Research Article

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Prevalence of Malocclusion Among Dental School Students in South Indian Population

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ABSTRACT

Background: The study was undertaken to determine the prevalence of Malocclusion among dental school students in Melmaruvathur, Tamil Nadu India.

Material and Methods: A total of 400 dental students were evaluated. According to Angle's classification, the assessment was done for molar relation, crowding, spacing, overbite, and overjet.

Results: Result shows that the prevalence of Malocclusion was 96.75%, with the majority of them having Class I malocclusion (84.7%), while the prevalence of Class III malocclusion was found to be the least (1.61%). Crowding in the lower arch with class I Malocclusion is found to be more prevalent (32.10%).

Conclusion: Gender-based difference was seen, lower anterior crowding and upper anterior spacing between males and females.

Keywords: Malocclusion, Angle's classification, prevalence, crowding, spacing.

INTRODUCTION

The epidemiological data plays an important role in determining the prevalence of Malocclusion and planning appropriate levels of orthodontic services. Malocclusion is an irregularity or misalignment of the teeth or a malrelationship of the dental arches beyond the range of what is accepted as normal[1]. Malocclusion is a common condition in the modern civilization due to the adoption of soft food diet and lack of stimulus for the proper growth of jaws, and proximal attrition of teeth, which otherwise helps accommodation of teeth in dental arches in an aligned manner. It has a huge effect on individuals and society in terms of quality of life, discomfort, and psychosocial problems related to impaired Dentofacial aesthetics and masticatory function, swallowing and phonetics, and susceptibility to diseases of periodontium[2].In developing countries like India, a diverse and vast sub-continent show a large variation in the procedure of Malocclusion in different regions of the country, variation in ethnicity nutritional status religious belief, the diet may be attributed to variation in the prevalence of Malocclusion. The prevalence of Malocclusion in India is found to be 20 to 43 %[3]. In India, very few studies have been reported on the prevalence of Malocclusion among students, especially on dental students. Hence, the purpose of the present study was to investigate Malocclusion, with respect to age and sex in the age-group of 18-23 years among dental students in Adhiparasakthi Dental College

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Table I. Prevalence of Malocclusion

Class I malocclusion (n=387)	Class II malocclusion (n=387)	Class III malocclusion (n=387)
327(84.70%)	54(14.09%)	6(1.61%)

Table II. Prevalence of Malocclusion in male and female students

Gender	Class I malocclusion	Class II malocclusion	Class III malocclusion
Male-64	51(81.68%)	9(15.08%)	2(3.24%)
Female-323	275(84.91%)	45(14.12%)	3(0.99%)

Table III. Prevalence of Malocclusion in lower anterior crowding and upper spacing

Malocclusion	Male	Female
Lower anterior crowding	26.88%	31.13%
Upper anterior spacing	22.52%	6.89%

Table IV. Prevalence of Malocclusion- Overall %

		CLASS –I %	CLASS II %	CLASS III %
CROWDING	UPPER	7.96	2.65	0.27
	LOWER	32.10	5.04	0.80
SPACING	UPPER	10.88	0.53	0.27
	LOWER	3.71	0.53	0
DEEP BITE		7.96	1.06	0
PROCLINATION	UPPER	6.10	1.86	0
	LOWER	0	0	0
	BIMAXILLARY	0.80	0.27	0
CROSSBITE	ANTERIOR	2.40	0.27	0
	POSTERIOR	0.53	0	0
ROTATION	UPPER	1.86	0	0
	LOWER	2.40	0	0
BUCCALLY PLACED	UPPER	1.60	0.80	0
	LOWER	1.33	0.27	0
LINGUALLY PLACED	UPPER	0.53	0.27	0
	LOWER	0.53	0.27	0
OPENBITE		3.98	0.27	0.27
TOTAL%		84.70	14.09	1.61

Table V: Prevalence of Malocclusion – Male in %.

		CLASS I %	CLASS II %	CLASS III %
CROWDING	UPPER	1.08	4.30	1.08
	LOWER	26.88	4.30	1.08
SPACING	UPPER	22.52	1.08	1.08
	LOWER	3.23	1.08	0
DEEP BITE		4.30	1.08	0
PROCLINATION	UPPER	8.60	1.08	0
	LOWER	0	0	0
	BIMAXILLARY	0	0	0
CROSSBITE	ANTERIOR	1.08	0	0
	POSTERIOR	0	0	0
ROTATION	UPPER	2.15	0	0
	LOWER	3.23	0	0
BUCCALLY PLACED	UPPER	2.15	1.08	0
	LOWER	1.08	0	0
LINGUALLY PLACED	UPPER	1.08	1.08	0
	LOWER	0	0	0
OPENBITE		4.30	1.08	0
TOTAL%		81.68	15.08	3.24

Table VI: Prevalence of Malocclusion – Female in %..

		CLASS I %	CLASS II %	CLASS III %
CROWDING	UPPER	9.50	1.97	0
	LOWER	31.13	4.92	0.66
SPACING	UPPER	6.89	0.33	0
	LOWER	3.61	0.33	0
DEEP BITE		8.53	1.64	0
PROCLINATION	UPPER	10.16	1.97	0
	LOWER	0	0	0
	BIMAXILLARY	0.98	0.33	0
CROSSBITE	ANTERIOR	2.62	0.33	0
	POSTERIOR	0.66	0	0
ROTATION	UPPER	1.64	0.33	0
	LOWER	1.97	0	0
BUCCALLY PLACED	UPPER	1.31	1.31	0
	LOWER	1.31	0.33	0
LINGUALLY PLACED	UPPER	0.33	0	0
	LOWER	0.66	0.33	0
OPENBITE		3.61	0	0.33
TOTAL%		84.91	14.12	0.99

and Hospital (APDCH), Melmaruvathur, who were from various regions of Tamil Nadu, India. The hypothesis of the study was formulated as there was a gender influence in the prevalence of Malocclusion.

MATERIALS AND METHODS

The study population includes dental students, consists of all dental undergraduate students from the first year to internship students of APDCH,

Fig 1: prevalence of malocclusion overall %.

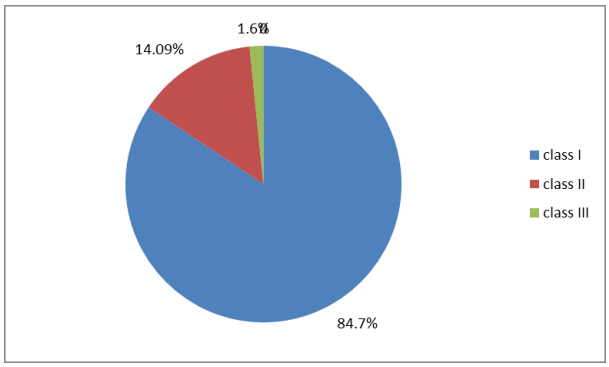


Fig 2: Comparison between male and female in percentage.

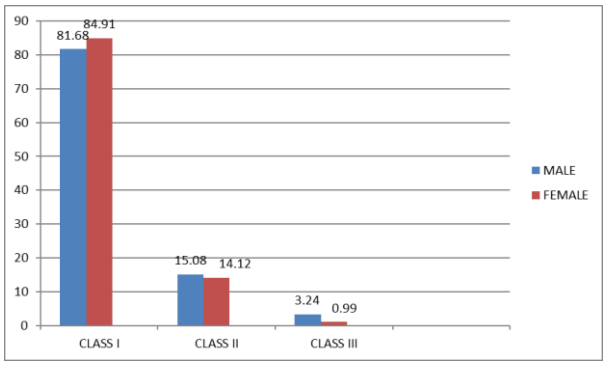
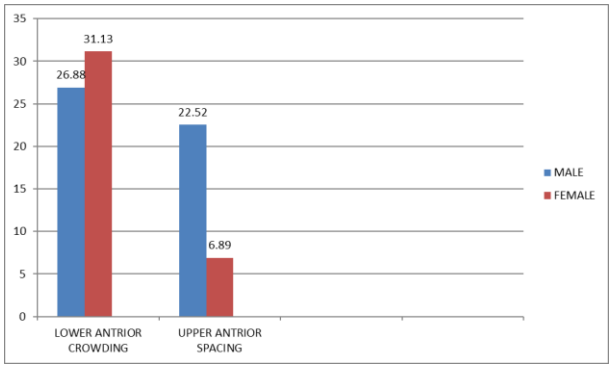


Fig 3: Lower anterior crowding and upper anterior spacing in percentage.



Melmaruvathur, Tamil Nadu, India. This study was a quantitative and descriptive in-vitro. In order to conduct this study, consent from the participants was obtained. For data collection; a survey format based on WHO guidelines were developed to record general background information and different variables related to Malocclusion. After obtaining consent from each student was examined in the department of orthodontic APDCH, Melmaruvathur.

Clinical examination of dental occlusion was carried out using latex gloves, mouth mirrors, millimetre rulers. No radiographs, study cast, or previously written records were used for the purpose of the study. Data about orthodontic treatment were obtained directly from the students.

The crowding, spacing, overbite, overjet, proclination, the relationship of the first upper and lower molars, according to Angle's classification was recorded. **Inclusion criteria** include all male and female students age 17 to 23yrs, Secondary dentition present with no remaining deciduous teeth, Presence of first permanent molars, and canine. **Exclusion criteria** include missing first permanent molar, Multiple missing teeth, History of orthodontic treatment. 400 dental students were examined out of which 387 students were found to satisfy the inclusion criteria (96.75%), and 13 students were not included according to exclusion criteria (3.25%). With the above data collected, the prevalence of Malocclusion and the status of Malocclusion among dental professionals were determined.

STATISTICAL ANALYSIS:

The data were analyzed statistically using SPSS software. Statistical significance for sexual dimorphism with different parameters was assessed, with the chi-square test. Gender-based significance was seen in upper anterior spacing and lower anterior crowding ($P<0.04$). Significance was seen among class I, class II and class II malocclusion ($P<0.01$). ($p<0.05$statistiacally significant).

RESULTS

The results were given using absolute numbers and the percentage of different types of conditions for both sexes separately. Among the 400 students examined, 387 students had Malocclusion (96.75%). Among the malocclusion present, class I malocclusion (84.7%) was more prevalent than class II (14.09%) followed by class III (1.61%) as shown in the results depicted in table I and figure I. Class I was more prevalent in females (84.91%) than in males (81.68%). Class II malocclusion was more prevalent in males (15.08%)than in females (14.12%)followed by class III which was more prevalent in males (3.24%)than in females (0.66%) as shown in table II and figure II. Prevalence of Malocclusion with crowding, spacing, rotation, proclination, crossbite, open bite, deep bite, buccally

and lingually placed teeth of overall percentage was shown in table IV and particular for male was shown in table V and for females in table VI. The significance of spacing and crowing was shown in table III and figure III.

DISCUSSION

The present study was performed for exploring Malocclusion and providing information on occlusal variation in dental students. The age of the sample subjected in this study was between 18-23 years. The malocclusion existence varies from one city to another city and differs from one country to another country and even from one geographical area to another. For orthodontic treatment, Angle's classification is very useful for easy assessment which exhibits knowledge among dental professionals[4]

The results showed that 96.75% of dental students surveyed had Malocclusion. This finding is opined that finding of Disha and Nitin (2016) who reported that 215 students i.e. 71.19% has malocclusion[1]. However, the studies revealed by HemaPriya et al. in Kancheepuram (75%) and Trehan et al. in Jaipur (66.7%) reported a lower prevalence than the present study[12,13].

Class, I Malocclusion constituted the major proportion of Malocclusion, which was found in 84.70 % that too female patients had 84.91%. This finding agreement with Proffit et al. (2008) and Onyeasoet al. (200)[5,6]found that Angle's Class I malocclusions was most prevalent, i.e., 52.2%, while Angle's Class II is 42.4% and less than 10% were Angle's Class III malocclusions of the studied population. The occurrence of a high number of Class I Malocclusion maybe by influences of registration methods, sample selection, and possibly ethnic variation in occlusal and facial features. There was a low prevalence of Angle's class II and class III malocclusions in this study 14.09% and 1.61% respectively, which was consistent with findings of Thilander et al. (2008)[14]. However, Garner & Butt 1985 in their study on Kenyan children found a higher prevalence of 16.8% of Class III[9].

Class, I lower anterior crowding was more prevalent in females (31.46%) than males (19.61%) whereas upper anterior spacing is more prevalent in males (19.61%) than females (6.89%). In class 1(10.80%) and class III (0. 27%).In Class-I, upper anterior spacing was higher than lower but similar in class II. The deep bite was higher in class 1 female (7.96%). Increased crossbite in class1(2.40%) anterior than posterior. Buccally placed tooth was similar in class 1upper (1.6%) and lower (1.3%) in class II upper (0.8%)was increased than lower. The open bite was higher in class I (4.30%) and class II (1. 08%). It was similar in class II and class III patients. Lingually erupted tooth was higher in class I and class II male than female.

The prevalence of Malocclusion with lower anterior crowding was 26.8% in males and 31.33% in females respectively. The upper spacing was 22.52% in males and 6.89% in females respectively. A significant difference was found between males and females in lower arch crowding and upper arch spacing. In female crowding is taking serious problems than males. But, upper anterior spacing is higher in males than females. Although Abhisek et al. (2019)[8] the frequency of crowding was almost the same in females as compared to males, the difference was not statistically significant. Although the frequency of crowding was more in females as compared to males, the difference was statistically significant. Increased crowding in the sample studies was very high, and thus, the causes of crowding should be looked into in future studies so that proper preventive actions could be taken by creating awareness campaigns. Similar studies occurred in 7-15-year-old Lithuanian school children. The results of the study showed that the prevalence of Malocclusion among 10-15-year-old school children is 84.6%. The most common Malocclusion was dental crowding. The class I Malocclusion was detected in 68.4% of the individuals while class II malocclusion was found in 27.7% and Class III in 2.8 % [7]**.** The reasons for crowding may be the migration of first permanent molar, inclination, and rotation is caused by carious teeth exfoliation and space closer due to lack of diagnosis which leads to a high percentage of crowding. Genetics and racial differences controlling the growth of jaws; evolutionary trends in jaw growth; premature extractions of baby teeth without any space maintenance; unrestored caries and space loss. The results of a previous study by Otuyemi et al. (1999) and Rwakatema et al. (2007) are in accordance with the present study indicating

that the prevalence and severity of Malocclusion for male and female children do not differ significantly (p=0.139) [10,11]. The findings of the current study will be very useful as an early interceptive measure and also the early correction of the Malocclusion, thus reducing the severity in the permanent dentition. It was concluded that 96.75% of dental students had Malocclusion, which required definite orthodontic treatment.

CONCLUSION

The prevalence of Malocclusion among dental school students was found to be 96.75%. Angles class I malocclusion was the most prevalent, out of which crowded incisors were the most common feature associated with class I Malocclusion in females and upper anterior spacing was prevalent in males. From the study, we conclude that there was an increase in the prevalence of Malocclusion among dental school professionals of the age group 18–23 years'. The finding of this study will be nourished baseline data for students to implement early interceptive treatment for the elimination of factors preventing dental arch development as well as skeletal jaw growth in their practice.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

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