



Original Article



The Impact of Malocclusion Severity on Self-Confidence and Facial Appearance among Orthodontic Patients

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ABSTRACT

Malocclusion was a group of dental deviations that have a particular psychological influence on the society. **Objective:** To assess the correlations between malocclusion severity and its effects on self-confidence and facial appearance in patients seeking orthodontic treatment. **Methods:** The hospital-based study was performed at Orthodontic Department, Institute of Dentistry of Liaquat University of Medical and Health Sciences, Jamshoro. Participants aged 7 to 30 years who were diagnosed with varying degrees of malocclusion, were included in the study while those with congenital or traumatic facial deformities unrelated to malocclusion were excluded from the study. Data were collected via questionnaires (Rosenberg Self Esteem and Dental Aesthetic Index) and clinical assessments. Correlation analysis was used as data analysis. **Results:** The research comprised of 383 individuals, with 110 (28.7%) were males, and 273 (71.3%) females. 361 (94.3%) participants having aesthetics problem, 19 (5.0%) reported with Functional issues, and 3 (0.8%) had found with Temporomandibular Joint (TMJ) complications. There were moderate to strong negative correlations between malocclusion severity and self-confidence ($r = -0.45, p < 0.05$) and between the impact on facial appearance and self-confidence ($r = -0.52, p < 0.05$). A positive correlation was observed between malocclusion severity and facial appearance impact ($r = 0.65, p < 0.05$) (Table 5). **Conclusions:** The study found that malocclusion significantly impacts self-confidence and facial appearance, with 71% of participants reporting negative effects on appearance and 47.3% experiencing reduced self-confidence.

INTRODUCTION

Malocclusion exerts influence on the dental health, psychological well-being, and social well-being of the patients. The most common repercussions of malocclusion include unaesthetic facial appearance; difficulty in speech, chewing, or cleaning; high prevalence of caries; low self-esteem; low self-confidence; and poor emotional and social health [1]. The consequences of facial aesthetics vary across the genders, age groups, social and economic groups, and in accordance with cultural backgrounds, which required considerable significance in understanding the treatment needs. Therefore, in order to enhance the preference for pursuing the orthodontic treatment procedures in order to enhance natural beauty

and overall appearance reflects a substantial and legitimate demand [2, 3]. However, it has been observed that women are often demonstrated greater concerns regarding their attractiveness, beauty, and facial appearance; therefore, malocclusion usually noticed earlier by them and made women much more anxious than men [4]. The current medical approach is gradually evolving towards a "bio-psycho-social" model that takes into considerations the subjective feelings and psychological conditions of patients. Moreover, there is an emerging trend toward enhancing the psychosocial status and quality of life of patients [1]. Therefore, in order to improve quality of life related matters appropriate



diagnosis and need for treatment has paramount importance. It has been found usually that the most frequently cited reasons for seeking orthodontic or orthodontic surgical treatment included aesthetic concerns, functional issues, headaches, temporomandibular disorders, and factors usually associated with self-confidence and facial attractiveness [1]. However, the percentages of reported motivating variables vary significantly between studies [5]. The Psychosocial factors, cultural norms, overall treatment expenses, patients age, sexes and expected treatment results can significantly have an effect on motivation and treatment seeking [6]. It has also been shown that patients' personal motivations for conventional orthodontic treatment orthognathic surgical interventions may considerably varies from patient understandings regarding recommendations [6, 7]. Moreover, patients' personal point of views on the requirement for orthodontic treatment may vary from assessments made by specialists [8]. Generally, women are more likely than males to seek treatment for malocclusion and to experience more deleterious influences as a result of malocclusion [6]. When it comes to oral health, many people supposed that diseases of the mouth didn't cause much of a problem. As a result, their psychological and societal consequences were underestimated [9]. Dental health is now widely acknowledged as a significant factor in overall health, and how people observe their own health and quality of life [10]. Malocclusion also effects on patient's mental well-being. People are concerned about their teeth's alignment and appearance, and as a result, the dentition plays a significant role in facial attractiveness [11]. Facial attraction is important in social interactions, as discussed in many studies. Facial appearance is markedly affected by malocclusion. Bullying and teasing are more common in people who have significant anterior teeth crowding or a midline diastema [12]. In addition, because orthodontic treatment improves both functional and aesthetic aspects, it can boost people's self-esteem and overall quality of life [13]. In a latest survey, timely orthodontic treatment during childhood or adolescence improves mental and social well-being. However, since all studies in the previously reported systematic review are based on observation, the interpretation of their findings is limited [14]. Therefore, this study was conducted to explore the effects of malocclusion on self-confidence and facial appearance on patients seeking orthodontic treatment.

METHODS

This research was a cross-sectional study which employed a non-probability consecutive sampling technique, conducted at the Department of Orthodontics, Liaquat University Hospital Hyderabad, and the Institute of Dentistry Jamshoro. The sample size of 383 patients was determined using the Open Epi sample size calculator,

taking anticipated frequency as 50% with 5% margin of error and 95% confidence interval. The study was approved by Ethical Review Committee of LUMHS, vide letter no. No. LUMHS/REC/-912. The duration of study was 1 year, starting from Oct 2020 to Sept 2021. Participants aged 7 to 30 years who were diagnosed with varying degrees of malocclusion, as confirmed by clinical examination and orthodontic assessment, and who provided written informed consent to participate, were included in the study. While individuals with congenital or traumatic facial deformities unrelated to malocclusion with significant medical conditions affecting facial appearance or self-confidence, and those already undergoing orthodontic treatment, were excluded from the study. Data were collected via questionnaires and clinical assessments. Clinical assessments included orthodontic examinations to determine the severity of malocclusion and facial aesthetic evaluations based on clinical photographs and expert assessments. Self-confidence was measured in terms of self-esteem through the Rosenberg Self Esteem questionnaire, which consists of 10 items on a four-point Likert scale, ranging from Strongly Agree to Strongly Disagree, that measure global self-worth by evaluating positive and negative feelings about oneself. Scores were calculated by summing the responses, with higher scores indicating higher self-esteem [15]. The impact of malocclusion on facial appearance was measured via Dental Aesthetic Index (DAI) which involved subjective evaluation where the aesthetic impact of dental conditions was judged based on standardized photographs or direct clinical observation [16]. The DAI score ranges from 0 to 100, with higher scores reflecting a greater perceived aesthetic impact. Specifically, a DAI score between 0 and 25 indicates minimal concerns while scores ranging from 26 to 30 signify some aesthetic concerns but not severe. A score between 31 and 35 reflects that the malocclusion has a more noticeable aesthetic impact. Scores from 36 to 45 suggest a significant malocclusion. A score of 46 or above denotes a substantial effect on the individual's self-esteem and social interactions. Descriptive statistics were used to summarize demographic data, malocclusion severity, self-confidence scores, and facial appearance perceptions. Correlation analysis was performed using Pearson coefficient to explore relationships between malocclusion severity, self-confidence, and facial appearance perceptions. Analysis was done using SPSS version 24.0, at significance level of $p < 0.05$.

RESULTS

The mean age of participants was 19.4 ± 4.612 years with 110 (28.7%) being male and 273 (71.3%) female. 361 participants (94.3%) reported with aesthetic concerns, 19 participants (5.0%) cited functional problems and 3 participants (0.8%) mentioned issues related to temporomandibular joint.

Regarding the effect to the Distribution of the effects of malocclusion on Self-Confidence, 28 (7.3%) participants were Confident, 181 (47.3%) participants were Less Confident, and 174 (45.4%) participants were Un-affected. Regarding the subjective effect to the Malocclusion on Facial Appearance, 272 (71.0%) of participants were experiencing some sort of Effect on Facial Appearance, whereas 111 (29.0%) did not feel any effect on Facial Appearance (Table 1).

Table 1: Participant Subjective Responses and Impact of Malocclusion

Response	Frequency (%)
Aesthetic Concerns	361 (94.3%)
Functional Problems	19 (5.0%)
Temporomandibular Joint Issues	3 (0.8%)
Confident	28 (7.3%)
Less Confident	181 (47.3%)
Un-Affected	174 (45.4%)
Experiencing Effect	272 (71.0%)
No Effect	111 (29.0%)

Participants reported a diverse range of malocclusion severities. The largest group, 28.7%, perceived their malocclusion as "None," while 22.2% classified it as "Minimal." A significant portion, 20.1%, described their condition as "Moderate." "Severe" malocclusion was reported by 15.2% of participants, and 13.8% considered their malocclusion as "Extreme" (Table 2).

Table 2: Subjective Severity of Malocclusion

Severity of Malocclusion	Frequency (%)
None	110 (28.7%)
Minimal	85 (22.2%)
Moderate	77 (20.1%)
Severe	58 (15.2%)
Extreme	53 (13.8%)

Self-confidence / Self-esteem among participants varied considerably. A total of 15.7% of individuals scored in the "Low" range (10-20), indicating lower self-confidence. The majority reported "Moderate" self-esteem, with 32.6% falling in the 21-30 range. Almost as many, 32.4%, had "High" self-esteem (31-40), while 19.3% achieved "Very High" self-esteem scores (41-50) (Table 3).

Table 3: Self-Confidence Scores

Self-Esteem	Frequency (%)
Low (10-20)	60 (15.7%)
Moderate (21-30)	125 (32.6%)
High (31-40)	124 (32.4%)
Very High (41-50)	74 (19.3%)

Similarly, the impact of malocclusion on facial aesthetics was notably significant. A substantial 31.3% of participants experienced a "Minimal Effect," while 24.8% reported "Some Effect." The study found that 20.6% observed a "Noticeable Effect," 14.1% faced a "Significant Effect," and

9.2% felt a "Substantial Effect" on their facial appearance (Table 4).

Table 4: Effect of Malocclusion on Facial Appearance

Effect on Facial Appearance	Frequency (%)
Minimal Effect (DAI 0-25)	120 (31.3%)
Some Effect (DAI 26-30)	95 (24.8%)
Noticeable Effect (DAI 31-35)	79 (20.6%)
Significant Effect (DAI 36-45)	54 (14.1%)
Substantial Effect (DAI 46+)	35 (9.2%)

There were moderate to strong negative correlations between malocclusion severity and self-confidence ($r = -0.45$, $p < 0.05$) and between the impact on facial appearance and self-confidence ($r = -0.52$, $p < 0.05$). A positive correlation was observed between malocclusion severity and facial appearance impact ($r = 0.65$, $p < 0.05$) (Table 5).

Table 5: Correlation Analysis Summary

Variables Pair	Correlation Coefficient (r)	Significance (p-Value)
Malocclusion Severity and Self-Confidence	-0.45	<0.05
Facial Appearance Impact and Self-Confidence	-0.52	<0.05
Malocclusion Severity and Facial Appearance Impact	0.65	<0.05

DISCUSSION

The apprehension of dental irregularities and their unfavorable influences on dental aesthetics can significantly affect social interactions, self-confidence, and psychological well-being. According to the findings of the psychological attractiveness study, the perception of one's own physical appearance was frequently related to anxieties about other people's response and a negative body concept [17]. It has been observed that the patient's personal motivations for orthodontic / orthognathic surgery may differ from their discernment of recommendations [17]. Previously several studies in different areas of Pakistan had been conducted to extensively explore the reasons for seeking treatment for malocclusions. While this study's findings cannot be anticipated to the entire population of Pakistan, they offer perceptions of patients into malocclusion trends and its impact on patient's self-confidence and facial appearance in orthodontic patients reported at OPD in Hyderabad and Jamshoro districts. Patients receiving orthodontic treatment were chosen according to the inclusion criteria to complete a questionnaire, which investigated treatment objectives, its influence on self-esteem and on patient's self-appearance among individuals aged 7-30 seeking care at LUMHS Jamshoro and ADCC Hyderabad. All participants were willing and actively engaged throughout the research, demonstrating a clear understanding of its purpose. Notably, the study observed a significantly higher prevalence of orthodontic treatment among women

compared to men, aligning with previous research findings. This discovery also aligns with prior studies indicating a higher likelihood of girls seeking orthodontic treatment compared to males [18, 19]. The results of this research also showed that out of the 361 participants, (94.3%) reported with aesthetic concerns, 19 participants (5.0%) cited functional problems, and 3 participants (0.8%) mentioned issues related to temporomandibular joint. While, regarding the effect to the Distribution of the effects of malocclusion on Self-Confidence, 28 (7.3%) participants were Confident, 181 (47.3%) participants were Less Confident and 174 (45.4%) participants were Un=affected. It have also been observed that according to the effect of Malocclusion on Facial Appearance, 272 (71.0%) of participants were experiencing some sort of Effect on Facial Appearance, whereas 111 (29.0%) did not feel any effect on Facial Appearance. Various studies have persistently inquired the desire to enhance the facial appearance as the primary motivation which was driving patients to seek orthodontic and orthodontic-surgical treatments. [20, 21] Skeletal malocclusion in patients directly influences their facial appearance, making it a crucial factor that can exert effects on their contentment and drive throughout orthodontic and orthognathic surgical treatments [22]. As with increasing awareness of the impact of dent facial influences on social and psychological well-being of the individuals, Orthodontists make out that achieving aesthetically pleasing teeth and associated soft tissue enhances both self-confidence and social well-being [13, 23]. Therefore, the primary duty of caregiver's was to appropriately assess the requirements for treatment, taking into consideration not only the child's dental health but also their overall cosmetic needs and subjective perception of concerns for orthodontic care [24]. It was also necessary to investigate the psychological influence of malocclusion in order to better understand the potential interventions desired at enhancing overall personal well-being. Any interventions should impart to improve the oral health-related quality of life (OHRQoL), physical health, self-esteem, and psychological personality of well-being [25]. The present study therefore underscores the importance of integrating orthodontics into the curricula of both public and private educational institutions. It also emphasizes ongoing discussions on appropriate treatment options and advocates the need for substantial research advancements in this field.

CONCLUSIONS

This study suggested that malocclusion has a significant effect on both self-confidence and facial appearance. A substantial majority of participants (71%) reported a negative impact on their facial appearance, while nearly half (47.3%) experienced reduced self-confidence due to their malocclusion. Notably, only a small percentage of

participants (7.3%) reported feeling confident, highlighting the profound influence of malocclusion on self-perception. The results also indicate that aesthetics concerns (94.3%) far outweigh functional issues (5.0%) and TMJ complications (0.8%) as the primary motivation for seeking orthodontic treatment. Overall, this study underscores the importance of addressing malocclusion to improve not only oral health but also psychological well-being and self-esteem.

Authors Contribution

Conceptualization: AMZ

Methodology: AMZ, MSK, EQ, AJ, SS, AM

Formal analysis: AMK

Writing, review and editing: AMZ, MSK, EQ, AJ, SS, AM

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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