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Research Paper

Psychosocial Ramifications of Perceived Dental Aesthetics: A Cross-Sectional Analysis of Oral Health-Related Quality of Life Outcomes

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ABSTRACT

Background: A person's dental appearance does more than just affect their smile it shapes their self-confidence, social connections, and overall sense of well-being. The current study was undertaken to investigate the potential link between the psychosocial consequences of dental aesthetics and oral health-related quality of life (OHRQoL) among medical students.

Methods: This study was conducted with 184 medical students (103 females, Mean: 24.82 ± 1.58 years). Data were collected using two validated questionnaires: the Psychosocial Impact of Dental Aesthetics Questionnaire (PIDAQ) and the Oral Health Impact Profile (OHIP-14). Data processing and analysis were carried out in SPSS (v. 26), using descriptive statistics and bivariate correlation tests, with a two-tailed significance level of $p < 0.05$.

Results: Significant correlations were found between all psychosocial dimensions of dental aesthetics and OHRQoL ($p < 0.05$). Gender did not significantly affect these relationships, but age influenced dental self-confidence and social impacts. Students in advanced academic levels reported higher quality of life compared to junior students. The mean scores for PIDAQ dimensions were as follows: dental self-confidence (12.25 ± 4.77), social impact (5.89 ± 5.88), psychological impact (6.69 ± 5.29), and aesthetic concern (1.62 ± 2.14). The mean OHRQoL score was 12.50 ± 10.90.

Conclusion: The findings indicate that satisfaction with dental appearance significantly influences quality of life and psychosocial well-being. However, due to the cross-sectional design and reliance on self-reported data, causal relationships cannot be established. Future longitudinal studies are needed to further explore these associations, and research should also investigate the potential benefits of combination therapies in addressing dental aesthetic concerns.

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Introduction

In contemporary society, dental aesthetics extend beyond physical appearance to profoundly influence self-perception, social interactions, and psychological well-being. Dissatisfaction with one's smile has been consistently linked to diminished self-esteem, increased social anxiety, and a poorer overall quality of life [1, 2]. Therefore, understanding the psychosocial ramifications of dental aesthetics is critical for a holistic approach to oral healthcare [3, 4].

A substantial body of literature has established a robust link between dental aesthetics and OHRQoL. For instance, while earlier studies focused primarily on clinical indices like malocclusion [5], more recent research has shifted towards subjective perceptions. Investigations by Klages et al. [6] and Naseri et al. [7] have demonstrated that perceived dental unattractiveness is a stronger predictor of psychosocial distress than objective clinical measures, leading to outcomes such as social withdrawal and low self-esteem. This body of work underscores that the psychological and social impacts are just as, if not more, significant than the physical aspects of oral health.

Despite this growing evidence, a significant gap remains in the literature. The majority of studies have focused on the general population or specific clinical groups, with limited attention paid to populations facing unique psychosocial burdens. Medical students, who are subjected to intense academic stress and high-performance expectations, represent a particularly vulnerable group [8]. These stressors can exacerbate body image concerns and amplify the negative impact of any perceived aesthetic flaw, including dental appearance. However, the specific interplay between the psychosocial dimensions of dental aesthetics and OHRQoL within these demographic remains largely unexplored [9].

To fill this lacuna, the present study was undertaken to investigate the association between the psychosocial dimensions of dental aesthetics (self-confidence, social impact, psychological impact, and aesthetic concern) and OHRQoL among medical students at Kashan University of Medical Sciences. By focusing on this understudied population, we aim to provide novel insights that can inform more targeted diagnostic and therapeutic interventions. Ultimately, our findings are expected to underscore the need to incorporate psychosocial assessments into routine dental and medical care to enhance the overall well-being of this high-risk group.

Materials and Methods

Study Design

This cross-sectional research was performed to investigate the relationship between psychosocial aspects of dental aesthetics and OHRQoL among medical students at Kashan University of Medical Sciences during the 2021–2022 academic years.

Sampling

The research subjects consisted of medical students enrolled at KAUMS, including interns and externs (referring to undergraduate medical students and medical residents, respectively). Participants were selected using convenience sampling. Inclusion criteria were: age between 20 and 35 years, current enrollment as a medical student, and no prior history of orthodontic or aesthetic dental treatments. Exclusion criteria included incomplete responses or missing demographic data.

Sample size estimation was based on a correlation coefficient of 0.217, with 95% confidence interval and 80% power, yielding a minimum requirement of 184 subjects. To account for possible attrition, 211 questionnaires were distributed. After excluding 27 incomplete forms, data from 184 participants were included in the analysis. Prior to enrollment, written informed consent was secured from every individual. All participants were explicitly assured of data confidentiality and were informed of their unconditional right to discontinue participation at any point without consequence.

Instruments

The study employed two validated Persian-language questionnaires to assess the variables of interest. The PIDAQ was used to evaluate four key dimensions: dental self-confidence, psychological impact, social impact, and aesthetic concern. Oral health-related quality of life was measured using the OHIP-14, a 23-item scale with a five-point Likert format. The tool demonstrated high internal consistency, with Cronbach's alpha coefficients ranging from 0.886 to 0.889. This tool encompasses 14 items distributed across seven domains, including functional limitation, psychological discomfort, physical pain, and social disability. The Persian-language version of the scale exhibited sound reliability, evidenced by a reported Cronbach's alpha of 0.85.

Data Collection

Eligible students were approached on campus and informed about the study objectives. After obtaining consent, printed questionnaires were distributed along with written and verbal instructions. Completed forms were collected over a period of three months.

Statistical Analysis

Statistical analyses were performed with IBM SPSS Statistics (version 26). Descriptive data, including means, SD, and frequency distributions, were computed to provide a summary of the sample characteristics. The relationship between self-perceived dental esthetics and OHRQoL was examined using Pearson's product-moment correlation. To identify significant variations among socio-demographic categories, independent-samples t-tests and a one-way ANOVA were employed. The threshold for statistical significance was established at a p-value of less than 0.05.

Results

Overall, 184 medical students participated in the research, including 103 females (Mean age of 24.82 ± 1.58 years). Data were collected using the PIDAQ and the OHIP-14 to evaluate psychosocial dimensions of dental aesthetics and OHRQoL, respectively.

The descriptive analysis revealed that among the PIDAQ domains, dental self-confidence had the highest mean score (12.25 ± 4.77), while aesthetic concern had the lowest (1.62 ± 2.14), indicating that although many students reported reduced self-confidence due to their dental appearance, fewer had direct concerns about their dental aesthetics. The mean score OHIP-14 was 12.50 ± 10.90, suggesting a moderate effect of oral health on overall quality of life (Table 1).

Table 1. PIDAQ Dimensions and OHIP-14 Score (n=184).

Measure	Mean ± SD	Interpretation
Dental Self-Confidence	12.25±4.77	Higher scores indicate lower self-confidence
Social Impact	5.89±5.88	Reflects social concern due to dental issues
Psychological Impact	6.69±5.29	Indicates emotional distress
Aesthetic Concern	1.62±2.14	Reflects dissatisfaction with appearance
OHIP-14 Total Score	12.5±10.9	Higher scores indicate poorer OHRQoL

International Journal of Medical Toxicology & Forensic Medicine

*Values are presented as mean ± standard deviation.

From a clinical standpoint, the mean OHIP-14 score of 12.50 falls within the lower range, suggesting that while dental aesthetics do affect quality of life, the overall impact in this population is mild to moderate. The dental self-confidence score, which represents a moderate level of reduced confidence, may be of clinical relevance, as it was the domain most strongly correlated with OHRQoL. In contrast, the aesthetic concern score was notably low; indicating that explicit dissatisfaction with dental appearance is not a major issue for most students, despite its significant correlation with quality of life.

Correlation analysis showed significant associations between all PIDAQ dimensions and OHIP-14 scores ($p < 0.001$). Lower dental self-confidence, along with psychological impact, higher social and aesthetic concern, correlated with poorer OHRQoL. The strongest association was observed between dental self-confidence and OHIP-14 ($r=-.421$, $p < 0.001$), as reported in **Table 2**.

No significant gender-based differences were observed in PIDAQ or OHIP-14 scores. However, age was positively correlated with dental self-confidence ($r = 0.176$, $p = 0.017$) and negatively correlated with social impact ($r = -0.159$, $p = 0.031$), suggesting that older students tended to perceive their dental aesthetics more favorably. Additionally, students in more advanced academic stages reported better OHRQoL, indicating a potential influence of academic maturity on psychosocial adaptation.

Table 2. Correlation Between PIDAQ Dimensions and OHIP-14 Scores.

PIDAQ Dimension	Pearson Correlation Coefficient	*p-value
Dental Self-Confidence	–0.421	<0.001
Social	0.398	<0.001
Psychological	0.367	<0.001
Aesthetic Concern	0.305	<0.001

International Journal of Medical Toxicology & Forensic Medicine

* p<0.001.

Discussion

Understanding the psychosocial implications of dental aesthetics is essential for evaluating how individuals perceive their oral health and overall well-being. In the present study, conducted among medical students, significant associations were observed between multiple psychosocial dimensions (e.g., dental self-confidence, psychological impact, social impact, and aesthetic concern) and OHRQoL. The following discussion contextualizes these results within the

existing literature, outlines the study's key contributions, addresses its limitations, and offers directions for future inquiry [10]. For instance, researcher demonstrated that perceived dental irregularities could negatively influence oral health perceptions and psychosocial outcomes, a finding consistent with our results [6, 11]. Importantly, the dimension of dental self-confidence exhibited the strongest correlation with OHRQoL. This underscores the critical role of self-perception in mediating the relationship among dental aesthetics and quality of life. Previous studies have similarly emphasized the importance of self-esteem and confidence in enhancing social interactions and reducing anxiety related to dental appearance [12-14]. The current study extends this understanding by demonstrating that higher dental self-confidence is associated with better OHRQoL, particularly among medical students who face unique academic and social stressors. The impact of age on dental self-confidence and social effects was another significant finding. Older students reported higher levels of dental self-confidence and lower social impact compared to younger participants. This may be attributed to increased maturity and coping mechanisms developed over time, as suggested by Tempski et al., who found that older medical students tend to exhibit better psychological resilience [15-17]. Conversely, gender did not significantly affect the relationships observed, which contrasts with some earlier studies reporting gender differences in dental aesthetics perception [18]. This discrepancy could be due to cultural or contextual factors specific to the Iranian population, warranting further investigation. Our findings corroborate those of other researchers, who reported a significant linked to malocclusion severity and psychosocial dimensions such as aesthetic concern and dental self-confidence [19-21]. However, unlike their study, we observed no direct relationship between malocclusion and OHRQoL. Additionally, the positive correlation between academic level and OHRQoL supports the findings of other scientists, who noted that senior students often report higher satisfaction with their dental appearance and quality of life [22-24]. This trend may reflect improved adaptation to stressors and greater prioritization of personal care among advanced-level students. The results underscore the importance of addressing psychosocial concerns related to dental aesthetics in healthcare settings. Dental practitioners should consider incorporating patient-centered approaches that focus not only on clinical outcomes but also on enhancing self-perception and confidence. For instance, counseling sessions or educational interventions aimed at improving awareness about oral hygiene and aesthetic treatments could empower patients to take proactive steps toward achieving desired dental outcomes [25, 26]. Furthermore, medical educators might explore integrating modules on oral health and its psychosocial implications into curricula to foster holistic student well-being. The present study underscores the profound interplay between psychosocial dimensions of dental aesthetics and OHRQoL among medical students at Kashan University of Medical Sciences. Key findings reveal that dental self-confidence, psychological impact, social impact, and aesthetic concern are significantly correlated with OHRQoL, aligning with prior research emphasizing the role of dental aesthetics in shaping psychosocial well-being [5, 10]. Notably, age emerged as a critical factor influencing dental social impact and self-confidence, with older students exhibiting greater resilience, potentially due to maturity and adaptive coping mechanisms [27, 28]. Conversely, gender did not significantly affect these relationships, a finding that contrasts with some international studies [4], hinting at cultural or contextual nuances specific to Iranian populations. The present findings underscore the need for a holistic approach to health that integrates both psychosocial and biological factors. In this regard, studies on metabolic interventions such as probiotics in neurological patients demonstrate how physical health modifications can indirectly affect quality of life [29], supporting the notion that oral health should not be viewed in isolation from general health. Also, beyond psychosocial factors, lifestyle behaviors such as smoking can significantly impact oral and general health. Studies have shown that cigarette smoking is associated with the accumulation of toxic elements in the body, which may contribute to systemic inflammation and poor oral health outcomes [30]. This further emphasizes that oral health-related quality of life is influenced by a complex interplay of behavioral, biological, and psychological factors [31].

Conclusion

This study found significant correlations between all four psychosocial dimensions of dental aesthetics (self-confidence, social impact, psychological impact, and aesthetic concern) and OHRQoL among medical students. Dental self-confidence showed the strongest association with OHRQoL, indicating it is the most influential factor. Age positively correlated with self-confidence and negatively with social impact, while gender had no significant effect. Advanced academic level was associated with better OHRQoL. The lack of a direct relationship between malocclusion severity and OHRQoL suggests that subjective perception outweighs objective clinical measures. From a clinical perspective, the mean scores suggest that while overall aesthetic concerns are low, the moderate reduction in dental self-confidence represents

a clinically relevant target for intervention. Due to the cross-sectional design, causal inferences are limited. Future longitudinal studies should focus on interventions targeting dental self-confidence, particularly among younger and junior students who appear more vulnerable.

Ethical Approval

This study was approved by Ethical Committee of KAUMS (IR.KAUMS.NUHEPM.REC.1401.001), all procedures performed in accordance with the ethical standards of the institutional and national research committee.

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Conflicts of Interest

The authors report there are no competing interests to declare.

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