

## PSYCHOSOCIAL INFLUENCE OF MALOCCLUSION AMONG NEPALESE PATIENTS SEEKING ORTHODONTIC TREATMENT: A HOSPITAL BASED CROSS-SECTIONAL STUDY

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### ABSTRACT

### INTRODUCTION

Traditionally, orthodontic treatment focuses on normative criteria, though psychosocial dimension has equal importance. The aim of the study was to evaluate the psychosocial impact of malocclusion among patient seeking orthodontic treatment using psychosocial impact of dental aesthetics questionnaire (PIDAQ).

### MATERIAL AND METHODS

A cross-sectional study was conducted in Department of Orthodontics and Dentofacial Orthopedics, UCMS during the period of July 2021 to Dec 2021. The study was approved by Institutional Review Committee of UCMS (IRC/081/21). Sixty patients seeking orthodontic treatment of age group 18-30 years answered questions concerning self perceived psychosocial impacts of malocclusion using Nepali version of PIDAQ, desire of orthodontic treatment based on scale ranging from 0 to 4. Clinical examination was performed to assess the severity of malocclusion based on the basis of Dental Health Component of Index of Orthodontic treatment need (IOTN-DHC).

### RESULTS

Results showed no significant differences in total PIDAQ scores and its subscale ( $p>0.05$ ) among genders. There was significant difference in total PIDAQ scores and its subscale ( $p<0.05$ ) among patients with different desire of orthodontic treatment. Patient with very strong desire have the highest scores of total PIDAQ ( $42.27\pm 11.40$ ). Significant difference in total PIDAQ score and its subscale ( $p<0.05$ ) was seen among patients with difference grades of IOTN-DHC.

### CONCLUSION

Equal self-perceived impacts of malocclusion were seen in both male and female. There was greater desire of Orthodontic treatment in patients with increased self-perceived psychosocial impact of malocclusion. Significant increase in PIDAQ score was also seen with increasing severity of malocclusion.

### KEYWORDS

Malocclusion, Orthodontics, PIDAQ, Psychosocial.

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## INTRODUCTION

Individuals with malocclusion require orthodontic treatment in order to improve oral health, dental function and aesthetics, resulting in an improvement in quality of life. Traditionally orthodontic treatment focuses on normative criteria, though psychosocial dimension has equal importance. The psychosocial impact of dental aesthetics questionnaire (PIDAQ) is an English language questionnaire designed to evaluate aspects of oral health related quality of life specifically related to orthodontics.<sup>1</sup> This tool was designed to assess the psychosocial impact of dental aesthetics in young adults using a self-rating questionnaire.<sup>2</sup> It consisted of one positive and three negative subscales i.e. Dental Self confidence (DSC), Psychological Index (PI), Social Index (SI), and Aesthetic Concern (AC).<sup>1</sup>

Patient expectations from orthodontic treatment are primarily improvement in appearance, self-image and social functioning.<sup>2</sup> Usually orthodontic treatment and the outcome are evaluated by parameters, such as occlusal indices and cephalograms. Psychosocial factors despite being important in patient expectations and agreed as an important factor by orthodontic professionals is often neglected.<sup>3</sup> Many studies also showed that malocclusion caused more detrimental effect on the individual psychology and well-being than it did on their physiological condition.<sup>4</sup>

Though many studies have been conducted to evaluate the patient orthodontic treatment need among Nepalese based on occlusal characteristic only few studies have considered the psychosocial effect of malocclusion. Hence, the aim of this study is therefore to evaluate the psychosocial impact of malocclusion among patient seeking orthodontic treatment using HRQoL (Health Related Quality of Life) questionnaire i.e. PIDAQ and compare total and subscale PIDAQ score among gender, desire of orthodontic treatment and severity of malocclusion as assessed by Index of orthodontic treatment need- Dental health component (IOTN-DHC)

## MATERIAL AND METHODS

The present cross-sectional study was conducted in Department of Orthodontics and Dentofacial Orthopedics, UCMS-college of dental surgery. The study was approved by Institutional Review Committee of UCMS (IRC/081/21). The Duration of study was July 2021 to Dec 2021. Inclusion criteria were patients seeking orthodontic treatment of age group 18-30 years. Exclusion criteria were patients with previous history of orthodontic treatment, patients with craniofacial syndrome and patients with cleft lip and palate. Sample size was calculated using the formula  $n = (z \sigma / E)^2$  where, Z is equal to 1.96 for 95 % confidence level,  $\sigma$  is standard deviation from previous study and E is margin of error. Taking margin of error 5 units and standard deviation as 18.82 from previous study,<sup>3</sup> minimum sample sizes was calculated to be 51. Sample size of 60 will be considered for the study.

All the participants eligible for the study fulfilling the inclusion criteria were provided with self administered questionnaire after giving consent for the study. The participant answered questions concerning self perceived psychoso-

cial impacts of malocclusion using Nepali version of PIDAQ.<sup>6</sup> It consists of 23 questions under 5 various subclasses. Participants also answered the question regarding the desire for orthodontic treatment based on scale ranging from 0 to 4. After completion of questionnaire the comprehensive orthodontic clinical assessment of the participants were done by a single experienced orthodontist. Clinical examination was performed to assess the severity of malocclusion based on the basis of DHC (Dental Health Component) of IOTN (Index of Orthodontic treatment need). PIDAQ score and grades of DHC of IOTN of all the participants will be recorded. Score for desire of orthodontic treatment need were also recorded the grade for which was from 0-4.

Data were entered in Statistical Package for Social Sciences (SPSS) version 22.0 and further statistical analysis was performed. Mean total and subscale PIDAQ score was calculated. Statistical difference of mean PIDAQ score and its subscale between male and female were tested using independent sample t-test. One way Analysis of Variance (ANOVA) test was carried out to find out the difference between different grade of DHC of IOTN and PIDAQ score and its subscale. ANOVA test was also used to test the significant difference between desires of orthodontic treatment and total PIDAQ score and its subscale.

## RESULTS

The demographic details of the participants are shown in Table 1; total 60 participants were recruited for the present study among which 17 were male and 43 were female patients. Among the 60 patients, 18 patients showed a very strong desire for orthodontic treatment, 28 patients showed strong desire, 10 showed somewhat and 4 patients showed a little desire for orthodontic treatment. Also with the study of IOTN-DHC, 43 patients were Grade 1-3, 12 patients were Grade 3 and 5 patients were of Grade 4-5.

Table 2 shows the comparisons of PIDAQ scores and its subscale between males and females. Mean PIDAQ score in female was  $37.67 \pm 11.57$  and male was  $37.23 \pm 10.62$ . There was no significant differences in total PIDAQ scores and its subscale among male and female ( $p < 0.01$ ). There was significant difference in total PIDAQ scores and its subscale i.e. aesthetic concern (AC) and dental self-consciousness (DSCo) ( $p < 0.05$ ) among patients with different desire of orthodontic treatment. Patient with very strong desire (Score =4) have the highest scores of total PIDAQ ( $42.27 \pm 11.40$ ). Patient with little desire of orthodontic treatment (Score=1) has lowest total PIDAQ score of  $21.25 \pm 5.37$  (Table 3).

Significant difference in total PIDAQ score and its subscale ( $p < 0.05$ ) was seen among patients with difference grades of IOTN-DHC. Patient having malocclusion severity of IOTN-DHC grade of 4-5 have highest PIDAQ scores of  $48.40 \pm 7.73$ .

**Table 1.** Demographic characteristics of the participants

Demographic	N
<b>Sex</b>	
Male	17
Female	43
Total	60
<b>Desire of Orthodontic treatment</b>	
0= "No desire"	0
1= "A little"	4
2= "Somewhat"	10
3= "Strongly"	28
4= "Very strongly"	18
Total	60
<b>IOTN-DHC, n</b>	
Grade 1-2	43
Grade 3	12
Grade 4-5	5
Total	60

**Abbreviation:**IOTN-DHC,Dental health component of the index of orthodontic treatment need.

**Table 2.** Comparison of PIDAQ scores and its subscale between males and females

Variable	Male	Female	p-value
PIDAQ, mean	37.23±10.62	37.67±11.57	0.49
DSC	11.76±3.68	11.46±3.42	0.57
SI	5.76±4.75	7.72±4.70	0.49
PI	5.35±2.02	5.51±2.19	0.97
AC	6.58±3.10	5.25±2.54	0.13
DSCo	8.23±3.11	7.72±3.57	0.65

**Note:** Student's t-test performed to observe sex difference in relation to PIDAQ score. \* $p < 0.05$ . Data are presented in mean  $\pm$  standard deviation

**Abbreviations:** PIDAQ, Psychosocial Impact of Dental Aesthetics Questionnaire; DSC, dental self-confidence; SI, social impact; PI, psychological impact; AC, aesthetic concern, DSCo dental self-consciousness

**Table 3.** Comparison of total and subscale PIDAQ score in different grades of desire of orthodontic treatment

Variable	Desire of Orthodontic Treatment				ANOVA p value
	1	2	3	4	
PIDAQ total	21.25±5.37	37.80±13.28	36.75±8.74	42.27±11.40	0.006*
DSC	11.25±1.50	9.50±3.10	11.21±3.07	13.27±3.93	0.037*
SI	2.50±1.91	8.30±5.61	6.71±4.21	8.27±5.05	0.128
PI	4.00±1.41	6.00±2.62	5.46±1.81	5.50±2.43	0.482
AC	1.75±1.25	5.60±2.17	5.60±2.84	6.55±2.50	0.015*
DSCo	1.75±1.50	8.80±4.15	7.89±2.88	8.66±2.84	0.001*

**Note:** One way analysis of variance (ANOVA) to test significant difference between different grades of desire of orthodontic treatment and total and subscale PIDAQ score. \* $p < 0.05$

**Abbreviations:** PIDAQ, Psychosocial Impact of Dental Aesthetics Questionnaire; DSC, dental self-confidence; SI, social impact; PI, psychological impact; AC, aesthetic concern, DSCo dental self-consciousness

**Table 4.** Comparison of total and subscale PIDAQ score in each grade of Index orthodontic treatment –Dental health component

Variable	IOTN-DHC			ANOVA p value
	Grade 1-2	Grade 3	Grade 4-5	
PIDAQ total	35.13±11.45	41.66±7.63	48.40±7.73	0.014*
DSC	11.02±3.64	12.58±2.74	13.60±2.50	0.150
SI	6.30±4.82	8.50±4.27	11.40±1.94	0.004*
PI	5.34±2.14	5.50±1.97	6.40±2.60	0.588
AC	5.32±2.87	6.25±2.41	6.80±2.28	0.368
DSCo	7.13±3.41	9.50±2.96	10.20±2.58	0.028*

**Note:** One way analysis of variance (ANOVA) to test significant difference between different grades of Index of orthodontic treatment –dental health component and total and subscale PIDAQ score. \* $p < 0.05$

**Abbreviations:** PIDAQ, Psychosocial Impact of Dental Aesthetics Questionnaire; DSC, dental self-confidence; SI, social impact; PI, psychological impact; AC, aesthetic concern, DSCo dental self-consciousness

## DISCUSSION

There are various reasons that motivate an individual to seek orthodontic treatment. The key determinant factor for seeking orthodontic treatment is a person's own desire for improving dental appearance and the most commonly perceived impacts of dental aesthetics included appearance, self-consciousness about their smile, self-confidence, self-esteem, and so on.<sup>7,8</sup> PIDAQ is a specialized tool using a questionnaire for the evaluation of the psychosocial impacts of dental aesthetics in young adults, and it has been widely proved with high validity across samples in different populations.<sup>2,9</sup> A reliable and valid Nepali version of the PIDAQ instrument was developed in having five domains with addition of a new domain 'Dental self-consciousness' while others domains remaining same by Singh VP which was adapted in our study.<sup>6</sup> This study was conducted with the aim to investigate the psychosocial impact of malocclusion of variable severity using Nepalese version of PIDAQ and its domain among Nepalese orthodontic patients.

This study consists of a sample of 60 patients those who sought orthodontic treatment and among which more than twice were females. Our finding is similar to the previous studies that showed more number of females seek orthodontic treatment than males.<sup>5,10,11</sup> Females being frequently and intensely dissatisfied with their dental appearance and higher priority on their physical appearance is the reason postulated for more number of female patient seeking orthodontic treatment.<sup>10-12</sup> In Nepalese community, one of the reason for more uptake of orthodontic treatment by female patients might be due to more concern of parents about the facial and dental appearance of their daughters rather than their sons.

Results of the present study showed no significant difference in total PIDAQ score and its domains between male and female subjects. This finding is also supported by several other studies carried out on other populations suggesting that male and females are equally concerned with their dental-facial appearance and have similar psychosocial effect on maloc-

clusion.<sup>5,9,13</sup> However, findings of our study showed contradicting results to other studies which showed significant sex difference with female subject having higher PIDAQ score suggesting that females feel significant higher social and psychological impact of malocclusion.<sup>11,12,14</sup> This findings of our study might be due to subjects in our study all of which were seeking orthodontic treatment and all being concerned about their dentofacial appearance despite being male or female.

The findings of our study showed significant difference between total PIDAQ score and degree of desire of orthodontic treatment. Greater the desire for orthodontic treatment more the total PIDAQ score was seen. The findings suggest that increased self-perceived malocclusion leads to increased desire for orthodontic treatment. Our result was similar to the findings of the study conducted by Yi song et al.<sup>14</sup>

Other findings of the present study showed significant difference between the IOTN-DHC grades and total PIDAQ score and its subscale. As there was increased in malocclusion severity on the basis of IOTN-DHC it leads to significant increased self-perceived psychosocial impacts of malocclusion. This finding was also supported by the previous study which showed increased self-perceived psychological impacts of malocclusion with increased severity of malocclusion.<sup>14</sup>

Since the study was conducted among patients seeking orthodontic treatment in a small group of sample, the findings of the study cannot be generalized to the general population. Various other factor as well can affect people desire of orthodontic treatment.

## CONCLUSION

Among the patients seeking orthodontic treatment majority of them were female. Total PIDAQ score and score of its domain showed no significant difference among genders suggesting equal self-perceived impacts of malocclusion by both male and female. There was greater desire of Orthodontic treatment in patients with increased self perceived psychosocial impact of malocclusion reflected by increased PIDAQ score. Significant increase in PIDAQ score was also seen with increasing severity of malocclusion.

## CONFLICT OF INTERESTS

None

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