

# Impact of malocclusion on self-esteem (SE) and orthognathic quality of life (OQOL) amongst dental undergraduate students

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## Abstract

**Introduction:** While malocclusion exerts both physical and emotional effects on laypersons, with increasing awareness of malocclusion and its aesthetic impairment, there must be psychological impact of malocclusion amongst students entering into a dental school. The null hypothesis proposed was increasing grades of the course results in higher self esteem and poorer quality of life amongst students pursuing on undergraduate course in dentistry.

**Aim:** The aim was to determine the relationship between severity of malocclusion, self esteem (SE) and orthognathic quality of life (OQoL) among female dental undergraduate students.

**Material and Methods:** The study sample was divided batchwise into four groups according to the grades. Written questionnaires for SE and OQoL were given to 83 female undergraduate students with no craniofacial anomalies, medical problems, and history of previous orthodontic treatment. To determine the severity of malocclusion, the subjects were later examined for Dental Aesthetic Index (DAI) score. Descriptive statistics for DAI, SE and OQOL were performed and elements of each group were compared using ANOVA. Spearman Rank Correlation coefficient was done to measure the level of association between the variables.

**Results & Discussion:** While 3rd year students presented with higher DAI and least OQOL score, there was a statistically significant negative correlation between DAI and OQOL, indicating more negative psychological impact of malocclusion with learning. Interns had higher SE and maximum OQoL. ANOVA results showed only statistically significant difference between the groups for SE indicating more armour propre with training and maturity. However, no significant correlation was noted between SE and OQol.

**Conclusions:** Malocclusion does hamper the quality of life but increasing grades and cumulative understanding also influence the self esteem amongst dental undergraduates.

**Keywords:** Malocclusion, Self esteem, Orthognathic quality of life, Dental Aesthetic Index, Rosenberg self esteem scale.

## Introduction

With the increasing recognition of the effect of dentofacial problems, the social and psychosomatic consequences of malocclusion have been topics of research for a long time, but with conflicting results.<sup>1</sup> The demand for orthodontic treatment in adults is rising with increase in the preventive outlook of the general dentistry nowadays, the esthetic demand of society, longevity of the population, access to information, technological advances in orthodontics and psycho-social variations.<sup>2-5</sup>

Studies show the malocclusion in adolescents has a potential negative impact on quality of life: higher dissatisfaction with appearance with increasing severity of malocclusion.<sup>1,6-8</sup> Also, there is improvement of psychological profile with enhancement of aesthetics with orthodontic treatment.<sup>4,9,10</sup> Thus, orthodontic treatment can improve not just an individual's appearance, oral health and function, but also psychosocial well-being, and the quality of life.<sup>11-13</sup>

Self-esteem is perception of one's own ability to effectively master or deal with the surrounding environment, and it is affected by the reactions of others towards an individual.<sup>14,15,16</sup> Evidence has suggested that malocclusion can be associated with self-esteem and quality of life issues.<sup>7</sup>

Regarding dental appearance and the need for orthodontic intervention, there are considerable differences between the way a dental professional and a patient perceives.<sup>11</sup> Likewise, the perception of esthetics and quality of life is different amongst patients, dentists and orthodontists.<sup>17</sup> Dental students bridge between lay-persons and dentists. This study thus aims to determine the relationship between severity of malocclusion, self-esteem (SE) and orthognathic quality of life (OQOL) among female dental undergraduate students. The null hypothesis proposed was increasing grades of the course results in higher self-esteem and poorer quality of life amongst students pursuing on undergraduate course in dentistry.

## Materials and Methods

The study group was chosen amongst 121 female dental undergraduate students of the university screened on the basis of the following inclusion criteria: (1) age between 18 and 30 years (young adults); (2) no craniofacial anomalies, including cleft lip and/or palate; (3) no orthodontic treatment experience. All consecutive students that fulfill the selection criteria and signed the informed consent for participation were enrolled for the study.

The study sample consisting of 83 subjects was divided batchwise into four groups: 2nd year, 3rd year, 4th year and Interns. To determine the severity of malocclusion, the subjects were examined by for Dental Aesthetic Index (DAI) score (Appendix 1). All subjects were then asked fill the questionnaires for self esteem (SE) and orthognathic quality of life (OQOL). (Appendix 2 & 3).

## Statistical analysis

Descriptive statistics for DAI, SE and OQOL were performed and elements of each group were compared

**Table 1:** Batch wise descriptive statistics for DAI, SE, OQOL (Social Aspects, Esthetics, Function and Awareness Components of OQOL)

BATCH	Sample Size (N)	DAI Score	SE	OQOL	Social Aspects (OQOL)	Esthetics (OQOL)	Function (OQOL)	Awareness (OQOL)
		Mean $\pm$ SD	Mean $\pm$ SD	Mean $\pm$ SD	Mean $\pm$ SD	Mean $\pm$ SD	Mean $\pm$ SD	Mean $\pm$ SD
2nd Year	21	21.00 $\pm$ 7.76	25.90 $\pm$ 3.55	17.52 $\pm$ 9.49	6.05 $\pm$ 4.32	4.48 $\pm$ 3.56	1.86 $\pm$ 2.07	5.33 $\pm$ 4.19
3rd Year	22	22.01 $\pm$ 5.36	27.55 $\pm$ 3.92	13.50 $\pm$ 10.30	4.00 $\pm$ 3.89	3.05 $\pm$ 2.11	1.46 $\pm$ 2.11	5.28 $\pm$ 4.48
4th Year	19	22.74 $\pm$ 5.89	27.52 $\pm$ 3.77	17.26 $\pm$ 14.05	4.99 $\pm$ 4.66	5.57 $\pm$ 4.96	2.63 $\pm$ 4.00	4.26 $\pm$ 2.54
Intern	21	20.15 $\pm$ 6.53	30.52 $\pm$ 4.75	18.90 $\pm$ 18.10	6.77 $\pm$ 7.05	5.10 $\pm$ 5.35	2.05 $\pm$ 3.38	5.29 $\pm$ 4.52
Total	83	21.29 $\pm$ 6.33	27.96 $\pm$ 4.36	16.72 $\pm$ 13.29	5.40 $\pm$ 5.17	4.43 $\pm$ 4.17	1.90 $\pm$ 2.90	5.09 $\pm$ 4.08

**Table 2:** Batch –wise comparison of Means using ANOVA for difference Between Groups

Anova table	DAI * batch	SE * batch	OQOL * batch
Sum of Squares	54.56	1253.24	345.65
Df	3	3	3
Mean Square	18.25	15.95	115.28
F	0.44	4.93	0.64
Sig.	0.72	0.003*	0.589

**Table 3:** Spearman's Rank Correlation b/t Batch, DAI, SE and OQOL for sample size N=83

Correlations					
		Batch	DAI	SE	OQOI
DAI	Spearman Correlation	0.19	1.000	0.16	-.25*
	Sig. (2-tailed)	0.45	.	0.67	0.02
SE	Spearman Correlation	.31**	0.16	1.00	-.39
	Sig. (2-tailed)	0.00	0.69	.	0.18
OQOI	Spearman Correlation	-.04	-.25*	-.29	1.00
	Sig. (2-tailed)	.71	.02	0.18	.

\*. Correlation is significant at the 0.05 level; \*\*. Correlation is significant at the 0.01 level; \*\*\*, Correlation is significant at the 0.001 level

using ANOVA. Spearman Rank Correlation coefficient was done to measure the level of association between the variables.

## Results

The mean age for the sample studied was 21.7 $\pm$ 1.5 years. 3rd year students presented with higher DAI and least OQOL score. Interns had higher SE and maximum OQOL.

ANOVA results showed only statistically significant difference between the groups for SE indicating more armour-propre with training and maturity. However, no significant correlation was noted between SE and OQOL. Results for Spearman rank correlation Batch, DAI, SE and OQOL indicated statistically significant negative correlation between DAI and OQOL, indicating more negative psychological impact of malocclusion with malocclusion.

## Discussion

In our study, self-esteem (SE) and orthognathic quality of life (OQOL) among female dental undergraduate students does relate to severity of malocclusion. The study was performed on young adults with the mean age for the sample  $21.7 \pm 1.5$  years.<sup>12,13</sup> To rule out the bias between the sexes, only female students were included in the study. Also females are more concerned with beauty and have a better perception of treatment need as well as esthetic results.<sup>4,17,18</sup>

To measure the self-esteem (SE), Rosenberg self esteem scale (RSE) scoring was used. The RSE is a Likert scale in which a positive or a negative response is weighed with a four-point scale, ranging from “strongly agree” to “strongly disagree,” and consists of 10 questions. The RSE was between 10 and 40, and a higher RSE score indicates greater SE. This scale has been used for both the general population and orthodontic patients.<sup>20,21</sup>

To measure the quality of life, orthognathic quality of life (OQOL) index was used, comprising of 22 questions that measure four principal components (social aspects, facial esthetics, function, and awareness of facial deformity) using a four-point scale.<sup>22</sup> OQOL dimensions are scores range between 0 and 88 and the lower scores indicate better QOL. Although, originally designed to assess quality of life in dentofacial deformity patients, we used OQOL to cover all the issues that may bother a malocclusion patient especially when the subjects are dental students who are already aware and concerned for dental treatment.

Third year batch presented higher DAI score as well as least OQOL score indicating more malocclusion and lower quality of life. (Table 1). Spearman’s Rank Correlation that also showed statistically significant negative correlation between DAI and OQoL score. (Table 3).

In concordance with earlier studies, that did reveal adolescents with higher DAI scores had greater esthetic impact scores, and adolescents with less attractive dentitions may be psychosocially disadvantaged and have esthetic concerns.<sup>23</sup> Also, self-perceived impact of dental esthetics is influenced by severity of malocclusion, oral health-related quality of life, and body satisfaction. Malocclusion has been observed to have significant negative associations with QOL.<sup>6-11, 24,25</sup> However, weak correlations between the DAI and the oral health related quality of life, suggesting that the DAI grade cannot be considered strongly as predictor of the quality of life.<sup>26</sup> Some also advocate with severe malocclusion do not report a

negative impact, while others with mild irregularities cited major impacts on their QOL.<sup>12</sup>

Intern batch had higher SE score and maximum OQOL score. However no significant correlation was observed between SE and OQOL (Table 3). It has been reported that individuals with more self-esteem have poorer quality of life.<sup>27</sup> Also, orthodontic treatment significantly improves SE as well as quality of life.<sup>5,28,29</sup>

Batch –wise comparison of means using ANOVA showed only statistically significant difference between the groups for self-esteem. This was also observed with Spearman’s Rank Correlation that showed statistically significant positive correlation between the batch and Self-esteem. Increased SE with experience and age with increasing maturity and increasing consciousness, more morale/ armour propre and hence more SE.<sup>30,31</sup>

Thus, the null hypothesis that increasing grades of the course results in higher self-esteem and poorer quality of life amongst students pursuing on undergraduate course in dentistry, holds accepted. However the limitations of this study must be taken into consideration. Perceptions of psychosocial impact related to dental esthetics are multi-factorial: specific socio-demographic characteristics such as type of education, demographic consideration, areas of residence, etc. may have resulted in potential bias for clinical and epidemiologic inferences. The subjects in this study were selected by convenience sampling: the sample amongst dental graduates is deficient in of individuals with severe malocclusion. Also a larger sample size would increase the sensitivity of the impact of malocclusion on SE and QOL.

## Conclusions

Malocclusion does hamper the quality of life but increasing grades and cumulative understanding influence the self esteem amongst dental undergraduates.

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None.

## Conflict of interest

None.

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