

Association of severity of malocclusion with socioeconomic status in the South Indian population

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ABSTRACT

Malocclusion has been linked to various factors out of which certain dietary patterns and unhealthy habits are the most overlooked. The dietary patterns and unhealthy habits vary according to socioeconomic status. The present research was aimed to perform an association of malocclusion severity with socioeconomic status. This study was done in a retrospective manner and was conducted at Saveetha Dental College. A total of 241 clinical case records of the participants with malocclusion reporting for orthodontic therapy were selected and enrolled for the study. Data on the socioeconomic status and the severity of malocclusion as assessed with the Index of Orthodontic Treatment Needs (IOTNs) index were noted. All these records were collected and entered into Excel and then analyzed through statistics. Descriptive statistics and nonparametric Chi-square tests were performed. From the analysis, the proportion of IOTN Grade 1 malocclusion (30%) was found to be the highest. The highest number of patients with Grade 1 malocclusion belonged to the lower socioeconomic class. Socioeconomic status and the severity of malocclusion were significantly associated with each other. Malocclusion prevalence and severity were more among participants belonging to lower socioeconomic groups.

Key words: Dental aesthetic index, Index of orthodontic treatment needs, Innovative, Malocclusion, Social status

INTRODUCTION

Malocclusion is termed a deviation in the interarch relationship in any plane or when a tooth is inappropriately positioned, as well as abnormalities in the form, number, and developmental position of teeth that are outside of

normal boundaries.^[1] It is primarily a clinically significant deviation from normal occlusion or tooth interdigitation. The popularly used Dental Aesthetic Index (DAI) and index of orthodontic treatment need (IOTN)^[2,3] indices were used to estimate the limit and severity of malocclusion in a person or a population for this study. Malocclusion treatment has been connected to a higher level of subjectivity and a unique perspective on treatment demands.^[4] Despite the inadequacy of evidence linking psychosocial well-being to tooth malalignment, it has been proven that self-perception has an impact on facial traits, including oral esthetics.^[5] In older teens and young adults, physical attraction has a considerable impact on colonial interactions and self-perception, which can impact their quality of life significantly.^[6-8]

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The reasons for malocclusion affecting each individual have been accredited to inheritable and environmental factors.^[9] There are hereditary patterns for facial characteristics including jaw size and tooth size. Occlusion is caused by a variety of environmental factors, one of which appears to be diet. However, little research has been done on the relationship between food and malocclusion of the teeth.^[10] Malocclusion has also been linked to certain dietary patterns and unhealthy habits.^[11] Nutrition has also been connected to other anomalies such as bone deformities and cartilage derangement. An individual's diet and nutrition are intrinsically related to his or her socioeconomic status.^[12] Our team has conducted many studies that have contributed to the high number of publications.^[13-32] The aim of the study was to report on the association of severity of malocclusion with the socioeconomic status of an individual.

MATERIALS AND METHODS

This study included a total of 241 patients ($n = 241$) from various age groups and genders who underwent treatment for malocclusion at a private dental hospital in Chennai city.

The study comprised participants between the age group of 18 and 40 years, regardless of gender, who reported to the department with a chief complaint of malocclusion and were treated there. Before the study began, the ethical committee granted their approval (IHEC/SDC/ORTHO/21/232). After describing the study's purpose to the participants, oral agreement was acquired. The IOTNs were used to determine the malocclusion severity (IOTN). The Kuppuswamy scale was used to determine each patient's socioeconomic position. We used descriptive statistics and nonparametric Chi-square testing.

RESULTS AND DISCUSSION

A total of 241 patients took part in the research. The gender and age distribution of the included sample are shown in Figures 1 and 2. According to the Kuppuswamy socioeconomic status scale, around 12% of the participants are upper-middle class, 12% higher-middle class, 18% middle class, 26% lower-middle class, and 32% lower class. The lower class percentage was higher [Figure 3].

According to IOTN, 30% of the included participants presented with Grade 1 malocclusion, 20% presented with Grade 2 malocclusion, 18% presented with Grade 3 malocclusion, 19% presented with Grade 4 malocclusion, and 13% had Grade 5 malocclusion [Figure 4]. The P was found to be < 0.05 , according to statistics. As a result, there was a high correlation between socioeconomic position and the severity of malocclusion [Figure 5].

After dental caries, the most common dental problem in India is malocclusion among young adults and children.^[33]

In the Indian population, the frequency of malocclusion has been estimated to be between 22% and 33% in similar

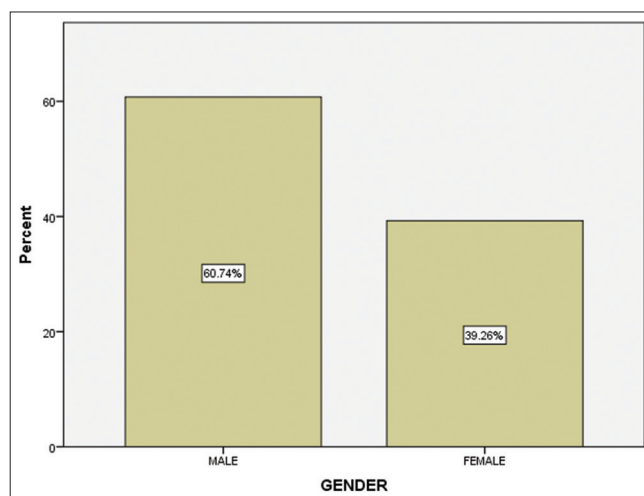


Figure 1: Gender distribution of the included sample

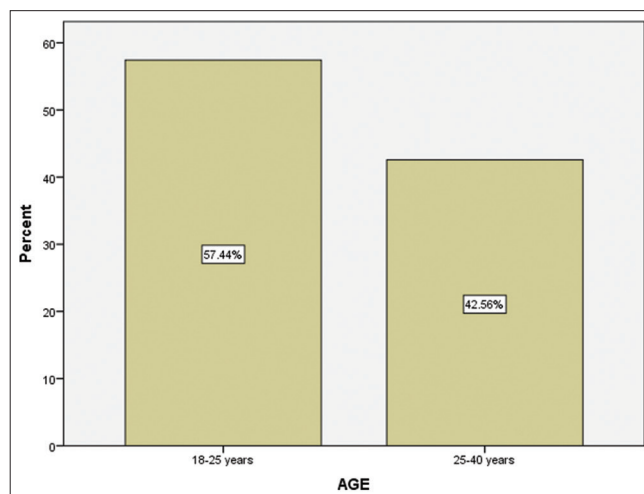


Figure 2: Distribution of the included sample in different age groups.

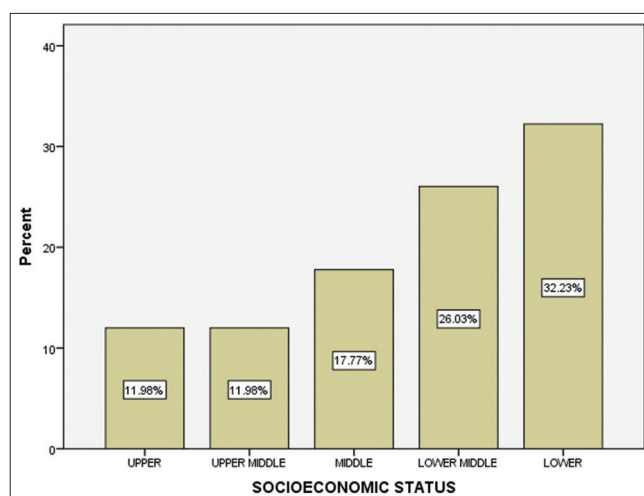


Figure 3: Distribution of the included subjects in different socioeconomic groups

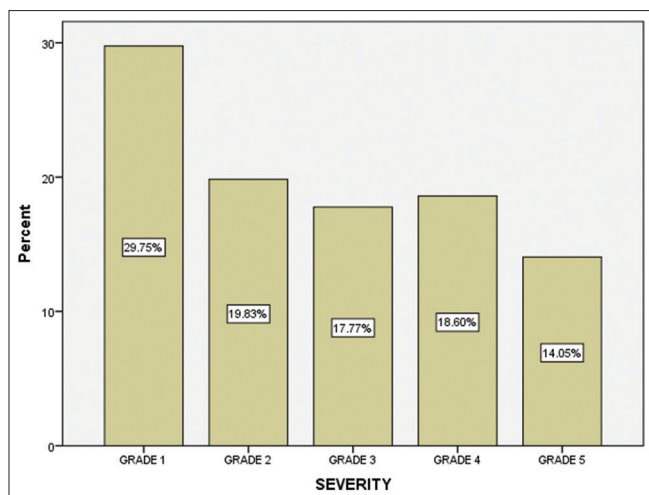


Figure 4: Distribution of subjects in different IOTN grades.

age groups.^[34] Several indices have been developed to quantify the severity of certain malocclusion traits. These indicators assess the severity of malocclusion, either in terms of treatment requirements or as a deviation from ideal occlusion.^[35] Despite the fact that there are a number of indices and metrics for the assessment of malocclusion, there is no universal consensus on which one is best for varying situations. According to Bellot-Arcs *et al.*, IOTNs and DAI were used more frequently in cross-sectional studies;^[36] IOTN is utilized mostly in child and adolescent populations. According to previous studies, males had higher orthodontic treatment demands also, in this study, it was noted that males had a higher incidence of malocclusion.^[37-40]

In the present study, about 30% were Grade 1 malocclusion, 20% were Grade 2 malocclusion, 18% were Grade 3 malocclusion, 19% were Grade 4 malocclusion, and 13% were Grade 5 malocclusion. According to the results of an IOTN index research conducted by Gudipaneni *et al.*^[41] just 21% of all participants were in the extreme need category for therapy (IOTN Grades 4 and 5), while the borderline need was for 29.3% of the population, and 49.4% of participants had Grades 1 and 2 a need for treatment. These findings matched those of our research. According to Al-Azemi and Artun^[42] for over 30% of teenage Kuwaiti females, there was a definite treatment need (Grades 4 and 5). According to Hedayati *et al.*^[43] of the Iranian population, 18.39% had a severe or very severe need for therapy, 25.8% were borderline, 48.1% had a little need, and 7.63% of the population did not have a need for treatment.

Borzabadi-Farahani *et al.* showed that there was a clear need for orthodontic treatment in 36.1% of Iranian school children, treatment need in 20.2% was moderate need, and 43.8% had a slight or no need for treatment.^[44]

The IOTN index is employed in epidemiological research but its ability to predict prospective functional inadequacies

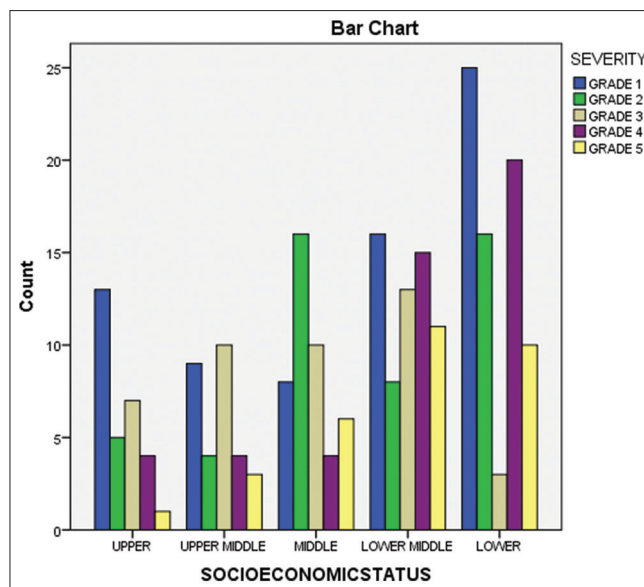


Figure 5: The relationship between socioeconomic class and the severity of malocclusion is depicted in a bar diagram. There was a high correlation between socioeconomic status and the severity of malocclusion (Chi-square test; $P = 0.003$)

or oral health concerns is questionable. Revalidation of the IOTN index may be required in future as a result of new study findings.^[45]

The study's drawback was that the link between malocclusion severity and socioeconomic position was only seen since the patients studied were from a specific group. Future research with higher sample size and a diverse population should be conducted in future.

CONCLUSION

The socioeconomic status of the participants is related to malocclusion severity. Malocclusion prevalence and severity was higher among participants in the lower socioeconomic group.

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Conflicts of interest

There are no conflicts of interest.

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