

# Surveying the Psychosocial Impact of Class II Div 1 Malocclusion on Adolescents and Young Adults –A Comparative Study

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## Abstract:-

### ➤ Introduction :

Malocclusion is a public health concern and is negatively associated with an individual's psychological health, social views, self-confidence, self-esteem, and overall quality of life. Among the different malocclusions, patients with Class II Div 1 malocclusion have more severe impact on overall quality of life. Few studies compared the overall effects of class II div 1 malocclusion on adolescents and young adults, despite the fact that there are several studies evaluating the psychological impact of various malocclusion.

### ➤ Aim and Objectives :

This study aims to compare the overall psychosocial impact of class II div 1 malocclusion on adolescents & young adults. Objectives were to compare the self confidence and dental aesthetic concern of male & female patients with Class II Div 1 malocclusion and to compare the social and psychological impact of malocclusion in those patients and to evaluate the overall quality of life.

### ➤ Materials and Methods :

This cross sectional study included 150 patients who were reported to the department of orthodontics & dentofacial orthopaedics , Tamil Nadu Government Dental College and Hospital Chennai for orthodontic treatment where, 75 patients were included in both groups ie.. group 1(adolescents)and group 2 (young adults).Outcome variables were measured using PIDAQ

questionnaire containing four domains and OHIP 14 questionnaire.

### ➤ Results :

Results demonstrated statistically insignificant differences in OHIP 14 and the four domains of PIDAQ between adolescents and young adults and statistically insignificant differences between male and female patients of the same group.

### ➤ Conclusion:

Statistically insignificant differences in\_OHIP- 14, aesthetic concern, social impact, self-confidence and psychological impact among both groups and between male and female of the same group. The social impact, psychological impact and aesthetic concern were showed statistically significant positive correlation with OHIP-14 ( $p < 0.05$ ) Correlation between self-confidence and OHIP-14 were found to be statistically insignificant ( $p$  value - 0.879).

**Keywords:-** Self-Confidence , Psychological Impact, Social Impact, Aesthetic Concern ,PIDAQ, OHIP 14,Class II div 1 Malocclusion.

## I. INTRODUCTION

In every stages of life, the harmony and beauty of face are largely determined by the smile, which is the result of normal occlusion with well-balanced facial structure, Malocclusion can be defined as a condition where there is deviation from the normal occlusion and it can range in

severity from minor problems like mild spacing to severe skeletal issues<sup>1</sup>

Numerous research have demonstrated malocclusion as a public health issue with greater prevalence and its unfavourable correlations with a person's psychological wellbeing, social perceptions, self confidence, self-esteem, and quality of life.<sup>2</sup> Since adolescence is the period of Social identity and self-image development, malocclusion tend to influence emotional health during this time<sup>3</sup>

Bullying is described as the practice of exhibiting aggressive conduct or purposeful harm to a person on a regular basis in a relationship characterised by power imbalance<sup>4</sup>. Since physical attributes & aesthetic preferences have a remarkable amount of significance in society, malocclusion may be linked to bullying which can negatively affect the individuals.

According to previous study, adolescents and adults with malocclusion experienced bullying more frequently<sup>5</sup>. Another study done by Agel et al found that there is clear correlation between the prevalence of bullying at school and the rise in overjet or lip incompetence<sup>6</sup>

Clinical parameters are most frequently used by the clinicians to evaluate the degree of malocclusion and to analyse the patients' treatment needs. But these measures don't give enough weight to how the patients feel about their malocclusion. Since paradigm of patient management has changed from a disease-focused approach to a more comprehensive patient-centered approach, meeting patients' expectations and enhancing their quality of life are the goals of the latter strategy.<sup>7</sup>

The term oral health-related quality of life, or OHRQoL refers to the effects of oral diseases on various aspects of daily life such as aesthetics, function, speech etc those ultimately influence a person's overall quality of life. One of the most popularly used measures of OHRQoL is Oral Health Impact Profile (OHIP-14). Although the questionnaire is brief, research has demonstrated that it is sufficiently cross consistent, responsive to changes, and trustworthy.<sup>8</sup>

Psychosocial Impact of Dental Aesthetics Questionnaire (PIDAQ) is a highly useful tool for gathering data on various aspects of the quality of life associated with dental health. This self-rating tool was initially created to evaluate the psychological effects of dental aesthetics in young adults.<sup>9</sup> Later validation of PIDAQ in adolescents was done by Jose .M.Montiel Company in Spanish adolescents.<sup>10</sup>

Previous study done by Cortes et al showed statistically significant differences in the psychosocial impact of malocclusion in males & females where females exhibiting more impact<sup>11</sup>. Similar results were obtained in another study done by Birkeland et al in 1996<sup>12</sup>.

Study done by Jiang et al found that Adolescents with Class II malocclusion had poorer self-esteem than those with Class I and III malocclusions<sup>13</sup>

Georgina et al found that ,the association of psychological impact and malocclusion increases as the age increases and is more pronounced in children between the ages of 11 and 18 and in young adults between the ages of 18 and 24. This association supports Hurrelmann's (1989) assertion that as people mature, they become more conscious of facial attractiveness<sup>14</sup>.

Even though there are studies evaluating the various type of malocclusion & the psychological impact associated with, limited studies were found comparing the overall impact of class II div 1 malocclusion on adolescents and young adults.

To fill this knowledge gap, this study aims to compare the overall psychosocial impact of class II div 1 malocclusion on adolescents & young adults.

#### ➤ Objectives:

- To compare the self confidence of adolescents & young adult patients with class II DIV 1 malocclusion.
- To compare the social impact of class II DIV 1 malocclusion on adolescents & young adult patients.
- To compare the psychological impact of class II DIV 1 malocclusion on adolescents & young adult patients.
- To compare the dental aesthetic concern of adolescents & young adult patients with class II DIV 1 malocclusion.
- To compare the self confidence ,social impact ,psychological impact , dental aesthetic concern between males & females of same group.
- To compare the overall oral health related quality of life between adolescents and young adults.

## II. MATERIALS AND METHODS

This study was conducted as a cross sectional study. Participants in this study were adolescents aged between 12-18 years and young adults aged between 19-25 years who were reported to the department of orthodontics & dentofacial orthopaedics, Tamil Nadu Government Dental College and Hospital, Chennai for orthodontic treatment. Ethical approval was obtained from the Institutional Review Board, Tamil Nadu Government Dental College and Hospital, Chennai with ethical clearance number (51/III/IERB/2024/TNGDC). Data collection were carried out between February 2024 to May 2024.

Sample size estimation was done based on the previous study done by Choi et al (15). The mean Psychological discomfort among adolescent patient with Class II division I malocclusion is 0.73+0.87 and in younger adult with Class II division I malocclusion is 1.12+1.01. The nMaster 2.0 software was used for calculation. Considering 5% alpha error and 80% power, a minimum samples of 72 was estimated in both groups and it is rounded off to 75 per group. A final sample size of 150 was estimated from both groups.

Inclusion criteria were Adolescent patients (11- 18 years) & young adults (19-25) patients with class II div 1 malocclusion either full cusp class II or subdivision malocclusions with an increased overjet of  $\geq 6$  mm, and those with class II skeletal base either with retrognathic mandible /prognathic maxilla or combination. Patients with any congenital malformations like cleft lip and palate, gross facial asymmetry, past or current history of orthodontic treatment and orthognathic surgery, excessive spacing or crowding  $\geq 4$  mm, missing anterior or posterior tooth, systemic illness or any drug history, those under treatment for any psychological problems, those with physical or intellectual limitations that would prevent them to interpret the questions were excluded from the study.

Outcome variable of the present study was an orthodontic-specific OHRQoL measured using Psychosocial Impact of Dental Aesthetics Questionnaire (PIDAQ). This 23 item scale is categorised into four domains: Dental self-confidence (1-6), Aesthetic concern (7-9), Psychological impact (10-15), and Social impact (16-23). Using a five-point rating system with 0 denoting- no impact and 4 denoting- greatest impact scores were identified. By summing the scores of each item in the PIDAQ, an overall total score was created. Similarly, the scores of each item in each domain were added to obtain the domain scores<sup>9,10</sup>. Another tool used in this study to measure the OHRQoL was OHIP-14 questionnaire. Seven categories of oral health: functional limitation, physical pain, physical disability, psychological

discomfort, psychological impairment, social disability, and handicap were covered by 14 questions. A Likert-type scale was used to record the responses: 0, never; 1, hardly ever; 2, occasionally; 3, fairly often; and 4, very often. The OHIP-14 total score ranges from 0 to 56. Higher values indicate poor OHRQoL<sup>8</sup>. Informed consent was obtained before the commencement of study and patients were interviewed directly using the standard questionnaire (in English) or translated version (in Tamil).

#### ➤ Statistical Analysis

Statistical analysis was done using SPSS version 25 (IBM version 25). Kolmogorov-Smirnov test and Shapiro-Wilk test were used to check the normality of distribution of data. Regarding the base line characteristics such as age and sex, descriptive analyses were carried out using mean and standard deviations. Mann-Whitney U test was used to compare the data between different groups. Spearman correlation analysis was used to find the association between OHIP 14 scores and the four domain scores of PIDAQ.

### III. RESULTS

A total of 150 patients were participated in this study. Group 1 included 75 adolescents aged between 12-18 years with mean age of  $15.28 \pm 1.72$  years and included 38 female and 37 male patients. Group 2 included 75 young adults aged between 19-25 years with mean age of  $21.95 \pm 3.288$  years and included 39 females and 36 males.

Table 1 Four Domains of PIDAQ & OHIP 14 among the Participants - Group wise Comparison

Domains of PIDAQ and OHIP score	Score (Mean $\pm$ SD)		p- value
	Group 1(N=75)	Group 2(N=75)	
SELFCONFIDENCE	6.52 $\pm$ 5.52	8.03 $\pm$ 6.45	0.127
SOCIAL IMPACT	12.93 $\pm$ 7.40	14.24 $\pm$ 6.54	0.254
PSYCHOLOGICAL IMPACT	11.77 $\pm$ 5.78	11.69 $\pm$ 5.39	0.930
ESTHETIC CONCERN	5.33 $\pm$ 3.61	5.65 $\pm$ 3.20	0.567
OHIP - 14	13.53 $\pm$ 10.40	14.89 $\pm$ 10.54	0.428

Table 1 denotes: The OHIP- 14 and the four domains of PIDAQ were not normally distributed data. OHIP- 14, aesthetic concern, social impact, and self-confidence were found to be higher among group 2 participants whereas

psychological impact score was found to be higher among group 1 participants. But the difference in OHIP-14 and domain scores between two groups were not found to be statistically significant ( $p > 0.05$ )

Table 2 Four Domains of PIDAQ & OHIP 14 among the Participants -Gender wise

Domains and total score	Score (Mean $\pm$ SD)		p- value
	Male(N=73)	Female(N=77)	
SELFCONFIDENCE	7.29 $\pm$ 5.85	7.26 $\pm$ 6.24	0.977
SOCIAL IMPACT	12.90 $\pm$ 6.90	14.23 $\pm$ 7.06	0.246
PSYCHOLOGICAL IMPACT	11.11 $\pm$ 5.17	12.32 $\pm$ 5.89	0.181
ESTHETIC CONCERN	5.16 $\pm$ 3.07	5.81 $\pm$ 3.68	0.249
OHIP - 14	13.67 $\pm$ 9.66	14.73 $\pm$ 11.20	0.537

Table 2 denotes: OHIP- 14, aesthetic concern, psychological impact, and social impact score were higher among female participants whereas self-confidence score was

found to be higher among male participants. But the difference in these in OHIP-14 and domain scores between gender were not found to be statistically significant ( $p > 0.05$ )

Table 3 Spearman Correlation between Four Domains and OHIP 14 Score

Domains	Correlation coefficient	p- value
SELFCONFIDENCE	- 0.013	0.879
SOCIAL IMPACT	0.307	<0.001
PSYCHOLOGICAL IMPACT	0.341	<0.001
ESTHETIC CONCERN	0.283	<0.001

Table 3 denotes: The social impact, psychological impact and aesthetic concern were showed positive correlation with OHIP-14 ( $p < 0.05$ ) Among these the psychological impact was found to have more association with OHIP-14. Correlation between self-confidence and OHIP-14 were found to be statistically insignificant ( $p$  value -0.879).

#### IV. DISCUSSION

This study evaluated and compared the psychosocial impact of class II div 1 malocclusion on adolescents and young adults. According to earlier study done by Zheng et al, substantial variations in the domains of physical impairment and functional disability were identified on Class II Div 1 patients before and after the orthodontic treatment showed that those patients have more severe impact of malocclusion on OHRQoL. So we included patients with class II div 1 malocclusion in our study.<sup>16,17</sup>

In this study, overall malocclusion related quality of life was analysed using two scales : PIDAQ and OHIP 14. PIDAQ is a validated questionnaire with 4 domains and OHIP 14 is a sensitive assessment tool with 7 domains of oral health. PIDAQ was verified in Indian population by a study conducted by Monisha et al in 2021<sup>18</sup>. The Tamil version of OHIP is dependable and validated, as per the research of Anu et al<sup>19</sup>. Accordingly, PIDAQ and OHIP 14 can be used to assess the psychological, social, aesthetic, functional, and other malocclusion-related effects.

In our study results OHIP- 14, aesthetic concern, social impact, and self-confidence were found to be higher among young adults compared to adolescents whereas psychological impact score was found to be higher among adolescents. But the difference in OHIP-14 and domain scores between two groups were not found to be statistically significant ( $p > 0.05$ ). Previous study done by Masood et al found a negative association between age and overall impact of malocclusion on quality of life which is contradictory to our results<sup>20</sup>. But the results found by Georgina et al are similar to the finding of present study<sup>14</sup>. Both the above studies reported more psychological impact in younger patients compared to adults which is matching with our study findings.<sup>20,14</sup>

Of the four PIDAQ dimensions, psychological impact was found to have a stronger correlation with OHIP in the current investigation. These findings are consistent with those of a prior study conducted by Masood et al<sup>20</sup>

According to our study, OHIP- 14, aesthetic concern, psychological impact, and social impact score were higher among female participants whereas self-confidence score was found to be higher among male participants. But the

difference were found to be statistically insignificant ( $p > 0.05$ ). Similar results were found in the study done by Masood et al<sup>20</sup>. However, Ellakany et al. observed that females have more psychological and social impact of malocclusion than males<sup>21</sup>. Our study's conclusions are more credible than those of other earlier research since we used larger sample size and nearly equal number of males and females .

#### V. LIMITATIONS

- Study design is cross sectional and in order to ascertain the cause-and-effect link between malocclusion and its influence on OHRQoL, further longitudinal studies should be conducted.
- Confounders such as dental caries, gingival problems or periodontal damage were not considered.
- Another shortcoming is the absence of data regarding the socioeconomic status and environmental factors that might have an impact on participant's quality of life.
- The OHIP-14 does not specifically identify the cause of the consequences, which may be connected to a number of oral health issues and not always the subject's malocclusion.
- Only patients with Class II Div 1 malocclusion were included in this study. Additional research is required to assess and compare the effects of various malocclusions on OHRQoL.

#### ➤ Benefits of the Study

- The findings underscore the influence of Class II Div 1 malocclusion on overall health-related quality of life (OHRQOL) and stress the significance of patient-centred assessment of oral health which is a part of integral health programs.
- Study results help the orthodontists to take into account the psychological and social consequences of malocclusion in addition to the restoration of oral health and function.
- Knowledge about the various impact of malocclusion will help the operator to adequately motivate the patients on the right time there by increasing more positive attitude towards treatment.

#### VI. CONCLUSION

- Statistically insignificant differences in OHIP- 14, aesthetic concern, social impact, self-confidence and psychological impact among adolescents and young adults.



- Greater scores for psychological impact, social impact and aesthetic concern among females compared to males but males shown more self confidence. But all the differences were statistically insignificant.
- The social impact, psychological impact and aesthetic concern were showed statistically significant positive correlation with OHIP-14 ( $p < 0.05$ ) and psychological impact was found to be more association with OHIP-14.
- Correlation between self confidence and OHIP-14 were found to be statistically insignificant ( $p$  value -0.879).

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