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Original Article

Evaluation of Self-Esteem Levels in Patients Desiring Orthodontic Treatment

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ABSTRACT

Objective: To evaluate the effects of dental crowding and protrusion on the self-esteem levels of patients desiring orthodontic treatment.

Study Design: Cross-sectional study.

Place and Duration of Study: Department of Orthodontics, Armed Forces Institute of Dentistry, Combined Military Hospital, Rawalpindi Pakistan, from Aug 2019 to Mar 2020.

Methodology: One hundred and ten patients were included in the study. Rosenberg Self-Esteem Scale was used to evaluate self-esteem levels, and the scores were correlated with the severity of malocclusion. Dental crowding and lip protrusion were evaluated on study casts and lateral cephalograms, respectively, taken during clinical examination of the patients. All the measurements were taken twice by the same operator.

Results: The mean self-esteem (SE) score was highest in patients with no crowding (22.20±5.14) and lowest in cases with severe crowding (16.75±3.23). The self-esteem among various categories of crowding was statistically significant (p=0.003). No statistically significant difference in self-esteem levels was seen for lip protrusion, age, or gender.

Conclusion: Patients with severe crowding had significantly lower self-esteem, while patients with nil or mild crowding had significantly higher self-esteem. This finding indicates that while being important for oral health, functional and esthetic reasons, orthodontic treatment may also have strong psychosocial benefits.

Keywords: Dental crowding, Protrusion, Rosenberg self esteem scale, RSES, Self-esteem.

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INTRODUCTION

Facial and dental appearance play a crucial role in shaping an individual's image of their self, along with their personality and self-worth. Individuals with higher self-esteem are more likely to cope with life better.[1] Consequently, low self-esteem negatively impacts the life of an individual daily and can lead to other disorders like depression and anxiety.[2,3] With time, the demand for orthodontic treatment has markedly increased. More and more people are seeking orthodontic treatment, primarily for aesthetic concerns.[4] The age group of patients desiring orthodontic treatment has also widened to include adolescents and adults. The benefits of orthodontic treatment are multi-fold and lead to an improvement in facial and dental esthetics, oral function and oral health.[5] In addition to that, orthodontic treatment has also been reported to have a positive impact on the psychological and emotional well-being of an individual.[6]

Visible dental malocclusions are dental irregularities in the anterior region of the mouth and, thus, are more obvious to the common person. As a result, these malocclusions may profoundly affect an individual's self-image and how he perceives himself.[7] Two such examples are dental crowding and protrusion. 'Crowding' is a term that refers to the malalignment of teeth, while 'Protrusion' refers to teeth, lips or jaws that are forwardly placed. Severe skeletal malocclusions that require orthognathic surgery can easily be co-related to poor psychological health and quality of life as they significantly impact the life of an individual.[8]

However, controversial results have been seen for patients with dental malocclusions. Some studies have shown that malocclusions visible in the anterior region of the mouth have profound psychosocial implications and can lead to low self-esteem, anxiety and depression.[9,10]

This study aimed to evaluate the effect of visible dental malocclusions (dental crowding and lip protrusion) on self-esteem(SE) levels in patients desiring orthodontic treatment and how self-esteem varies with age, gender and severity of malocclusion. This study has yet to be conducted previously in our population. Understanding a patient's psychological

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and emotional needs is imperative, leading to better patient management and satisfaction.

METHODOLOGY

The cross-sectional study was conducted at Orthodontics Department of the Armed Forces Institute of Dentistry (AFID), Rawalpindi Pakistan, from August 2019 to March 2020 after approval by the Research and Ethical Committee of AFID (IRB approval No: 905/Trg-ABP1k2), and the patients signed a consent form before participating. The sample size was calculated using WHO calculator 1.1 with a prevalence of 17% of male participants with lower self-esteem than normal.[11]

Inclusion Criteria: Patients of either gender aged 10-29 years, presenting with either dental crowding or lip protrusion were included.

Exclusion Criteria: Patients with severe skeletal discrepancies patients with facial asymmetry, or craniofacial disorders or dentofacial anomalies, e.g. cleft lip and palate, hemifacial microsomia, Treacher Collins Syndrome or patients with psychological disorders, body dysmorphic disorder, bulimia nervosa, patients with the history of previous orthodontic treatment, Candidates for orthognathic surgery, or grossly carious teeth, multiple restorations or periodontal problems or patients with reported medical problems or TMJ disorders, were excluded.

A total of 110 patients presenting to the Orthodontics Department of AFID during the study period were included. The different degrees of crowding were classified as nil (0-1mm), mild (2-3mm), moderate (4-6mm) and severe (7mm or above) crowding. Patients with lip protrusion greater than 2mm with reference to the S line were included.[11,12]

Rosenberg Self Esteem Scale (RSES) was used to evaluate self-esteem levels in patients desiring orthodontic treatment. It is a valid and reliable questionnaire extensively used for orthodontic patients and the general population.[11] Patients fitting the inclusion criteria were asked to complete the Rosenberg Self-Esteem Scale (RSES) questionnaire and a form specifying patient details (Age, Gender). The RSES questionnaire comprises ten questions, and each positive or negative response is weighed on a 4-point scale from "Strongly Agree" to "Strongly Disagree." The RSES score ranges between 0 and 30; a higher score indicates higher self-esteem. Scores between 15 and 25 are within the normal range, while lower than 15 indicate low self-esteem.

Study casts were taken at the time of clinical examination. Lateral cephalograms were taken by orienting the head in the cephalostat (ORTHOPHOS XG, Sirona) with the Frankfort horizontal plane parallel to the horizon while maintaining the midsagittal plane perpendicular to it. The degree of crowding was calculated by measuring Arch Length Deficiency (ALD) on study casts, and lip protrusion for S-line (>2mm) was measured on lateral cephalograms. The same examiner repeated the measurements twice with a 2-week interval in between. Intra-examiner reliability was measured by using the Pearson correlation coefficient test.

Statistical analysis was conducted using SPSS 22. Mean and Standard Deviation were calculated for numerical variables. Frequency and percentage were calculated for categorical variables. The normality of data was determined by the Shapiro-Wilk normality test. Student t-test was used to compare self-esteem (SE) scores between genders and protrusion/non-protrusion groups. One-way ANOVA was applied to compare SE scores among age groups and different crowding degrees. The level of significance for all tests was set as $p \leq 0.05$

RESULTS

A total of 110 patients were included in the study. The mean age was 19.49±4.93 years, ranging from 10-29 years. The mean self-esteem (SE) score was 20.49±4.36. The minimum SE score was six, and the maximum was 29. The number of females in the sample was 77(70%), while the number of males was 33(30%). Mild dental crowding was found in 38(34.5%), moderate in 37(33.6%) and severe in 16(14.5%) patients. The protrusion was present in 23(20.9%) (Table-I).

Table-I: Frequency Distribution of Gender, Crowding and Protrusion (n=110)

		n(%)
Gender	Female	77(70)
	Male	33(30)
Crowding	Nil	19(17.3)
	Mild	38(34.5)
	Moderate	37(33.6)
	Severe	16(14.5)
Protrusion	No	87(79.1)
	Yes	23(20.9)

The highest mean SE score was in cases with no crowding (22.20±5.14), and the lowest score was found in cases with severe crowding (16.75±3.23). The self-

esteem among various categories of crowding was statistically significant (p=0.003) (Figure).

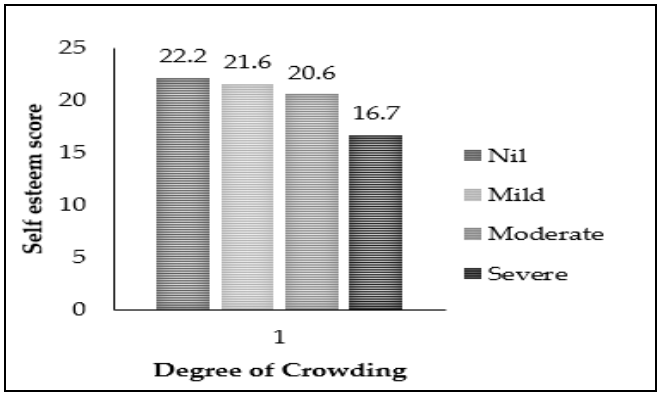

Figure: Comparison of Self Esteem score among various degrees of Crowding (n=110)

In females, the mean self-esteem (SE) score was higher (20.99±4.82) than in males (19.82±4.54), but the difference was not statistically significant (P=0.237, 95% CI-0.780, 3.118). Participants having dental protrusion had less SE score (19.35±4.074) than those without protrusion (20.98±4.82), but the results were not statistically significant (P=.143; 95% CI=-3.818, 0.559) (Table-II).

Table-II: Comparison of Self Esteem Score between gender and protrusion (n=110)

Variable	Category	Mean	*p*-value
Gender	Female(n=77)	20.99±4.82	0.237
	Male(n=33)	19.82±4.54	
Protrusion	Yes (n=23)	19.35±4.074	0.143
	No (n=87)	20.98±4.82	

**Student t test*

The highest mean SE score was in the age group 26-30 years (22.20±5.14), and the lowest was in the age group 21-25 years (19.82±4.66). The self-esteem among various age groups was not statistically significant (p=0.411) (Table-III).

Table-III: Comparison of Self Esteem score among Age Groups (n=110)

Parameters	Age 10-15 years (n=32)	Age 16-20 years (n=30)	Age 21-25 years (n=33)	Age 26-30 years (n=15)	*p*-value
Self esteem score	21.00±4.4	20.37±5.10	19.82±4.66	22.20±5.14	0.411

**One-way ANOVA*

DISCUSSION

The findings of our study revealed that self-esteem levels were highest in patients with minimal crowding and lowest for patients with severe crowding, and the difference was statistically significant. Literature suggests that those with an attractive facial appearance have higher self-esteem.[13] This study aimed to assess the effect of visible dental malocclusions on self-esteem levels as these are the most noticeable to a layperson and one of the major reasons why orthodontic treatment is sought.[14] A wide age range(10-29 years) was selected for the study as newer studies have revealed that young adults are also highly socially impacted due to their dental appearance in addition to adolescents.[15,16]

The findings of our study are in agreement with a study conducted by Tessarollo *et al*.[17] on secondary school adolescents in Brazil, which revealed that the likelihood of dissatisfaction with dental appearance increases 3.5-fold with the severity of malocclusion. The same findings were reported in a study conducted in Korea by Jung on middle school students, where lower self-esteem levels were found in girls with anterior crowding.[14]

Regarding lip protrusion, no statistically significant difference in self-esteem levels was seen in our study. However, another study conducted on adults revealed that Class I malocclusion patients with lip protrusion had significantly lower self-esteem levels than the non-protrusion group.[6] As individuals mature, they become more conscious of protrusive lips and increased overjet, but more studies are needed.

In our study, females had higher self-esteem scores than males, although the difference was not statistically significant. Similar findings have been reported by Afroz *et al*.[18] in a study conducted at Aligarh University, India, which stated that a significant percentage of males (45%) were more conscious about their dental appearance than females(28%), especially in front of the opposite gender. In contrast, a study conducted on Jordanian adolescents reported no significant difference in the SE levels of the two genders.[19]

A recent study conducted in 2020 on dental undergraduates in New Delhi, India, revealed that self-esteem levels increase with age and maturity.[20] The same findings were seen in a study conducted in Jeddah, Saudi Arabia, on 886 adolescents aged 12-19 years.[21] However, no statistically significant difference was seen in the SE scores between the different age groups in our study.

Consequently, the findings of our study conclude that there is a drop in self-esteem levels with an increase in the degree of crowding, as per our

hypothesis. Thus, this should be considered when evaluating patients for orthodontic treatment, and efforts should be made to create awareness among the general public that these dental problems are treatable. In addition, steps should be taken to establish orthodontic centres that provide quality orthodontic care to patients of all economic backgrounds to ensure everyone has an equal opportunity to excel in all aspects of life, professional, personal or social.

CONCLUSION

Patients with severe crowding had significantly lower self-esteem, while those with nil or mild crowding had significantly higher self-esteem. No significant association was seen between self-esteem levels and age or gender. This finding indicates that while orthodontic treatment is important for oral health, functional, and esthetic reasons, it may also have strong psychosocial benefits.

Conflict of Interest: None.

Authors' Contribution

Following authors have made substantial contributions to the manuscript as under:

TIS & AJ: Conception, study design, drafting the manuscript, approval of the final version to be published.

SM & ZA: Data acquisition, data analysis, data interpretation, critical review, approval of the final version to be published.

NA & RQ: Conception, data acquisition, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

REFERENCES

1-Kaur P, Singh S, Mathur A, Kaur Makkar D, Pal Aggarwal V, Batra M, et al. Impact of Dental Disorders and its Influence on Self Esteem Levels among Adolescents. J Clin Diagn Res 2017; 11(4): ZC05-ZC08. https://doi.org/10.7860/JCDR/2017/23362.9515.

2- Taibah SM, Al-Hummayani FM. Effect of malocclusion on the self-esteem of adolescents. J Orthod Sci 2017; 6(4): 123-128. https://doi.org/10.4103/jos.JOS_16_17.

3-Sheikh A, Mathew T, Siew TB. Dental Malocclusion among University Students and Its Effect on Self esteem: A Cross-sectional Study. World J Dent 2014; 5(4): 204-208. https://doi.org/10.5005/jp-journals-10015-1290.

4-Romero-Maroto M, Santos-Puerta N, González Olmo M, Peñacoba-Puente C. The impact of dental appearance and anxiety on self-esteem in adult orthodontic patients. Orthod Craniofac Res 2015; 18(3): 143-155. https://doi.org/10.1111/ocr.12091.

5- Jaeken K, Cadenas de Llano-Pérula M, Lemiere J, Verdonck A, Fieuws S, Willems G, et al. Reported changes in oral health-related quality of life in children and adolescents before, during, and after orthodontic treatment: a longitudinal study. Eur J Orthod 2019; 41(2): 125-132. https://doi.org/10.1093/ejo/cjy035.

6- Jung MH. An evaluation of self-esteem and quality of life in orthodontic patients: Effects of crowding and protrusion. Angle Orthod 2015; 85(5): 812-819. https://doi.org/10.2319/091814.1.

7- Proffit W. Contemporary orthodontics. 6th Edition St. Louis, Mo. Elsevier; 2018.

8- Jung M. Quality of life and self-esteem of female orthognathic surgery patients.J Oral Maxillofac Surg 2016; 74(6): 1240.e1-1240.e7. https://doi.org/10.1016/j.joms.2016.01.046.

9- Grecu AG, Balazsi R, Dudea D, Mesaroş AŞ, Strîmbu M, Dumitraşcu DL. Oral health related quality of life and self-esteem in a general population.Med Pharm Rep 2019; 92(Suppl No 3): S65. https://doi.org/10.15386/mpr-1520.

10-Sharma A, Mathur A, Batra M, Makkar DK, Aggarwal VP, Goyal N, Kaur P. Objective And Subjective Evaluation Of Adolescent's Orthodontic Treatment Needs And Their Impact On Self-Esteem. Rev Paul Pediatr 2017; 35(1): 86-91. https://doi.org/10.1590/1984-0462/;2017;35;1;00003.

11- Priya SS, Shyamla. Evaluation of quality of life and self esteem in patients with malocclusion. Dent Oral Craniofac Res 2015; 1(3): 63-65. https://doi.org/10.15761/DOCR.1000115.

12- Modarai F, Donaldson JC, Naini FB. The influence of lower lip position on the perceived attractiveness of chin prominence. Angle Orthod 2013;83(5):795-800. https://doi.org/10.2319/122912-974.1.

13- Venete A, Trillo-Lumbreras E, Prado-Gascó VJ, Bellot-Arcís C, Almerich-Silla JM, Montiel-Company JM, et al. Relationship between the psychosocial impact of dental aesthetics and perfectionism and self-esteem. J Clin Exp Dent 2017; 9(12): e1453-e1458. https://doi.org/10.4317/jced.54481.

14-Jung M. Evaluation of the effects of malocclusion and orthodontic treatment on self-esteem in an adolescent population.Am J Orthod Dentofacial Orthop 2010; 138(2): 160-166. https://doi.org/10.1016/j.ajodo.2008.08.040.

15- Clijmans M, Lemiere J, Fieuws S, Willems G. Impact of self-esteem and personality traits on the association between orthodontic treatment need and oral health-related quality of life in adults seeking orthodontic treatment. Eur J Orthod 2015; 37(6): 643-650. https://doi.org/10.1093/ejo/cju092.

16- Murillo JA, Jaet DR, Rovira RO, Doczi RJ, López SG. Self-confidence, psycho-social impact and perceived treatment quality in young and adult patients after orthodontic treatment. Rev Mex Ortodon 2018; 6(1): 8-15.

17- Tessarollo FR, Feldens CA, Closs LQ. The impact of malocclusion on adolescents' dissatisfaction with dental appearance and oral functions. Angle Orthod 2012; 82(3): 403-409. https://doi.org/10.2319/031911-195.1.

18- Afroz S, Rathi S, Rajput G, Rahman S. Dental Esthetics and Its Impact on Psycho-Social Well-Being and Dental Self Confidence: A Campus Based Survey of North Indian University Students. J Indian Prosthodont Soc 2013; 13(4): 455-460. https://doi.org/10.1007/s13191-012-0247-1.

19- Badran S. The effect of malocclusion and self-perceived aesthetics on the self-esteem of a sample of Jordanian adolescents. Eur J Orthod.2010; 32(6): 638-644. https://doi.org/10.1093/ejo/cjq014.

20-Nausheen K, Madiha S, Kaur H. Impact of malocclusion on self-esteem (SE) and orthognathic quality of life (OQoL) amongst dental undergraduate students. Int Dent J Student Res 2020; 8(1): 14-17. https://doi.org/10.18231/j.idjsr.2020.003.

21- Taibah SM, Al-Hummayani FM. Effect of malocclusion on the self-esteem of adolescents. J Orthod Sci 2017; 6(4): 123-128. https://doi.org/10.4103/jos.JOS_16_17.