring them to orthodontists for consultation and treatment of

orthodontic problem.

Most orthodontic patients have reported that the most common reason for not receiving treatment was embarrassment rather than physical discomfort.¹ Even among the dental graduates, only 25% demonstrated poor to fair orthodontic knowledge.² On the other hand, Nepalese orthodontic patients show good perception of orthodontists' communication and clinical skills, along with good practices in regular brushing habits.³ The lack of awareness remains the main factor preventing people from seeking orthodontic treatment.⁴

A study on orthodontic knowledge and attitude among the general population found that most respondents were aware of the benefits of the orthodontic treatment and had a positive attitude towards it.⁵ Awareness of orthodontics was influenced by age, gender, and the socio-economic and sociocultural structure of the community.⁶

In a study in Kathmandu, it was found that approximately 73% of high school students presented with malocclusion.⁷ It is therefore necessary to recognize the perception of this major group of orthodontic patients who are high school students. With this aim, we conducted a study to investigate orthodontic knowledge and attitudes among high school students in Biratnagar.

MATERIALS AND METHODS

This study was a comparative, cross-sectional study conducted among high school students in Biratnagar. Ethical approval was obtained from the Institutional Review Committee (IRC) of Nobel Medical College Teaching Hospital (Reference no. 905/2023). The questionnaire used in this study had been previously validated.⁸ The content and construct validity were established for the Nepali-translated questionnaire. Both English and Nepali versions were printed together for each participant.

The questionnaire consisted of three sections: demographics, 14 questions for assessing orthodontic knowledge, and 10 questions for orthodontic attitude. In the knowledge section, a correct answer ("Yes") was assigned a score of 1, while incorrect answers ("No"/"Don't know") received a score of 0. For the attitude section, affirmative answers ("Yes") were scored as 1, and negative answers ("No"/"Don't know") were scored as 0.

Two private schools and two government schools were randomly selected from the list of schools obtained from the District Education Office, Morang. Students from grades 8, 9 and 10 in these schools were randomly selected for the research. The sample size was calculated based on the responses of secondary-level students in Kathmandu, as reported by Dhakal et al.⁸ On the knowledge-based questionnaire, 60.6% and 30.9% of correct responses were reported among private and public-school students respectively. The sample size was calculated for two strata of private and public-school students, with 0.05 level of significance at 95% confidence interval.⁸

Strata: private high school: $P=60.6\%$ $Zx= 1.96$ $d= 10\%$ of P . n (private) = $Zx^2 P(100-P)/d^2 = 250$

Strata: public high school:
 $P=30.9\%$ $Zx= 1.96$ $d= 10\%$ of P . n (public) = $Zx^2 P(100-P)/d^2 = 860$

The total sample size was therefore 1,110 (250 private and 860 public).

The study was carried out from March 2024 to August 2024. Written informed consents were obtained from parents. Questionnaires were then distributed only to students who consented to participate. Students who did not provide consent were excluded and only the completely filled questionnaires were considered for analysis. The data were entered and coded in Microsoft Excel 2019 and was analyzed using Statistical Package of Social Sciences (SPSS) version 23.0. Frequency, percentage, mean and standard deviation were calculated for knowledge and attitude score. Shapiro-Wilk test confirmed non-normal distribution of the scores and hence Mann-Whitney U test was conducted to assess the differences in the scores between students from government and private schools.

RESULTS

Altogether 1,111 students aged 13 to 18 years participated in the study, including 251 from private schools and 860 from government schools. Out of these, 629 were females and 482 were males.

Knowledge and attitude assessment of the participants are tabulated in Tables 1 and 2 respectively. The mean knowledge and attitude scores were calculated and compared between students from private and government schools (Table 3), as well as between male and female students (Table 4). The findings

indicated that the mean knowledge scores for private and government school students were 8.68 and 9.05, respectively. Similarly, the mean attitude scores were 4.63 for private school students and 4.58 for government school students. A statistically significant difference ($p < 0.001$) was observed in knowledge scores between private and government school students,

with government school students demonstrating a higher mean rank (587.3) compared to private school students (448.7), indicating a higher level of knowledge among students of government schools. No significant difference was observed in orthodontic attitude scores ($p = 0.592$).

Table 1: Knowledge assessment of participants

| SN | Questions on knowledge | Response | Students/School | | Total |
|----|---|---------------|-----------------|------------|---------------|
| | | | Private | Government | |
| 1 | Have you heard of an orthodontist? | Yes | 132 | 562 | 694 (62.47%) |
| | | No/don't know | 119 | 298 | 417 (37.53%) |
| 2 | Are you aware that orthodontists arrange irregular teeth? | Yes | 135 | 602 | 737 (66.34%) |
| | | No/don't know | 116 | 258 | 374 (33.66%) |
| 3 | Have you heard about the irregularity of teeth? | Yes | 215 | 787 | 1002 (90.19%) |
| | | No/don't know | 36 | 73 | 109 (9.81%) |
| 4 | Have you noticed people having irregular teeth? | Yes | 218 | 808 | 1026 (92.35%) |
| | | No/don't know | 33 | 52 | 85 (7.65%) |
| 5 | Do you think heredity can influence the arrangement of teeth? | Yes | 88 | 260 | 348 (31.32%) |
| | | No/don't know | 163 | 600 | 763 (68.68%) |
| 6 | Do you think habits like thumb sucking/ tongue thrusting / mouth breathing can cause irregularity of teeth? | Yes | 120 | 336 | 456 (41.04%) |
| | | No/don't know | 131 | 524 | 655 (58.96%) |
| 7 | Do you think irregular teeth can affect chewing ability? | Yes | 158 | 519 | 677 (60.94%) |
| | | No/don't know | 93 | 341 | 434 (39.06%) |
| 8 | Do you think irregular teeth can affect speech? | Yes | 125 | 478 | 603 (54.28%) |
| | | No/don't know | 126 | 382 | 508 (45.72%) |
| 9 | Do you think irregular teeth can affect oral hygiene? | Yes | 138 | 459 | 597 (53.74%) |
| | | No/don't know | 113 | 401 | 514 (46.26%) |
| 10 | Do you think dental checkup and treatment of irregularity is essential in early childhood and adolescents? | Yes | 191 | 645 | 836 (75.25%) |
| | | No/don't know | 60 | 215 | 275 (24.75%) |
| 11 | Do you know crooked teeth have ill effects? | Yes | 106 | 466 | 572 (51.49%) |
| | | No/don't know | 145 | 394 | 539 (48.51%) |
| 12 | Have you seen people wearing braces? | Yes | 232 | 790 | 1022 (91.99%) |
| | | No/don't know | 19 | 70 | 89 (8.01%) |
| 13 | Did you know braces at an earlier age would improve facial appearance? | Yes | 171 | 610 | 781 (70.30%) |
| | | No/don't know | 80 | 250 | 330 (29.70%) |
| 14 | Are you aware that few teeth may have to be removed for aligning irregular teeth? | Yes | 149 | 461 | 610 (54.91%) |
| | | No/don't know | 102 | 399 | 501 (45.09%) |

Table 2: Attitude assessment of participants

| SN | Questions on knowledge | Response | Students/School | | Total |
|----|--|---------------|-----------------|------------|--------------|
| | | | Private | Government | |
| 1 | Has anyone advised you to get your teeth aligned | Yes | 115 | 328 | 443 (39.87%) |
| | | No/don't know | 136 | 532 | 668 (60.13%) |
| 2 | Do you think irregular teeth can affect appearance? | Yes | 184 | 644 | 828 (74.53%) |
| | | No/don't know | 67 | 216 | 283 (25.47%) |
| 3 | Do you believe teeth should be properly aligned for a better facial appearance? | Yes | 191 | 638 | 829 (74.62%) |
| | | No/don't know | 60 | 222 | 282 (25.38%) |
| 4 | Have you ever felt the need to wear braces? | Yes | 82 | 230 | 312 (28.08%) |
| | | No/don't know | 169 | 630 | 799 (71.92%) |
| 5 | Would you do orthodontic treatment if it takes 1-2 years? | Yes | 84 | 357 | 441 (39.69%) |
| | | No/don't know | 167 | 503 | 670 (60.31%) |
| 6 | Will you agree if some teeth must be removed for orthodontic treatment? | Yes | 107 | 386 | 493 (44.37%) |
| | | No/don't know | 144 | 474 | 618 (55.63%) |
| 7 | Will you wear additional retainer appliances for 6-12 months after treatment completion? | Yes | 87 | 287 | 374 (33.66%) |
| | | No/don't know | 164 | 573 | 737 (66.34%) |
| 8 | Will you continue treatment if you experience slight pain, ulcerations or discomfort? | Yes | 146 | 509 | 655 (58.96%) |
| | | No/don't know | 105 | 351 | 456 (41.04%) |
| 9 | Do you know that orthodontic treatment is costly? | Yes | 123 | 465 | 588 (52.93%) |
| | | No/don't know | 128 | 395 | 523 (47.07%) |
| 10 | Have you undergone any treatment for irregular teeth in the past? | Yes | 43 | 99 | 142 (12.78%) |
| | | No/don't know | 208 | 761 | 969 (87.22%) |
| a) | Was the treatment completed as planned? | Yes | 26 | 65 | 91 (64.08%) |
| | | No/don't know | 17 | 34 | 51 (35.92%) |
| b) | Did you wear retainer for the entire duration specified by your doctor? | Yes | 9 | 32 | 41 (28.87%) |
| | | No/don't know | 34 | 67 | 101 (71.13%) |
| c) | Did you consult your doctor for any complaints after completion of treatment? | Yes | 16 | 33 | 49 (34.51%) |
| | | No/don't know | 27 | 66 | 93 (65.49%) |

Table 3: Comparison of knowledge and attitude according to type of school

| Type of School | | N | Mean score | Mean Rank | P value |
|----------------|------------|-----|------------|-----------|---------|
| Knowledge | Private | 251 | 8.68 | 448.7 | <0.001* |
| | Government | 860 | 9.05 | 587.3 | |
| Attitude | Private | 251 | 4.63 | 565.5 | 0.592 |
| | Government | 860 | 4.58 | 553.2 | |

* Statistically significant, Mann -Whitney U test

Regarding gender-based comparisons (Table 4), female students exhibited higher mean scores for both knowledge (9.12) and attitude (4.63). The differences were statistically significant ($p < 0.001$), indicating that female students possessed a more favorable

knowledge and attitude toward orthodontic treatment. However, the study also revealed that the mean ranks for knowledge (579.9) and attitude (575.7) were higher among male students compared to female students.

Table 4: Comparison of knowledge and attitude according to gender

| Gender | | N | Mean score | Mean Rank | P Value |
|-----------|--------|-----|------------|-----------|---------|
| Knowledge | Male | 629 | 8.38 | 579.9 | <0.001* |
| | Female | 482 | 9.12 | 524.6 | |
| Attitude | Male | 629 | 4.32 | 575.7 | <0.001* |
| | Female | 482 | 4.63 | 530.2 | |

* Statistically significant, Mann-Whitney U test (Shapiro-Wilk test was done to test normality)

DISCUSSION

This study was designed to assess the knowledge and attitude of high school students towards orthodontic treatment. The orthodontic knowledge and attitude could be different among private and government school students. In our study, among the participants, 37.53% had never heard of an orthodontist, 33.66% were unaware of what an orthodontist is, 58.96% of the participants were unaware that habits like thumb sucking, tongue thrusting or mouth breathing can cause irregularity of teeth, and 48.51% did not think that malocclusion can have ill effects. However, 70.73% thought that braces at an earlier age could improve facial appearance and 91.99% of the participants had seen others wearing braces. About 39.87% of our participants had received advice to have their teeth aligned, 74.62% believed that teeth should be properly aligned for better facial appearance, and only 28.08% of the participants had ever felt the need to wear braces; 52.93% believed that orthodontic treatment is costly and only 12.78% of the participants had undergone any orthodontic treatment in the past.

From the comparison of knowledge of orthodontic treatment among students in government and private schools, the knowledge of government school students was found to be significantly higher than that of students in private schools, which shows higher orthodontic awareness among government school students, which was further supported by the fact that government school students had a higher mean rank. This finding was different from the findings of Dhakal et al in the study conducted in Kathmandu which showed greater knowledge among private school students.⁸ This could

be due to students in the government schools in this locality being more aware than those in private schools, or government school students chosen in the study had better knowledge than those from private schools. This finding also challenges the false prejudice that private school students are always considered superior to government school students.⁹

The attitude and knowledge among girls in our study were significantly higher than those of boys, which was in accordance with the findings of Cigerim et al.⁶ However, the study by Dhakal et al did not show any significant association between orthodontic attitude and knowledge in boys and girls.⁸ Similarly, the study by Muktaadir Quadri SM et al showed same level of orthodontic awareness regarding orthodontic treatment among boys and girls.¹⁰ The reason behind this could be that females in our study were more aesthetically conscious and aware of their appearance, and therefore their attitude and knowledge were greater than those of the boys. Orthodontic knowledge directly influences orthodontic attitude, which in turn influences the orthodontic practice, thereby necessitating efforts to enhance patients' understanding of orthodontic treatment.¹¹ Our study shows that high school students' knowledge and attitude towards orthodontic treatment are not adequate. Therefore, orthodontic awareness programs should be encouraged at the primary or secondary school levels, including rural schools.

Our study randomly selected students from private and government schools in grades 8,9 and 10, irrespective of their ages and socioeconomic status. Further studies including age of the students, as well as questionnaires

for parents to evaluate parental orthodontic knowledge, attitude, and socioeconomic status, are suggested.

CONCLUSION

From this study, it can be concluded that government school students in Biratnagar possessed higher orthodontic knowledge and attitude compared to private school students, and girls possessed higher orthodontic knowledge and attitude compared to boys.

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Conflicts of Interest: None

| OJN |

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