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Original Article

Orthodontic Anomalies, Dental Caries, and Tooth Loss in Adolescence: Their Impact on Self-Esteem and Body Image: A Cross-Sectional Study

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CLINICAL SIGNIFICANCE

The study highlights the psychosocial impact of orthodontic treatment needs on body image in adolescents, emphasizing the importance of early orthodontic assessment to enhance self-perception and psychological well-being, ultimately contributing to improved patient outcomes and holistic adolescent care.

ABSTRACT

Objectives: This study aims to examine the relationship between common dental anomalies, such as orthodontic treatment needs, tooth loss, and dental caries, and their impact on self-esteem and body image in adolescents. Given that adolescence is a critical period for psychological and physical development, understanding how dental health influences these factors is essential.

Materials and Methods: A total of 167 adolescents aged 15–18 years who sought dental care at the Recep Tayyip Erdoğan University Faculty of Dentistry participated in this study. Sociodemographic data, Rosenberg Self-Esteem Scale (RSES) scores, and Body Image Scale scores were collected. A clinical oral examination assessed orthodontic treatment needs, tooth loss, and untreated dental caries. Participants were categorized based on their self-esteem and body image scores, and statistical analyses, including Spearman correlation and chi-square tests, were conducted to evaluate associations between dental anomalies, self-esteem, and body image.

Results: A significant negative correlation was found between orthodontic treatment needs and body image ($p = 0.015$), indicating that adolescents requiring orthodontic treatment had lower body image scores. However, no significant relationship was observed between tooth loss, dental caries, and either self-esteem or body image ($p > 0.05$).

Conclusion: The findings suggest that orthodontic issues are strongly linked to body image concerns in adolescents, whereas tooth loss and dental caries do not appear to significantly affect self-esteem or body image. These results highlight the psychosocial importance of orthodontic treatment and emphasize the need for further longitudinal studies exploring the link between dental health and psychological well-being.

1. Introduction

Self-esteem refers to an individual's positive or negative attitude towards themselves. When a person evaluates themselves positively, their self-esteem is considered high, whereas a negative self-evaluation indicates low self-esteem.[1] Particularly among adolescent girls, self-esteem is closely linked to body image, which is shaped by societal ideals of physical appearance. When individuals perceive themselves as falling short of these ideals, they may develop negative emotions.[2]

Body image refers to an individual's internalized thoughts and perceptions about their own body and physical appearance. Self-esteem and body image interact dynamically; individuals with a positive perception of their physical appearance tend to exhibit greater confidence and success, whereas those who are dissatisfied with their appearance may experience feelings of insecurity and worthlessness. The physical changes that occur during adolescence, particularly those related to facial aesthetics, can significantly influence body image and self-esteem.[3] Given the importance of physical attractiveness in social interactions, orthodontic issues, tooth loss, and dental caries are also relevant factors, as they can contribute to aesthetic concerns and social discomfort. While orthodontic anomalies have been extensively studied in relation to body image, the impact of dental caries and tooth loss remains less explored. These conditions can alter dental appearance, potentially leading to self-consciousness and negative self-perception, making their inclusion in this study essential for a more comprehensive understanding of the psychological effects of dental health on adolescents.[4]

Since self-esteem and body image are psychological constructs and, as previously mentioned, subjective processes, common dental disorders such as orthodontic problems, tooth loss, and untreated cavities can influence both body image and self-esteem. A limited number of studies have examined the impact of orthodontic treatment needs on body image and self-esteem, with findings indicating that self-esteem tends to improve following orthodontic treatment.[5]

In this context, the present study aims to clearly assess and elucidate the relationship between common dental pathologies and self-esteem and body image during adolescence, a critical developmental period marked by significant physical changes and increased sensitivity to appearance. By doing so, this study seeks to contribute to a better understanding of the psychological impact of dental health on adolescents' self-perception and well-being. Null hypothesis is there is no significant relationship between common dental pathologies (orthodontic anomalies, tooth loss, and dental caries) and self-esteem or body image in adolescents.

2. Materials and Methods

This study was approved by the Non-Interventional Clinical Research Ethics Committee of Recep Tayyip Erdoğan University (Decision No: 2024/224). Written and verbal informed consent was obtained from all participants and parents prior to data collection. The study was conducted in accordance with the Declaration of Helsinki, ensuring the confidentiality and privacy of participants' data.

2.1. Study Design

The study sample consisted of literate adolescents aged 15–18 who voluntarily agreed to participate in the study. These individuals applied to the Department of Oral and Dentomaxillofacial Radiology at Recep Tayyip Erdoğan University

Faculty of Dentistry for routine examinations due to various dental complaints. After obtaining informed consent from participants, a routine oral examination was conducted by an oral and dentomaxillofacial radiology specialist to assess common dental anomalies, including the need for orthodontic treatment, permanent tooth loss, fractured teeth, and dental caries.

Following the examination, participants were asked to complete a sociodemographic data form, the Rosenberg Self-Esteem Scale, and the Body Image Scale. The sample was then categorized into two groups based on body image scale cutoff values: those scoring below the cutoff were classified as having low body image, whereas those scoring above the cutoff were classified as having high body image.[6] These groups were compared in terms of common dental pathologies. Additionally, participants were categorized into high self-esteem (scoring 0–1 on the Rosenberg Self-Esteem Scale) and low self-esteem (scoring above 1) groups.[1] These groups were also compared in terms of common dental pathologies.

2.2. Indices Used in Oral Examination

a) All maxillary and mandibular anterior teeth, from canine to canine, were examined for traumatic injuries using a modified version of the Ellis classification.[7]

b) The number of missing teeth, their location (maxillary and/or mandibular), and their region (masticatory and/or aesthetic) were assessed. The aesthetic region is defined as the incisors, canines, and first premolars in the maxilla, and the incisors and canines in the mandible. The masticatory region includes the second premolars and the first and second molars in the maxilla, and both premolars and the first and second molars in the mandible.

c) The number, location (maxillary and/or mandibular), and region (masticatory and/or aesthetic) of untreated dentine caries were assessed, secondary caries will not be included.

d) Malocclusion was evaluated using the Index of Orthodontic Treatment Need (IOTN).[8]

The Dental Health Component (DHC) of the IOTN categorizes malocclusions based on various occlusal characteristics into five grades: Grades 1 and 2 indicate little or no need for treatment, Grade 3 represents borderline need, and Grades 4 and 5 signify definite treatment necessity.

2.3. Rosenberg Self-Esteem Scale

The Rosenberg Self-Esteem Scale (RSES), developed by Morris Rosenberg in 1963,[1] was used in the study to measure self-esteem. After being tested for reliability and validity in the United States, it has been widely used as a measurement tool in various studies. Designed specifically for the adolescent age group, its validity and reliability studies in Turkey were conducted.[9]

RSES consists of 11 subscales and 63 items, assessing self-esteem, continuity of self-concept, trust in others, sensitivity to criticism, depressive affect, daydreaming, perceived threats in interpersonal relationships, ability to engage in discussions, psychological isolation, psychosomatic symptoms, and parental interest. The self-esteem subscale includes ten items, with five measuring positive self-evaluation (items 1, 2, 4, 6, and 7) and five assessing negative self-evaluation (items 3, 5, 8, 9, and 10).[1] Based on the scoring system, self-esteem is categorized as high (0–1 points), moderate (2–4 points), or low (5–6 points). Higher scores indicate lower self-esteem.

2.4. Body Image Scale

The Body Image Scale was developed by Secord and Jourard in 1953 [6] and later validated for reliability and validity by Hovardaoğlu in 1989.[10] The scale consists of 40 items, each evaluating an organ, body part (such as arms, legs, or face), or bodily function (such as sexual activity level). Participants rate each item on a five-point Likert scale ranging from "Strongly Dislike" to "Strongly Like". The total score ranges from 40 to 200, with higher scores indicating greater body satisfaction. The cutoff score for the scale is 135; individuals scoring below this threshold are classified as having low body image.

2.5. Statistical Analysis

Data were analyzed using SPSS 29.0 (IBM, Armonk, USA). The Kolmogorov-Smirnov test was applied to assess the normality of variable distributions. Descriptive statistics, including minimum, maximum, mean, standard deviation, median, frequency, and percentage values, were reported. For categorical variables, the Pearson Chi-Square test was used when the sample size assumption (expected value >5) was met; otherwise, Fisher's Exact test was applied ($p < 0.005$). The relationships between the Rosenberg Self-Esteem Scale, Body Image Scale, tooth loss, dental caries, and the presence of orthodontic problems were analyzed using Spearman correlation analysis ($p < 0.05$).

3. Results

The study included 167 participants, aged between 15 and 17 years, with a median age of 16 years. The height of the participants ranged from 146 cm to 190 cm, with a median height of 165 cm. Their weight varied between 39 kg and 120 kg, with a median weight of 58 kg. Of the participants, 63% (n=104) were female and 37% (n=61) were male (Table 1).

Regarding education levels, 95% (n=157) were high school students, 4.2% (n=7) were not attending school, and 1.8% (n=3) were university students. The income distribution of the participants' families showed that 23.4% (n=39) had an income between 0–17,000 TL, 32.9% (n=55) between 17,000–22,000 TL, and 43.7% (n=73) had an income of 22,000 TL or more (Table 1).

The educational background of the participants' mothers indicated that 1.8% (n=3) were illiterate, 34.1% (n=57) had completed primary school, 22.8% (n=38) had completed middle school, 29.3% (n=49) had completed high school, 10.8% (n=18) had a university degree, and 1.2% (n=2) had a master's or doctoral degree. The educational background of the fathers showed that 1.2% (n=2) were illiterate, 13.8% (n=23) had completed primary school, 38.3% (n=64) had completed middle school, 29.3% (n=49) had completed high school, 13.2% (n=22) had a university degree, and 4.2% (n=7) had a master's or doctoral degree (Table 1).

According to the Ellis fracture classification, 97.6% (n=163) of the participants had no fractures, while 2.4% (n=4) had minor fractures. In terms of orthodontic treatment needs, 55.1% (n=92) were classified as Grade 1, 19.2% (n=32) as Grade 2, 10.2% (n=17) as Grade 3, 5.4% (n=9) as Grade 4, and 10.2% (n=17) as Grade 5 (Table 1).

When evaluating dental caries and tooth loss, 64.1% (n=107) of participants had caries in the upper jaw, while 35.9% (n=60) did not. In the lower jaw, 59.9% (n=100) had caries, whereas 40.1% (n=67) had no caries. The prevalence of tooth loss was 10.8% (n=18) in both the upper and lower jaws (Table 1).

Regarding psychological assessments, the median RSES score was 1 (range: 0–4.59), while the median Body Image Scale score was 141 (range: 91–193). According to RSES, 39.5% of participants had low self-esteem, while 60.5% had high self-esteem. Similarly, Body Image Scale results showed that 38.3% had low body image, whereas 61.7% had high body image. These findings suggest that, overall, the participants exhibited relatively high levels of self-esteem and body image (Table 1).

A statistically significant relationship was found between body image and the need for orthodontic treatment ($p = 0.015$). However, no statistically significant difference was observed between tooth loss and body image ($p = 0.469$). Similarly, when examining the relationship between dental caries and body image, no significant difference was found ($p = 0.249$) (Table 2).

Table 1. Demographic data of the participants.

Factors	Subgroup	n	[Median (Min-Max)] or %
Age (years)		167	16 (15-17)
Heigth (cm)		167	165 (146-190)
Weight (kg)		167	58 (39-120)
Gender	Male	61	37%
	Female	104	63%
Income Status of the Family	0-17.000	39	23.4%
	17000-22000	55	32.9%
	22 000 and higher	73	43.7%
Mother's Educational Status	Illiterate	3	1.8%
	Primary school	57	34.1%
	Secondary school	38	22.8%
	High school	49	29.3%
	University	18	10.8%
	Master's or Doctoral Degree	2	1.2%
Father's Educational Status	Illiterate	2	1.2%
	Primary school	23	13.8%
	Secondary school	64	38.3%
	High school	49	29.3%
	University	22	13.2%
	Master's or Doctoral Degree	7	4.2%
Ellis Classification	No Fractures	163	97.6%
	Type 1	4	2.4%
The Need for Orthodontic Treatment	Grade 1	92	55.1%
	Grade 2	32	19.2%
	Grade 3	17	10.2%
	Grade 4	9	5.4%
	Grade 5	17	10.2%
Orthodontic Treatment Need	Present	75	44.9%
	Absent	92	55.1%
Caries in the Maxilla	Present	107	64.1%
	Absent	60	35.9%
Caries in the Mandible	Present	100	59.9%
	Absent	67	40.1%
Dental Caries	Present	40	24%
	Absent	127	76%
Tooth Loss in the Maxilla	Present	18	10.8%
	Absent	149	89.2%
Tooth Loss in the Mandible	Present	18	10.8%
	Absent	149	89.2%
Tooth Loss	Present	27	16.2%
	Absent	140	83.2%
Rosenberg Self-Esteem Scale		167	1 (0-4.59)
Body Image Scale		167	141 (91-193)
Rosenberg Self-Esteem Scale	Low	66	39.5%
	High	101	60.5%
Body Image Scale	Low	64	38.3%
	High	103	61.7%

N (%), Median (Min-Max)

Table 2. Comparison of Body Image with the Presence of Orthodontic Problems, Tooth Loss, and Dental Caries

		Body Image Scale		
Orthodontic		Low	High	p-value
Treatment Need				
Present	n	36	28	**0.015***
Absence	n	39	64	
Tooth Loss		Present	Absence	p-value
Present	n	53	87	0.469
Absence	n	11	16	
Dental Caries		Present	Absence	p-value
Present	n	51	76	0.249
Absence	n	13	27	

Fisher's Exact Test, * indicates statistical significance

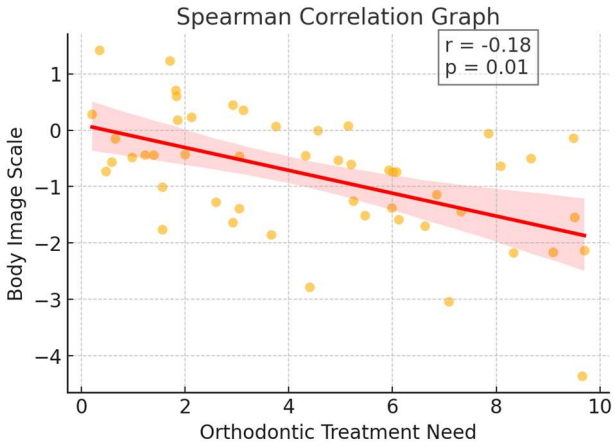

Fig. 1. Spearman Correlation graph comparing Body Image Scale and Orthodontic Treatment Need

No statistically significant relationship was found between self-esteem and orthodontic problems (p = 0.517). Similarly, there was no statistically significant difference between tooth loss and self-esteem (p = 0.358). Likewise, the relationship between dental caries and self-esteem was not found to be significant (p = 0.573) (Table 3).

According to the Spearman correlation analysis results presented in Fig. 1, a significant negative correlation was found between orthodontic treatment need and body image (r = -0.180, p = 0.010). However, the effect size indicates that this is a weak correlation, suggesting that while orthodontic treatment need is statistically associated with body image, its actual impact on perception may be limited. This finding suggests that individuals with orthodontic problems may have a more negative body image.

4. Discussion

This study examined the relationship between common dental pathologies and self-esteem and body image in the adolescent age group. The null hypothesis was partially rejected. While no significant relationship was found between tooth loss, dental caries, and self-esteem or body image, the study identified a statistically significant negative correlation between orthodontic treatment needs and body image. These findings suggest that orthodontic concerns are more strongly linked to adolescents' self-perception, whereas tooth loss and dental caries may not significantly impact body image or self-esteem in this age group.

In the present study, 63% of the participants were female adolescents. This may be related to the higher frequency of dental visits in females could be explained by hormonal changes affecting dental health, the impact of smile and jaw aesthetics on overall appearance, and greater awareness of oral health among female adolescents.[11]

Table 3. Comparison of the Rosenberg Self-Esteem Scale with the Presence of Orthodontic Problems, Tooth Loss, and Dental Caries

		Rosenberg Self-Esteem Scale		
Orthodontic		Low	High	p-value
Treatment Need				
Present	n	30	45	0.517
Absence	n	36	56	
Tooth Loss		Present	Absence	p-value
Present	n	54	86	0.358
Absence	n	12	15	
Dental Caries		Present	Absence	p-value
Present	n	51	76	0.249
Absence	n	15	25	

Fisher's Exact Test, * indicates statistical significance

When classified according to orthodontic treatment need, 55.1% of the participants were categorized as Grade 1, 19.2% as Grade 2, 10.2% as Grade 3, 5.4% as Grade 4, and 10.2% as Grade 5. Proffit et al. [12] classified the aetiologies of malocclusion into three categories: specific causes, environmental influences, and genetic factors. However, the exact causes remain not fully understood. Regional factors may contribute to the variation in orthodontic treatment needs observed in this study. Additionally, differences between the treatment need rates reported in the literature and those found in this study may be attributed to the inclusion of first-time dental visit patients rather than orthodontic clinic patients and a broader adolescent sample.

This study found a statistically significant relationship between body image and the need for orthodontic treatment. A review of the literature reveals that previous research also supports a strong correlation between orthodontic treatment needs and body image. Aesthetic concerns and social interactions can increase the demand for orthodontic treatment.[13]

In a study conducted by Phillips et al.[14], the impact of dental aesthetics on self-confidence and body image was examined, and it was suggested that dental appearance is a crucial component of body image. Similarly, Klages et al.[15] investigated the effects of orthodontic anomalies on body image and reported that individuals with orthodontic anomalies experienced a negative impact on their body image, while those who underwent orthodontic treatment showed improvement in body perception after treatment.

Research on young adults with malocclusion-related dental aesthetic concerns has explored the impact of these conditions on body image and oral health-related quality of life. Findings suggest that individuals with severe orthodontic issues tend to have a more negative body image, though the psychological effects of these conditions may vary depending on individual perception.[16]

Furthermore, a systematic review by Dimberg et al.[17] examined the effects of orthodontic disorders on aesthetic concerns and body image in children and adolescents. The study concluded that orthodontic disorders could increase aesthetic concerns, influencing body image, making the statistically significant association between orthodontic treatment needs and body image an expected finding.

Another study by Sicari et al.[18] found that malocclusion and dental anomalies significantly impact psychological well-being and that orthodontic disorders particularly affect body image negatively in adolescents. The findings of this study, indicating a

relationship between the need for orthodontic treatment and lower body image in adolescents, are consistent with existing literature.

Research investigating the psychological and oral health-related quality of life effects of orthodontic treatment has indicated that individuals who receive orthodontic treatment experience improvements in body image after treatment.[19] The findings of the present study align with previous research demonstrating a negative correlation between orthodontic treatment needs and body image scale scores.

This study found no significant relationship between tooth loss and body image. A review of the literature reveals a lack of studies directly examining the relationship between tooth loss and body image.

However, body image is often defined as a psychological state in which individuals experience intense mental preoccupation with minor or perceived physical imperfections, which can impair functionality and overall quality of life. In existing research, tooth loss has frequently been studied about quality of life, and psychosocial health and body image have been indirectly evaluated through quality-of-life assessments.[20]

A systematic meta-analysis conducted by Gerritsen et al.[21] examined the relationship between tooth loss and quality of life, concluding that tooth loss can affect an individual's quality of life and psychosocial well-being. However, its impact on body image may vary depending on factors such as age, the location of tooth loss, and whether the individual uses prosthetics.

Although individuals experiencing tooth loss may be expected to suffer from body image disturbances and decreased self-esteem due to aesthetic concerns and difficulties in social interactions, [22] findings from a meta-analysis by Zhang et al. [23] suggest that tooth loss is primarily associated with functional impairments rather than directly affecting body image.

The lack of studies specifically examining the direct relationship between tooth loss and body image, along with the methodological variations in meta-analyses, may contribute to inconsistent findings in the literature. In this context, the absence of a statistically significant relationship between body image and tooth loss in the present study could be explained by the perception of tooth loss as a functional deficiency rather than an aesthetic concern. Additional factors such as the location of the missing tooth and individual differences among participants may also influence these findings.[22] Future studies with larger sample sizes and more comprehensive methodologies could provide a deeper understanding of the relationship between body image and tooth loss.

The study found no significant relationship between dental caries and body image. Currently, there are no studies directly examining the impact of dental caries on body image. However, it is thought that dental caries may influence body image and psychosocial well-being by causing both aesthetic and functional issues.

In the literature, dental caries, similar to tooth loss, has often been studied about quality of life, and its potential effects on body image have been discussed indirectly. A study by Kramer et al.[24] investigating oral health and quality of life in preschool children reported that dental caries negatively affected the quality of life of both children and their caregivers, particularly in terms of social interactions. However, the study suggested that dental caries might not be a determining factor in an individual's overall body image. Additionally, in adolescents, the duration of a tooth's presence in the mouth is generally shorter compared to adults. Therefore, dental caries may not have progressed to a degree that significantly affects aesthetics, which could explain the lack of a statistically significant impact on body image in this study.[22]

Similarly, a systematic meta-analysis on oral health-related quality of life in children and adolescents, which included studies using the OIDP Questionnaire, found that the presence of dental caries negatively affected adolescents' quality of life.[25]

Since quality-of-life scales incorporate multidimensional aspects, including functional well-being, emotional well-being, and self-esteem, the negative impact of dental caries on quality of life does not necessarily imply a direct effect on body image. Given that dental caries is more commonly associated with oral health and functional concerns rather than aesthetics, the lack of a significant relationship between body image and dental caries in this study is a reasonable finding.

These findings indicate that body image is significantly associated with the need for orthodontic treatment but is not directly related to other dental health factors such as tooth loss and dental caries. The fact that orthodontic disorders are more closely linked to aesthetic concerns supports this result. However, it should be noted that factors such as age, social environment, and overall health status may influence the impact of tooth loss and dental caries on an individual's body image.[26]

This study examined the relationship between RSES scores and the presence of orthodontic treatment needs, tooth loss, and dental caries. The findings indicate that there was no statistically significant relationship between self-esteem and these variables.

Self-esteem is influenced by how individuals perceive themselves and can be affected by various psychosocial and physical factors. While oral and dental health is known to play a role in physical appearance, social interactions, and overall psychosocial well-being, the present study found that orthodontic treatment needs did not have a significant impact on self-esteem ($p = 0.517$). This result is consistent with some previous studies. For example, a study by Johal et al.[27] found that individuals requiring orthodontic treatment did not necessarily have lower self-esteem but suggested that aesthetic concerns may vary based on individual differences. Similarly, Dann et al.[28] assessed self-concept in 208 individuals aged 7 to 15 years using the Pierre-Harris Self-Concept Scale and found no significant changes in self-concept scores during early treatment.

However, some longitudinal studies have suggested that orthodontic disorders may impact self-esteem, particularly in adolescents. Feu et al.[19] reported that orthodontic treatment improved both oral health-related quality of life and self-esteem in adolescents over time. Additionally, a study by Perillo et al.[5] found that orthodontic treatment need negatively affected self-esteem and self-perception in adolescents. Similarly, Badran[29] examined 385 adolescents aged 14–16 years and found that those who had undergone orthodontic treatment had higher self-esteem compared to those who had not. Furthermore, dissatisfaction with dental appearance was identified as a predictor of low self-esteem.

The contradictory findings in the literature may stem from the multifaceted nature of self-esteem, which is influenced by numerous factors beyond orthodontic treatment needs. Additionally, differences in sample demographics, age groups, and sociocultural backgrounds may contribute to variations in study results.[30]

When examining the relationship between tooth loss and self-esteem, no significant difference was observed between individuals with and without missing teeth. Some studies suggest that tooth loss is associated with social isolation and decreased self-confidence, particularly in older individuals.[21] This finding may be explained by the lower prevalence of tooth loss in the adolescent age group examined in this study, as compared to older populations. Additionally, some individuals may not perceive tooth loss as a significant aesthetic concern, and the availability of effective prosthetic solutions may further minimize its impact on self-esteem.

Similarly, no significant relationship was found between the presence of dental caries and self-esteem. The impact of dental caries on self-perception remains a debated topic in the literature.

While some studies suggest that dental caries negatively affects self-esteem[31], others indicate that this relationship is not particularly strong.[32] These contradictory findings in the literature may stem from differences in sample age groups, sociocultural factors, and variations in oral hygiene habits. Additionally, self-esteem is influenced by multiple factors, which may explain why a direct relationship between dental caries and self-esteem was not observed in this study.[1]

These findings suggest that the degree to which individuals are affected by oral health-related physical factors varies based on personal, cultural, and socioeconomic factors. Additionally, self-esteem is a multidimensional construct and should not be viewed solely as physical appearance.[1] Future large-scale and longitudinal studies are recommended to further evaluate the relationships between these variables.

Studies on the impact of dental aesthetics on body image have shown that individuals with orthodontic issues tend to perceive themselves as less attractive and experience higher levels of social anxiety.[33] Malocclusion-related factors such as crowding, misalignment, and noticeable occlusal issues can reduce comfort in smiling and lead to increased self-consciousness in social settings.[34]

This study provides valuable insights into the impact of orthodontic issues, tooth loss, and dental caries on body image and self-esteem. To the best of our knowledge, this is the first study in the literature to examine the relationship between common dental anomalies and body image. Given that adolescence is a critical period for the development of self-esteem and body image, focusing on this age group enhances the significance of the study's findings. Furthermore, the study's sample size of 167 participants exceeds the typical sample size used in cross-sectional studies in this field, and the use of scientifically validated measurement tools strengthens its reliability.

Despite its strengths, this study has certain limitations. Its cross-sectional design makes it difficult to establish causal relationships between variables. Additionally, the study's narrow age range of 15–17 years limits the generalizability of the results to the broader population. Another limitation is that the assessment tools relied on self-reported data, and structured psychiatric evaluations were not conducted to identify potential comorbid psychiatric disorders. Future longitudinal studies incorporating structured psychiatric interviews across different age groups are necessary to provide a more comprehensive understanding of these relationships.

5. Conclusion

In conclusion, this study suggests that while orthodontic treatment need negatively affects body image, tooth loss and dental caries may not have a significant impact on body image or self-esteem. Given the negative influence of orthodontic issues on body image, further research is needed to explore the relationship between oral health and psychological well-being. These findings emphasize that orthodontic treatments are not only important for aesthetic reasons but also play a crucial role in improving individuals' psychological well-being.

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