ISSN Print: 2394-7489
ISSN Online: 2394-7497
IJADS 2025; 11(2): 155-161

www.oraljournal.com
Received: 22-02-2025
Accepted: 21-03-2025

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Importance of orthodontics and smile correction in teenagers: A survey

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DOI: https://www.doi.org/10.22271/oral.2025.v11.i2c.2151

Abstract
Background: Orthodontics plays a critical role in correcting malocclusion and enhancing dental function, aesthetics, and overall oral health. Awareness among teenagers about orthodontic treatment and its benefits is essential for promoting early intervention and informed decision-making.
Aim: This study aimed to assess the level of awareness, perceptions, and attitudes of teenagers regarding orthodontic treatment and smile correction.
Materials and Methods: A cross-sectional survey was conducted in May 2020 using a structured 14-item questionnaire distributed via Google Forms. A total of 201 teenage participants were selected through simple random sampling. Descriptive statistics were used to analyze the data with SPSS software, and only complete responses were included in the analysis.
Results: Findings revealed that 83.6% of participants were aware of the role of orthodontics in correcting misaligned teeth, and 88.3% acknowledged the importance of a perfect smile for self-confidence. However, significant gaps in knowledge were observed: 56.9% were unaware of the treatment cost, and 52.5% were unaware of treatment duration. While 75% of respondents recognized the necessity of orthodontic treatment, many perceived it as costly (59.2%) and painful (70.1%). Positive perceptions included improved smile aesthetics (78.6%) and better oral function (32.3%).
Conclusion: Although most teenagers value the aesthetic and functional benefits of orthodontic treatment, awareness regarding cost and duration remains limited. These findings highlight the need for increased educational efforts targeting adolescents to enhance their understanding of orthodontic care. Future studies should address the current limitations by involving a larger and more demographically diverse population.

Keywords: Orthodontics, smile correction, awareness, teenagers, orthodontic treatment, malocclusion

1. Introduction
Orthodontics is a branch of dentistry that deals with diagnosis, prevention and correction of malpositioned teeth and jaws. Correction of malpositioned teeth is done by moving teeth and adjusting the underlying bone with the help of certain devices. Ideal age for undergoing orthodontic treatment is between 8 to 14 years.
Malocclusion is not a disease but refers to an abnormal alignment of the teeth and the way the upper and lower teeth come together [1]. It is commonly caused by genetic, environmental, and ethnic factors [2]. Orthodontic treatment is recommended to correct malocclusion in order to establish a proper bite, improve dental alignment, enhance facial aesthetics, and reduce the risk of accidental injury-especially in cases of severely protruding front teeth. Additionally, treatment helps correct abnormal oral habits and muscle activity, promotes better oral hygiene, and lowers the risk of dental caries and periodontal disease. Common gum diseases include gingivitis and periodontitis [3]. The health of the periodontium is typically evaluated using plaque scores, bleeding on probing, and probing pocket depth measurements [4].
Malocclusion can negatively impact an individual's self-satisfaction, self-confidence, and may lead to emotional and psychological distress [5]. While the severity of malocclusion is a key factor, the decision to begin orthodontic treatment is also influenced by background factors such as age, gender, and socioeconomic status [6].

Children's perception of the need for orthodontic care and their satisfaction with their dental appearance are often closely linked to their mother's perception, highlighting the strong motivational role of parental influence-often more significant than the actual severity of the malocclusion [7]. Studies also show that awareness of orthodontic procedures is generally higher among girls than boys, and among girls, those in urban areas tend to have greater awareness compared to their rural counterparts [8].

Raising awareness about orthodontic treatment among teenagers is crucial for ensuring timely and effective dental care. Undergoing treatment at an earlier age is generally more successful, as the bones are softer and more adaptable compared to those in late adolescence or adulthood. Therefore, educating teenagers about the benefits of orthodontic care is essential to promote informed decisions and better oral health outcomes. The aim of this investigation is to evaluate the awareness of orthodontic treatment and smile correction in teenagers.

Materials and Methods

- **Study Design:** A cross-sectional survey was conducted among teenagers to assess their awareness of orthodontics and smile correction. The study employed a simple random sampling method and included a total of 201 participants. Participation was entirely voluntary, with no incentives provided. The survey was carried out in May 2020. Ethical guidelines were followed, and informed consent was obtained from all participants prior to their involvement.
- **Survey Instrument:** The survey instrument, a structured questionnaire, was developed following an extensive review of existing literature. It was created using Google Forms and distributed through various social media platforms to reach the target audience. The questionnaire underwent a review process, during which revisions were made to enhance clarity and minimize ambiguous responses. It comprised 14 questions, including both open-ended and closed-ended formats. The collected responses were analyzed and presented using graphical representations for better interpretation of the data.
- **Data Analysis:** Only fully completed surveys were included in the analysis, while incomplete responses were excluded. Descriptive statistics were used as the primary method of analysis. All collected responses were systematically tabulated, and the reliability of the data was verified. Frequency tables were generated for each question and analyzed using SPSS statistical software [9, 13].

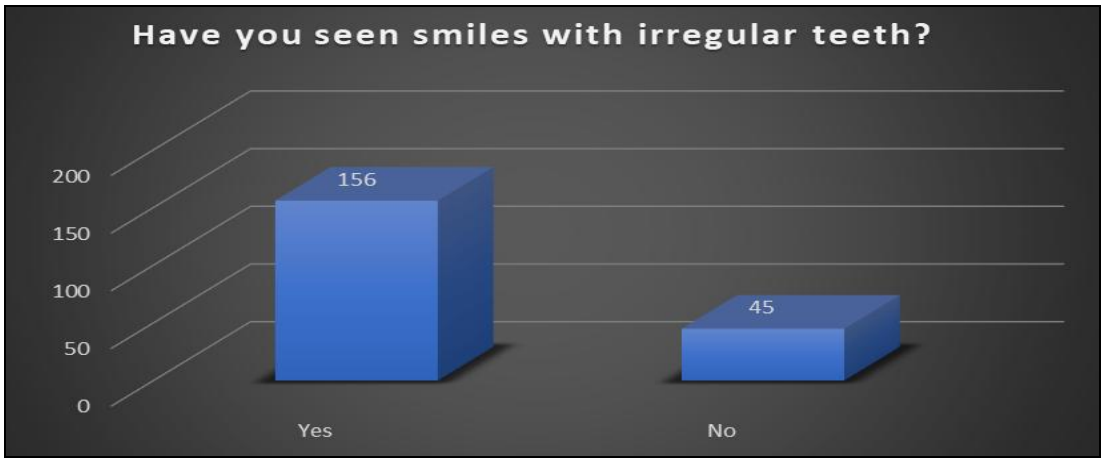

Fig 1: Bar chart showing the response to asked question have you seen smiles with irregular teeth? 156 respondents (77.6%) answered "Yes", indicating they have observed smiles with irregular teeth and 45 respondents (22.4%) answered "No", suggesting they have not noticed such irregularities.

Fig 2: Bar chart showing "In your opinion is having a perfect smile important for self confidence in yourself" displays the opinions of 201 teenagers on the relationship between a perfect smile and self-confidence. 174 respondents (86.6%) answered "Yes", indicating they believe a perfect smile plays an important role in boosting self-confidence, 7 respondents (3.5%) answered "No", suggesting they do not associate a perfect smile with self-confidence, and 20 respondents (10%) selected "Don't Think So", showing uncertainty or a differing perspective on the importance of dental aesthetics.

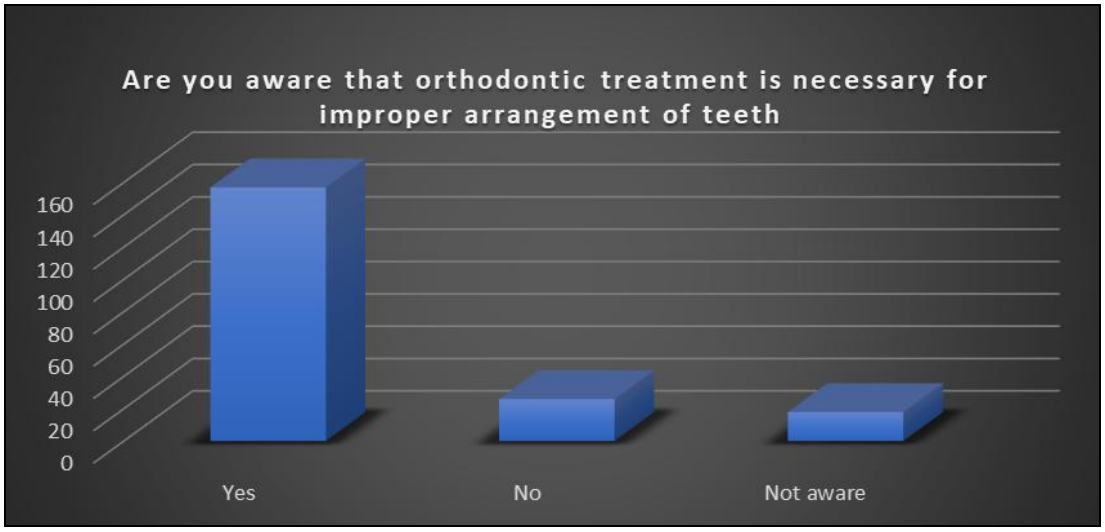

Fig 3: Bar chart showing "Are you aware that orthodontic treatment is necessary for improper arrangement of teeth" illustrates the level of awareness among 201 teenagers regarding the role of orthodontic treatment in correcting dental misalignment. A significant majority of respondents, approximately 168 (83.6%), answered "Yes", indicating they are aware that orthodontic treatment is necessary for correcting improperly arranged teeth, Around 18 respondents (9%) answered "No", suggesting they do not believe orthodontic treatment is required, and about 15 respondents (7.5%) selected "Not aware", showing a lack of knowledge on the subject.

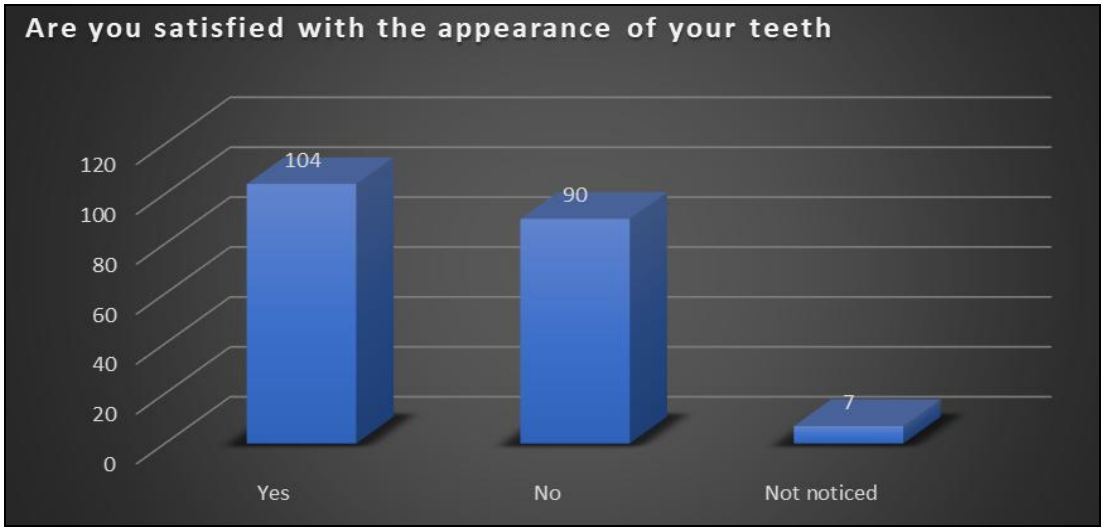

Fig 4: Bar chart showing "Are you satisfied with the appearance of your teeth" presents the self-perception of dental aesthetics among 201 teenage respondents. 104 respondents (51.7%) answered "Yes", indicating satisfaction with the appearance of their teeth, 90 respondents (44.8%) answered "No", expressing dissatisfaction with how their teeth look, and 7 respondents (3.5%) chose "Not noticed", suggesting they have not paid attention to or evaluated their dental appearance.

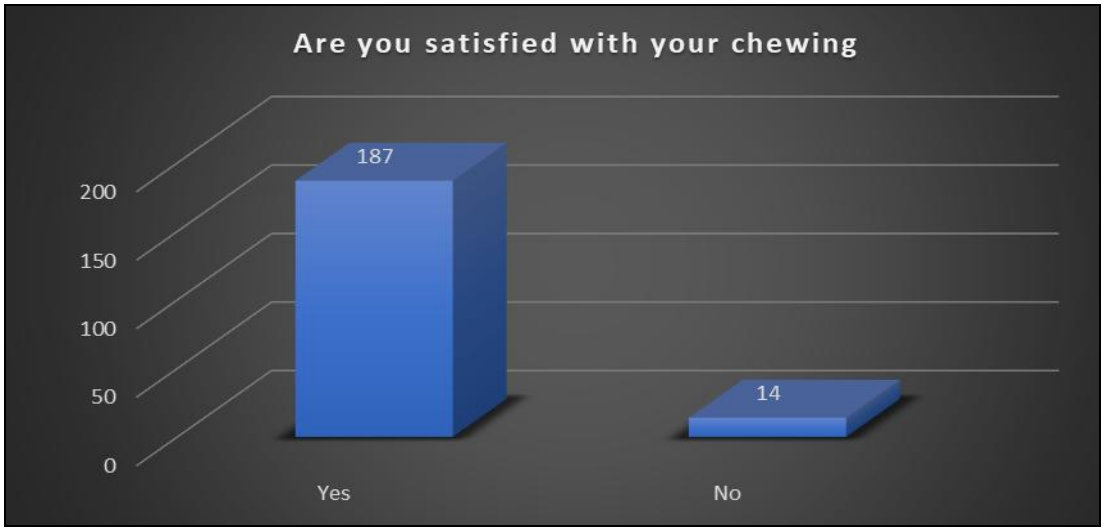

Fig 5: Bar chart showing "Are you satisfied with your chewing" shows the responses of 201 teenagers regarding their satisfaction with their chewing ability. 187 respondents (93%) answered "Yes", indicating they are satisfied with how they chew food and 14 respondents (7%) answered "No", indicating dissatisfaction with their chewing function.

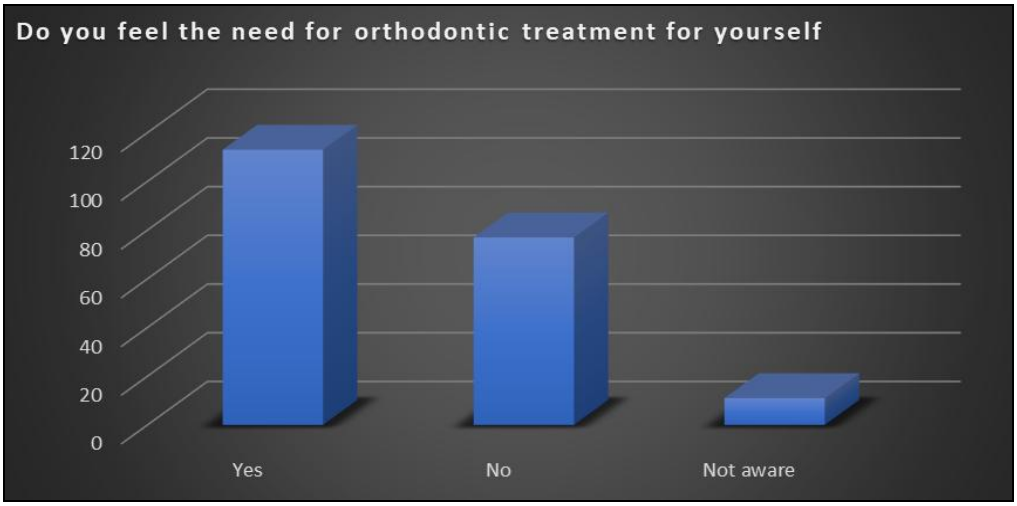

Fig 6: Bar chart titled "Do you feel the need for orthodontic treatment for yourself" presents how teenagers perceive their own need for orthodontic care. Approximately 124 respondents (61.7%) answered "Yes", indicating they believe they require orthodontic treatment, about 78 respondents (38.8%) answered "No", expressing that they do not feel a need for such treatment, and small portion, around 10 respondents (5%), selected "Not aware", suggesting uncertainty or lack of awareness regarding their own orthodontic needs.

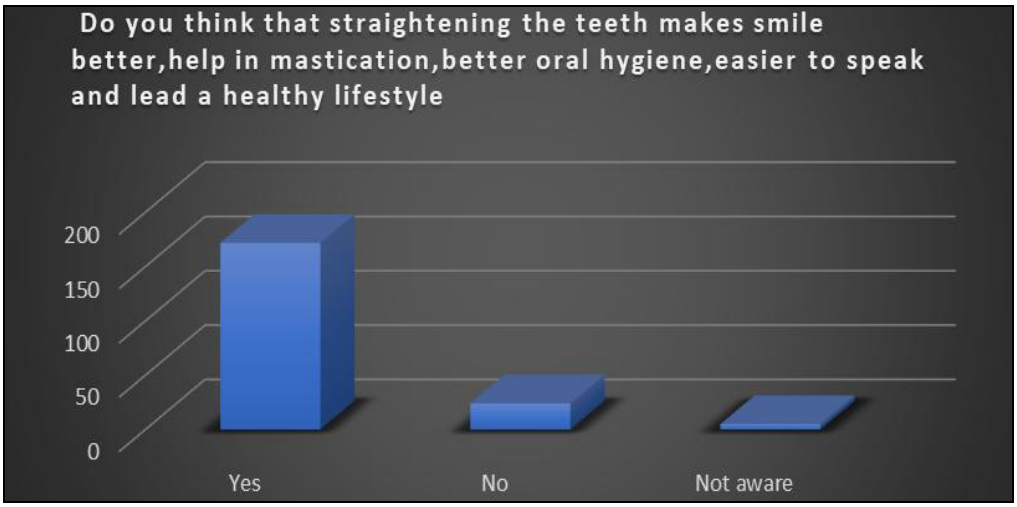

Fig 7: Bar chart showing "Do you think that straightening the teeth makes smile better, helps in mastication, better oral hygiene, easier to speak and lead a healthy lifestyle" illustrates teenagers' perceptions of the broader benefits of orthodontic treatment. A large majority, approximately 190 respondents (94.5%), answered "Yes", acknowledging the multiple benefits of teeth straightening, including improved aesthetics, better chewing (mastication), enhanced oral hygiene, improved speech, and overall health, around 7 respondents (3.5%) answered "No", indicating they do not believe these benefits are associated with orthodontic treatment, and 4 respondents (2%) chose "Not aware", reflecting a lack of understanding or awareness of the holistic benefits.

Fig 8: Bar chart showing "Are you aware of 'Orthodontist'" shows the level of awareness among teenagers about the dental specialty focused on correcting irregularities of the teeth and jaw. A significant majority, approximately 170 respondents, answered "Yes", indicating that they are aware of what an orthodontist is and what they do, and around 50 respondents answered "No", suggesting a lack of awareness about the orthodontic specialty

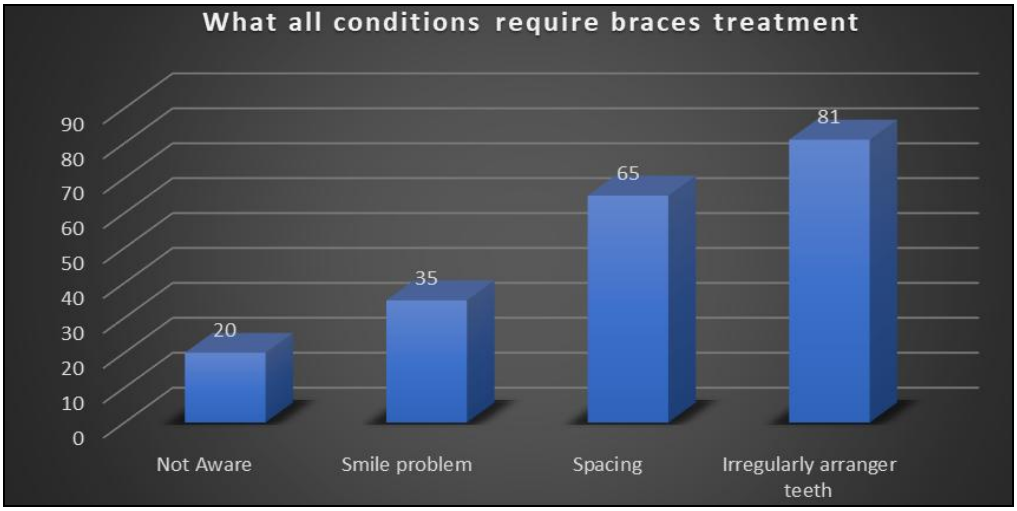

Fig 9: Bar chart showing "What all conditions require braces treatment" illustrates teenagers' understanding of various dental conditions that necessitate orthodontic intervention with braces. 81 respondents identified "Irregularly arranged teeth" as a condition requiring braces, 65 respondents recognized "Spacing" (gaps between teeth) as an indication for braces treatment, 35 respondents associated braces treatment with "Smile problems", possibly referring to aesthetic concerns or misalignment affecting smile appearance, and 20 respondents reported being "Not aware" of any specific conditions that require braces

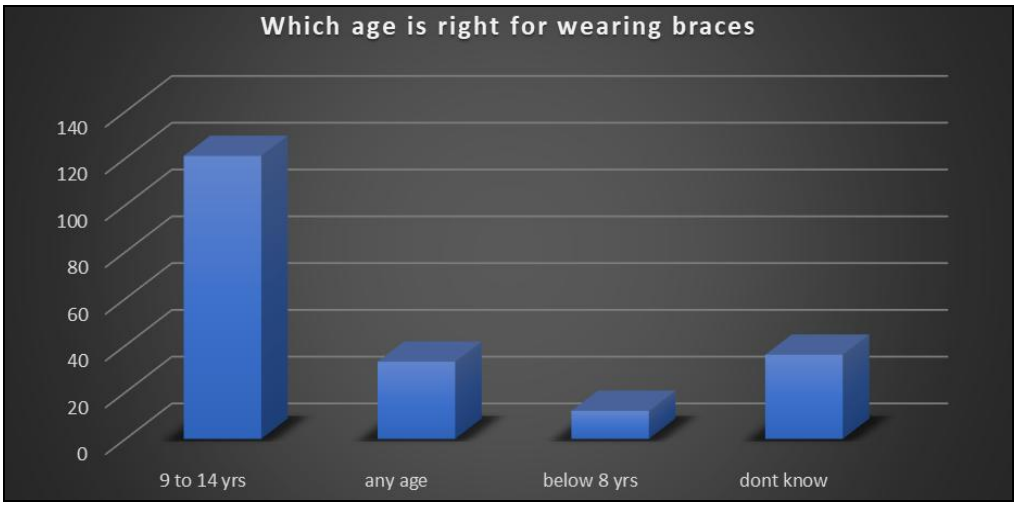

Fig 10: Bar chart showing "Which age is right for wearing braces" illustrates the participants' perceptions regarding the most appropriate age for initiating orthodontic (braces) treatment. 130 respondents selected "9 to 14 years", indicating a strong awareness of the most commonly recommended age group for starting orthodontic treatment, 43 respondents chose "Don't know", reflecting a lack of awareness or uncertainty about the appropriate timing for braces, 39 respondents believed that "any age" is suitable, suggesting some flexibility in understanding that orthodontic treatment may be appropriate across various life stages depending on individual needs, and 15 respondents selected "below 8 years", which is typically considered too early for full orthodontic treatment but may reflect early observation of dental issues.

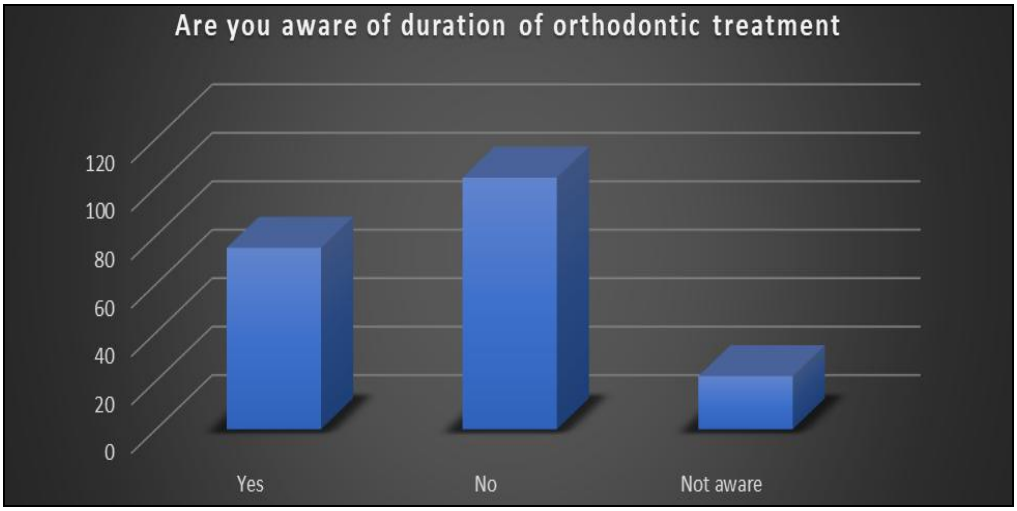

Fig 11: Bar chart showing "Are you aware of duration of orthodontic treatment" presents the participants' awareness regarding how long orthodontic treatment typically takes. Around 120 respondents answered "No", indicating that a majority are not aware of how long orthodontic treatment usually lasts, approximately 90 respondents selected "Yes", showing they have some knowledge of the treatment duration, and roughly 30 respondents answered "Not aware", signifying complete unfamiliarity with the concept.

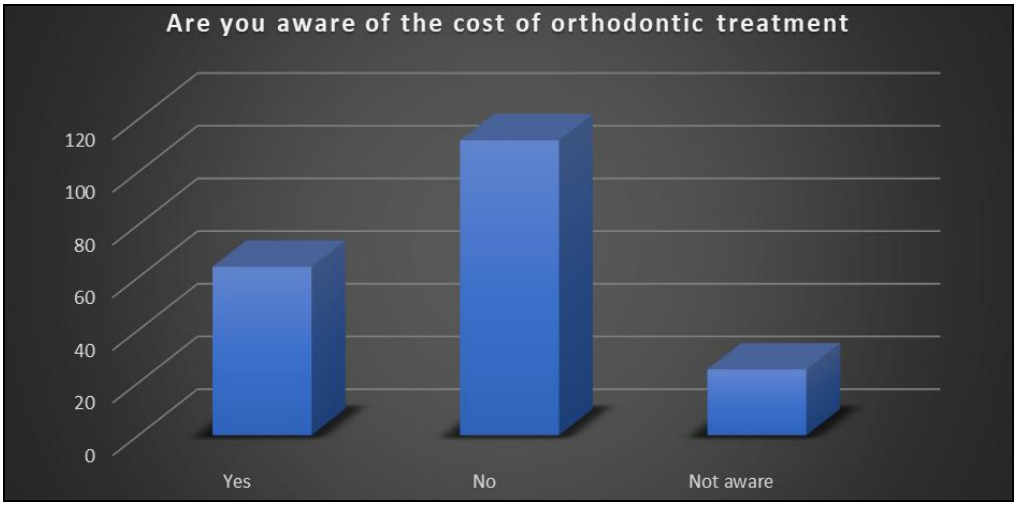

Fig 12: Bar chart showing "Are you aware of the cost of orthodontic treatment" shows how informed participants are regarding the financial aspect of undergoing orthodontic care. Approximately 120 respondents said "No", indicating they are not aware of the cost involved, around 70 respondents answered "Yes", showing some level of awareness, and roughly 30 respondents indicated "Not aware", suggesting complete unfamiliarity with the cost issue.

Fig 13: Bar chart showing "What do you think about orthodontic treatment procedures" captures public perceptions and attitudes towards undergoing orthodontic care. 158 respondents believe it improves smiles, which is the most common positive perception, 141 respondents think the treatment is painful, highlighting a significant concern, 119 respondents find it costly, indicating financial burden is a major consideration, 65 respondents believe it improves function of teeth, reflecting understanding of its medical benefits, and only 16 respondents feel they cannot maintain oral hygiene during treatment, suggesting this is less of a concern.

Results and Discussion

Out of the 201 teenagers who participated in the survey, responses regarding orthodontic treatment revealed varying levels of awareness and perception. When asked about the purpose and implications of orthodontic procedures, 31.6% of respondents believed that orthodontic treatment improves one's smile, 28.2% perceived it as painful, and 23.9% considered it to be expensive. Additionally, a significant proportion of participants demonstrated limited knowledge about treatment specifics: 56.9% reported being unaware of the cost associated with orthodontic care, and 52.5% were not informed about the typical duration of treatment.

Furthermore, 56.1% of the teenagers expressed that they felt a personal need for orthodontic treatment. Notably, a large majority 88.3% acknowledged the importance of having a perfect smile, associating it with enhanced self-confidence. These findings suggest that while a substantial number of adolescents recognize the aesthetic and psychological value of orthodontic care, there remains a considerable gap in their understanding of the procedural and financial aspects of treatment.

The present research builds upon previous investigations conducted by our team, which included clinical reports, interventional studies, [14, 16] *in vitro* studies, [13] and systematic reviews [17, 21]. A prior survey conducted among parents in the Kanchipuram district revealed that 76.5% of parents with children aged 5-17 years viewed orthodontic treatment as essential, while 55.9% expressed anxiety about seeking treatment. In comparison, our study found that 75% of participants considered orthodontic treatment necessary, showing a strong alignment with the earlier findings [22].

This study has several limitations that must be acknowledged. One of the primary limitations is the relatively small sample size of 201 participants. A larger sample size would enhance the statistical power of the study and provide more reliable and generalizable findings. Additionally, the study sample was limited to teenagers, which restricts the applicability of the results to other age groups. Including a broader demographic range such as children, young adults, and older individuals would offer a more comprehensive understanding of public awareness, attitudes and perceptions toward orthodontic treatment across different stages of life. Future

research should aim to address these limitations by incorporating a more diverse and extensive participant base.

Conclusion

This study highlights that while a majority of teenagers recognize the importance of orthodontic treatment-particularly its role in improving smile aesthetics and boosting self-confidence there remain significant gaps in awareness regarding key aspects such as cost, duration, and the full scope of its functional benefits. Although 75% of participants considered orthodontic treatment necessary, misconceptions and limited knowledge persist, particularly about financial and procedural factors. These findings underscore the need for targeted educational initiatives to improve awareness and understanding among adolescents. Expanding future research to include larger and more diverse populations would provide deeper insights and support the development of more effective public health strategies in orthodontic education.

Conflict of Interest

Not available

Financial Support

Not available

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How to Cite This Article

Adhav P, Patil T, Mahamuni A, Misal A, Sataput S, Lad S. Importance of orthodontics and smile correction in teenagers: A survey. International Journal of Applied Dental Sciences. 2025;11(2):155-161.