

# Dental Malocclusion among University Students and Its Effect on Self-esteem: A Cross-sectional Study

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## ABSTRACT

**Introduction:** Studies on prevalence of malocclusion and self-esteem among young adults are sparse in Malaysia. The objectives of this study were to highlight the type of Angle's malocclusion most commonly prevalent in young adults of International Medical University (IMU) of age 18 to 25 years as well as to assess the social impact of malocclusion in them. Another objective was to identify the young adults' satisfaction level with the appearance of the teeth and self-perceived orthodontic treatment needs using a questionnaire and to correlate groups of malocclusion with self-esteem.

**Materials and methods:** All 142 subjects were randomly selected from the name list of different cohorts of students in IMU. Study information was provided to the subjects along with the consent form and two questionnaires about global self-esteem (GSE) and social impact of malocclusion. Intraoral clinical examination was performed using disposable mouth mirror, probe and metal ruler in presence of artificial illumination. Angle's molar relation and other occlusal characteristics were recorded.

**Results:** Angle's class I malocclusion was most prevalent (48.6%), followed by class III (26.8%), class II (16.2%) and normal occlusion (8.5%). Analysis of variance ANOVA test showed no significant association between Angle's malocclusion and GSE with mean self-esteem score of 14.1, 15.5 and 13.8 for class I, II and III malocclusion respectively.

**Conclusion:** The satisfaction with the teeth appearance (0.026) and social impact of malocclusion (0.004) had significant association.

**Keywords:** Angle's malocclusion, GSE scale, Self-esteem, University students.

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## INTRODUCTION

Malocclusion is defined as deviation from normal occlusion and is considered to be one of the most widespread oral health problems.<sup>1,2</sup> Malocclusion has not been thoroughly investigated in Malaysian university population of age group 18 to 25 years probably because the pain and suffering caused by this variation in occlusion is seldom acute.

Studies conducted in different countries show wide variation of prevalence's of malocclusion within different population among various races.<sup>1-6</sup> A study published by Mtaya et al<sup>2</sup> demonstrated that the variation in prevalence of malocclusion ranged from 39 to 98% and could be attributed to ethnicity, age of the subjects and sample size.

Soh et al,<sup>7</sup> in a study for Asian population carried out in National University of Singapore concluded that class I malocclusion was the most prevalent, followed by class II and III for both the right side and the left side. Angle's malocclusion for the right side was 49.9, 24.5 and 24.2% and for the left side it was 53.1, 25.1 and 21.2% for class I, class II and III respectively.

The 2007 National Oral Health Survey School Children (NOHSS 2007) among 16-year-old Malaysian school children used the dental health component of the index of orthodontic treatment (IOTN) and concluded that 35.3% definitely need orthodontic treatment.<sup>8</sup> Over a period of past several years, studies have been carried out to correlate orthodontic treatment need and esthetics with self-esteem.<sup>9,10</sup> Marques et al<sup>10</sup> used oral impact on daily performance (OIDP), dental esthetic index (DAI), oral esthetic subjective impact scale (OASIS) to determine self-perception of dental esthetics and global self-esteem (GSE) scale for self-esteem and found significant association between the esthetic impact and the malocclusion but no significant correlation between esthetic impact and self-esteem.<sup>10</sup>

A recent study by Badran<sup>9</sup> using esthetic component of IOTN and GSE scale, found subjects with greater normative treatment need and high self-perceived treatment need demonstrated lower self-esteem. The subjects who had received orthodontic treatment had a higher self-esteem than those who had not been treated. This study also reported of subjects being teased about their teeth and were more likely to hide a smile if they had low self-esteem.<sup>9</sup>

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Another study found that lower self-esteem contributes to the development of depression resulting in negative self-image.<sup>11</sup> Furthermore, the adolescents who maintain positive self-concepts with higher self-esteem report greater wellness, more life satisfaction and fewer depressive symptoms.

A review of articles done by Liu et al<sup>12</sup> suggests an association between malocclusion, orthodontic treatment need and poor quality of life. Kvarme et al<sup>13</sup> also concluded a strong relationship between self-esteem and quality of life (QoL).

Sun and Jiang<sup>11</sup> used malocclusion according to Angle's and used children self-esteem scale (CSES) for school children age 12 to 18 years to assess its relationship with self-esteem and concluded that malocclusion negatively affects self-esteem of the adolescents. However, CSES may not be applicable for young adults. In contrast, our study used the GSE which is a scale that is designed for the adult population including adolescents from age 12 years and above.<sup>13</sup>

From the studies, it is evident that there is an association between malocclusion, self-esteem and QoL.<sup>9,11,14</sup> It is also clear that malocclusion can affect self-esteem and self-appearance.<sup>15</sup>

Since body image consciousness increases during late childhood and adolescence until adulthood,<sup>9</sup> the study on effects of malocclusion on self-esteem are considered to be appropriate on young adults of age 18 to 25 years.<sup>16</sup>

There are not many studies among the young adults in Malaysia to determine the prevalence of malocclusion using Angle's classification, neither have many studies explored an association between GSE and Angle's malocclusion among university students.

The aim of this study was to identify the type of Angle's malocclusion most prevalent in young adults in IMU of age group 18 to 25 years. The specific objectives were to (i) assess self-perceived orthodontic treatment needs, (ii) identify satisfaction level with the appearance of the teeth, (iii) determine the social impact

of malocclusion and (iv) correlate malocclusion with self-esteem, using a questionnaire.

## MATERIALS AND METHODS

The samples comprised students of International Medical University (IMU) of ages 18 to 25 years. Approval was obtained from the IMU joint ethics committee and a cross-sectional study was conducted to assess the occlusal trait of the sample population. Research was carried out by a single operator to avoid inter operator bias.

Sample size was calculated using Epi Info software. Using total strength of IMU (3321 students) and expected prevalence of malocclusion of 34.5%<sup>8</sup>; the sample size calculated was 142 at a confidence level of 80%.

The exclusion criteria's were, undergoing orthodontic treatment or had undergone orthodontic treatment, fractured or missing incisors and restorations on upper and lower central incisors.

Following that, student representatives from each batch were notified by email to help disseminate brief information about this forthcoming clinical examination

**Table 1:** First questionnaire—self-perceived treatment, satisfaction level with the look of the teeth and social impact of malocclusion

Do you think you need braces treatment?	1: Not at all 2: May be 3: Most probably 4: Definitely
Are you satisfied with the way your teeth look?	1: Not at all 2: A little 3: Probably 4: Very satisfied
Do you think having straight teeth makes you more popular?	1: Not at all 2: A little 3: Probably 4: Definitely
Do you think having straight teeth makes you successful in life?	1: Not at all 2: A little 3: Probably 4: Definitely
Have you been told by other people that you need to have your teeth straightened?	1: Never 2: Sometimes 3: Most of the times 4: Always
Have you been teased about your teeth?	1: Never 2: Sometimes 3: Most of the times 4: Always
Do you avoid smiling to hide your teeth?	1: Never 2: Sometimes 3: Most of the times 4: Always

**Table 2:** Second questionnaire—global self-esteem scale (Alsaker and Olweus 1986)

	1: Does not apply at all	2: Does not apply well	3: Applies somewhat well	4: Applies fairly well	5: Applies well	6: Applies exactly
At times I feel I am no good at all						
I feel I do not have much to be proud of						
I certainly feel useless at times						
All in all I am inclined to feel that I am a failure						
I would like to change many things about myself						

to the students. Subjects were randomly selected from the name list of different cohorts. The selection involved every 5th students from the name list. The next candidate was selected if the 5th student did not satisfy the inclusion or exclusion criteria. Selected students from each batch were invited randomly to the oral health clinic. Study information sheet was provided along with the consent form and two questionnaires.

The first questionnaire (Table 1) was about self-perceived treatment, satisfaction level with the appearance of teeth and social impact of malocclusion<sup>9</sup> and consisted of seven questions. The score was answered on a four-point likert scale.

The second questionnaire (Table 2) was about self-esteem using GSE scale (Alsaker and Olweus, 1986); an adaptation of the self-esteem scale of Rosenberg (1965).<sup>9</sup>

After filling in the questionnaires, intraoral examination was carried out using metal millimeter ruler, mouth mirror, periodontal probe, disposable latex gloves and good illumination provided by artificial light. Malocclusion was recorded using Angle’s classification. Other occlusal characteristics also included were overjet, overbite, crossbite, crowding, diastema, missing permanent and midline misalignment.

**Statistical Analyses**

Data were analyzed using statistical package for social sciences 18.0 (SPSS 18.0). Descriptive statistics, bivariate correlation and one-way analysis of variance (ANOVA) were used to assess the frequencies, determine means and also to assess the relationship between different variables. The p-value for statistical significance was set at < 0.05.

**RESULTS**

A total of 170 subjects recruited and 142 were included based on the inclusion criteria.

*Sample Profile*

The mean age of the study sample was 20.3 and ranging from 18 to 25 years. Majority of the sample were Chinese (73.9%), followed by Indian (16.9%), Malay (5.6%) and others (3.5%) (Table 3).

*Prevalence of Malocclusion*

According to Angle’s classification of malocclusion 48.6% had class I malocclusion, 26.8% had class III malocclusion, 16.2% had class II malocclusion and 8.5% had normal occlusion (Table 4). In maxillary and mandibular arch 40.1% and 26.1% had no crowding and the rest had crowding ranging from mild to severe.

**Table 3:** Sociodemography of the sample

Character	Mean	SD	n	Percentage(%)
Age (year)	20.3	1.2		
Ethnicity				
Chinese			105	73.9
Indian			24	16.9
Malay			8	5.6
Others			5	3.5
Gender				
Male			53	37.3
Female			89	62.7
Program				
Dentistry			24	16.9
Medicine			26	18.3
Pharmacy			53	37.3
Others			39	27.5

SD: Standard deviation

**Table 4:** Prevalence of Angle's malocclusion

Angle's malocclusion	n(%)	Mean of self-esteem	SD
Class 1 malocclusion	69 (48.6)	14.1	4.2
Class 2 malocclusion	23 (16.2)	15.5	5.1
Class 3 malocclusion	38 (26.8)	13.8	4.8
No malocclusion	12 (8.5)	14.7	4
Total	142 (100)	14.3	4.5

SD: Standard deviation

**Table 5:** Perceived treatment need, satisfaction with teeth look and social impact of malocclusion

	Mean score (95% CI)	SD	Correlation coefficient	p-value
Need for the orthodontic treatment	1.9 (1.8-2.1)	0.9	0.1	0.19
Satisfaction with dental appearance	2.9 (2.7-3.0)	0.8	-0.19	0.026
Social impact of malocclusion	9.0 (8.6-9.3)	2.3	0.24	0.004

SD: Standard deviation

**Self-esteem and Angle’s Malocclusion**

Mean self-esteem score among the different group of Angle’s malocclusion were not very different among each other (Table 4). Using ANOVA test, it showed no significant association between Angle’s malocclusion and GSE (self-esteem) with p-value greater than 0.05.

**Self-esteem and Perceived Treatment Need, Satisfaction with Teeth Looks and Social Impact of Malocclusion**

Mean score for perceived treatment need, satisfaction with teeth looks and social impact of malocclusion were 1.9, 2.9 and 9.0 respectively. Of these three groups



**Table 6:** Spearman's rho correlation coefficient\* between the components of perceived social impact of malocclusion and satisfaction with dental appearance and self-esteem GSE scale

	Do you think you need braces treatment?	Are you satisfied with the way your teeth look?	Do you think having straight teeth makes you more popular?	Do you think having straight teeth makes you more successful in life?	Have you been told by other people that you need to straighten your teeth?	Have you been teased about your teeth?	Do you avoid smiling to hide your teeth?
GSE scale	0.190	0.026	0.131	0.023	0.271	0.059	0.018

\*Correlation is significant at the 0.05 level

mentioned the satisfaction with teeth appearance and social impact of malocclusion group showed significant association with global negative self-esteem scale with p-value being 0.026 and 0.004 subsequently (Table 5).

At the bivariate level (simple linear correlation analyses), it was found that 3 out of 7 of the self-perceived social impact components had association with global negative self-esteem scale. These were; are you satisfied with the way your teeth look?; do you think having straight teeth makes you more successful in life?; do you avoid smiling to hide your teeth?" (Table 6).

Subjects who were less satisfied with the appearance of their teeth or avoid smiling to hide their teeth and who think that having straight teeth would make them more successful in life were the ones who showed lower self-esteem.

## DISCUSSION

The prevalence of normal occlusion in this study 8.5% was consistent with one of the study done in Singaporean-Chinese population with 7%.<sup>17</sup> The prevalence was lower in other studies carried out within Hong Kong with 20%,<sup>14</sup> 12.2% observed in Nigeria, 18.2% in Brazilian and 86% in Australian Aborigines.<sup>18,19</sup>

The results in this study show that Angles class I malocclusion is predominant as agreed by previous studies.<sup>6,10,14,20</sup> However, the results were not consistent. Prevalence of class I malocclusion was low in this study when compared with others in Nepal, Colombia, Nigeria and other Caucasian groups.<sup>1,5,7,21</sup>

The class III malocclusion was high in this study and is supported by other studies.<sup>7,14</sup>

This study does not support any association between Angle's malocclusion and self-esteem that was otherwise supported by Sun Y.<sup>11</sup> This could be due to the fact that severity of crowding and skeletal deformity could vary within the different groups of malocclusion.

However, in this study subjects who perceive their teeth as less attractive or were less satisfied tend to have

lower self-esteem which is supported by Kenealy et al.<sup>20</sup> Badran<sup>9</sup> also supports that people who hide their smile or think that having straight teeth makes oneself more successful in life tend to have lower self-esteem.

This study however does not support that people who are teased about their teeth tend to have lower self-esteem probably due to the lower sample size or lack of individuals with severe malocclusion in this university. This was one of the limitations in this study along with the poor response rate of 20% among the medical students.

## CONCLUSION

This study revealed high level of class III Angles malocclusions among the university students although class I malocclusion is predominant. There is also no association found between Angle's malocclusion and self-esteem however social impact of malocclusion showed significant effects on self-esteem.

## REFERENCES

- Bhardwaj VK, Veerasha KL, Sharma KR. Prevalence of malocclusion and orthodontic treatment needs among 16- and 17-year-old school-going children in Shimla city, Himachal Pradesh. *Ind J Dent Res* 2011 Jul-Aug;22(4):556-560.
- Mtaya M, Brudvik P, Astrom AN. Prevalence of malocclusion and its relationship with sociodemographic factors, dental caries, and oral hygiene in 12- to 14-year-old Tanzanian school children. *Eur J Orthod* 2009 Oct;31(5):467-476.
- Sayin MO, Turkkahraman H. Malocclusion and crowding in an orthodontically referred Turkish population. *Angle Orthod* 2004 Oct;74(5):635-639.
- Borzabadi-Farahani A, Eslamipour F. Malocclusion and occlusal traits in an urban Iranian population: an epidemiological study of 11- to 14-year-old children. *Eur J Orthod* 2009 Oct;31(5):477-484.
- Thilander B, Pena L, Infante C, Parada SS, de Mayorga C. Prevalence of malocclusion and orthodontic treatment need in children and adolescents in Bogota, Colombia: an epidemiological study related to different stages of dental development. *Eur J Orthod* 2001 Apr;23(2):153-167.
- Oshagh M, Ghaderi F, Pakshir HR, Baghmollai AM. Prevalence of malocclusions in school-age children attending the orthodontics department of Shiraz University of Medical

- Sciences. Eastern Mediterranean Health Journal 2010;16(12): 1245-1250.
7. Soh J, Sandham A, Chan YH. Occlusal status in Asian male adults: prevalence and ethnic variation. *Angle Orthod* 2005 Sep;75(5):814-820.
  8. Oral Health Division, Ministry of Health Malaysia. National Oral Health Survey of School Children 2007 (NOHSS 2007). Ministry of Health, Malaysia.
  9. Badran SA. The effect of malocclusion and self-perceived aesthetics on the self-esteem of a sample of Jordanian adolescents. *Eur J Orthod* 2010 Dec;32(6):638-644.
  10. Marques LS, Filogonio CA, Filogonio CB, Pereira LJ, Pordeus IA, Paiva SM, et al. Aesthetic impact of malocclusion in the daily living of Brazilian adolescents. *J Orthod* 2009 Sep;36(3):152-159.
  11. Sun Y, Jiang C. The impact of malocclusion on self-esteem of adolescents. *Zhonghua Kou Qiang Yi Xue Za Zhi* 2004 Jan;39(1):67-69.
  12. Liu Z, McGrath C, Hagg U. The impact of malocclusion/orthodontic treatment need on the quality of life. a systematic review. *Angle Orthod* 2009 May;79(3):585-591.
  13. Kvarme LG, Haraldstad K, Helseth S, Sorum R, Natvig GK. Associations between general self-efficacy and health-related quality of life among 12 to 13-year-old school children: a cross-sectional survey. *Health and Quality of Life Outcomes* 2009 Sep;23(7):85.
  14. Chu CH, Choy BHB, Lo EC. Occlusion and orthodontic treatment demand among chinese young adults in Hong Kong. *Oral Health Prev Dent* 2009;7(1):83-91.
  15. Chen S, Chen Y, Yun Y. The influence of malocclusion on self-esteem and personality of college student. *Zhonghua Kou Qiang Yi Xue Za Zhi* 2000 Jul;35(4):299-302.
  16. Bernabe E, Flores-Mir C. Influence of anterior occlusal characteristics on self-perceived dental appearance in young adults. *Angle Orthod* 2007 Sep;77(5):831-836.
  17. Lew KK, Foong WC, Loh E. Malocclusion prevalence in an ethnic Chinese population. *Aust Dent J* 1993;38(6):442-449.
  18. Emmanuel OA. Prevalence of malocclusion among school children in Benin City, Nigeria. *J Med Biomed Res* 2007;1&2:5-11.
  19. Godoy F, Rosenblatt A, Guimarães CD. The type of occlusion in adolescents of the fulni-ô indian community, Pernambuco—Brazil. *Odontologia. Clín.-Científ* 2006;5(4):307-311.
  20. Kenealy P, Gleeson K, Frude N, Shaw W. The importance of the individual in the causal relationship between attractiveness and self-esteem. *J Commu Appl Soc Psychol* 1991 April;1(1):45-46.
  21. Angles EH. Classification of malocclusion. *Dental Cosmos* 1899;41:248-264.

