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Relationship Between Angle Class II Malocclusion and Harmful Oral Habits in Children

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ABSTRACT

Objective: The aim of this study was to assess the occurrence of harmful oral habits in individuals diagnosed with malocclusion and to investigate whether Class II malocclusion is more prevalent in this group.

Methods: The study involved a random selection of 140 patient records from those who had previously completed treatment at Rama dental College, Hospital and Research Centre. The participants' ages ranged from 6 years to 10 years. An analysis was conducted to explore the relationship between the presence or absence of harmful oral habits, the type and frequency of these habits, and the classification of malocclusion according to the Angle classification system. The statistical analysis was performed using the Chi-square test, with a significance level set at 5%.

Results: A history of harmful oral habits was identified in 67.1% of the patients. The most common malocclusion type was Class I (82.9%), followed by Class II (12.1%), and Class III (5%).

Conclusion: The study found a higher incidence of Class II malocclusion among individuals with a history of harmful oral habits.

Keywords: Angle Class II Malocclusion, Oral Habits, Digit Sucking, Pediatric Orthodontics

INTRODUCTION

Proper development of the stomatognathic system relies on a delicate balance between muscular activity and dental alignment. Disruptions in this equilibrium—often caused by persistent oral habits—can lead to skeletal and dental deviations, commonly categorized as malocclusion.[1]

Edward Angle[2] classified malocclusion into three primary types—Class I, II, and III—based on the sagittal relationship

of molars. In clinical practice, a significant number of children referred for orthodontic treatment present with concurrent oral habits such as thumb sucking, pacifier use, and mouth breathing, all of which can negatively influence craniofacial development.

Previous research highlights that if such habits persist beyond early childhood, they can contribute to conditions including maxillary protrusion, mandibular retrusion, anterior open bite, lip incompetence, and altered swallowing patterns.

Given the potential etiological role of oral habits in developing malocclusion, particularly Angle Class II, this study seeks to investigate their association in a pediatric population.

MATERIALS AND METHOD

140 patients of both sexes with malocclusion, ages 6 to 10 years and 11 months, who were receiving treatment at the hospital were chosen from the outpatient department of Rama Dental College, Hospital and Research Center. Under the guidance of lecturers in the field of orthodontics, undergraduate students gathered the data from medical records. The data retrieved from the records included: the number of habits discovered in each person, the kind of malocclusion based on Angle classification, the presence or absence of detrimental oral habits, and the type of habit (if present).[2] The behaviors included biting (nailbiting, bruxism, biting objects, pen/pencil, shirt collar and lips), suction (finger and lip, pacifier and bottle), and face support.

Relationships between Angle malocclusion and oral habits were identified, mainly taking into account the quantity of habits present in each person, irrespective of their kind. The habits that were discovered were then taken into consideration: biting, sucking, sucking and biting, or biting and face support. The Chi-square test with a 5% significance level was the statistical analysis employed.

RESULT

Table 1 displays the existence or lack of habits related to the various assessed age ranges, and Table 2 displays the various habits discovered in connection with age. In terms of habit count, the majority of patients had only one habit (53), followed by not having any habit at all (46), two types of habits (29), three types (10) and four types (2) (Table 1). Suction was the most commonly observed habit, followed by biting, biting and facial support, and coupled biting and sucking (Table 2).

Tables 3 and 4 show the various types of sucking and biting behaviors according to age, respectively. In terms of sucking behaviors, 32 patients sucked on their pacifiers, 27 sucked on their fingers, 18 sucked on their infant bottles, and 4 sucked on their lips (Table 3). Thirty patients had a habit of biting their nails, twenty-two had a habit of biting pens or pencils, six had a habit of chewing their shirt collars, five had a habit of biting their lips, three had bruxism, and one had a habit of biting items (Table 4).

Table 5 shows the kind of Angle malocclusion associated with age. It can be shown that, out of 140 patients, the majority had Angle Class I malocclusion (116), with the majority of children in the 8 year age group, followed by the 9 and 7 year age groups, respectively. The Class II malocclusion, which was seen in 17 files, was more common in children aged 8 to 9. Seven records contained the Class III malocclusion, which was primarily discovered in children aged seven.

Table 6 lists the presence or absence of habits associated with the kind of malocclusion based on Angle classification. Of the 94 patients who had habits, 75 belonged to Class I, 14 to Class II, and 5 to Class III. When the chi-square statistical test was used, it was not possible to rule out the possibility that those with oral habits had a higher prevalence of Class II malocclusion than people without habits (Table 6).

DISCUSSION

Table 1 shows that 29.2% of the sample had two or more behaviors associated with each other, 37.9% had just one habit, and 32.9% had no habits at all. These findings conflict with those of Soncini and Dornelles[25], who discovered that 49.0% of kids had 2–5 related habits, 2.5% never displayed any behaviors, and 46.0% exhibited just one habit. Out of the 140 files that were examined, it was found that 94 patients (67.1%) had a history of oral habits, while 46 patients (32.9%) had none at all (Table 1). Literature that lists these behaviors as one of the contributing causes to dental malocclusion supports these findings.[10,11,14]

The sorts of habits that the 94 participants in this study presented were arranged in decreasing order of prevalence as follows: Biting and sucking behaviors, related biting and sucking behaviors, biting behavior, and facial support (Table 2). The findings of Soncini and Dornelles[3] and Milk-Cavalcante et al.[7], who found a higher prevalence of sucking habits in their samples, are consistent with this one.

However, the proportion of patients with sucking behaviors shown here (57.9% to 81 out of 140) (Table 3) similarly deviates from the number reported by Milk-Cav-alcante et al15 (70% to 77.4%). This discrepancy most likely results from differences in the ages of the samples under investigation. Patients in the sample group ranged in age from 6 to 10 years and 11 months, while Soncini and Dornelles's[3] investigations focused on children aged 4 to 4 years and 11 months, and Milk-Cavalcante et al.'s[7] study involved children aged 3 to 5.

The time that passed between the patient's tender age and the time that the information was registered may also have contributed to the discrepancies between the three works mentioned, even though the information collected here was obtained through a questionnaire given to those in charge of the patients receiving treatment at the hospital during the clinical examination.

Table 3 shows that the most common habit was sucking a pacifier (32), followed by sucking (27). This is consistent with research by Paunio et al., [8] Katz et al., [9] Milk-Cavalcante et al., and [7] Duncan et al.[10]

The most common biting habit among the various types was nailbiting (30), which was followed by pen/pencil biting (22) (Table 4). The age groups most affected by these problems were 8 and 9 years old. Nonetheless, Souza et al.[11] discovered that object biting was more common than nailbiting. Perhaps the paucity of research on this subject stems from the fact that this type of behavior is rarely discussed individually and has little effect on modifications in tooth occlusion.

According to the frequency of the various malocclusion types identified by Angle,[2] this study discovered that, out of all the patients examined, the majority of people had Angle Class I (82.9%), and the majority of children were 8 years old,

followed by 9 and 7 years old, respectively. Class III (5%) was discovered at age 7, while the majority of Class II (12.1%) was discovered between ages 8 and 9 (Table 5).

In contrast to the findings of Vieira and Pillon[12] and Singh et al[13], who found that the prevalence of Angle Class II malocclusion was followed by Class I and Class III in their studies, the highest percentage of Class I patients (82.9%), followed by Class II (12.1%) and Class III (5%) found in this study (Table 5) is consistent with the work of Silva Filho et al[14] and Martin et al[15].

To determine whether those with oral habits had a higher prevalence of Class II malocclusion than people without habits, the chi-square test was used (Table 6). There were two degrees of independence and a 5% significance threshold. Following analysis, the computed chi-square value, derived from the data in the referenced table, was 2.18. It was determined that the null hypothesis cannot be thrown out because this result is less than the tabulated value (5.99). Class II malocclusion (82.4% - 14 of 17) was the most common malocclusion linked to oral habits in the research done for this paper. Class III malocclusion (71.4% - 5 of 7) and Class I malocclusion (64.6% - 75 of 116) were next in line. Class II malocclusion is likely more common because Class II, division 1 individuals, typically exhibit incisor protrusion with significant overjet, which in turn promotes the development and maintenance of the newborn swallowing and lip-sucking habits.

Given that habits were present in more than 60% of the three categories of malocclusion identified by Angle2, the findings presented here suggest a relationship between oral habits and malocclusion (Table 6).

CONCLUSION

The existence of the three forms of malocclusion identified by Angle is closely associated with harmful oral habits. In patients with oral habits, Class II malocclusion was more common.

TABLES

Table1-Presence or absence of habits in relation to age of the individuals.

Number of existing habit	AGE						Total
	6 years	7years	8years	9years	10years	n	
1 habit	3	14	22	11	3	53	37.9
2 habits	2	6	9	9	3	29	20.7
3 habits	--	2	5	2	1	10	7.1
4 habits	--	--	--	2	--	2	1.4
Absence of habits	8	11	11	13	3	46	32.9
Total	13	33	47	37	10	140	100

Table2-Types of habits found.

Habits	n	%
Suction	38	40.42
Biting	31	32.98
Suction and Biting	23	24.47
Biting and Face support	2	2.13
Total	94	100

Table3– Relation between different sucking habits and age

Biting habits Total	AGE					Total
	6 years old	7 years old	8 years old	9 years old	10 years old	
Finger Sucking	2	8	6	9	2	27
Pacifier	1	7	14	7	3	32
Bottle	--	4	8	3	3	18
Lip sucking	1	2	--	1	--	4
Total	4	21	28	20	8	81

Table4-Relation between the different biting habits and age.

Biting habits Total	AGE					Total
	6 years old	7 years old	8 years old	9 years old	10 years old	
Nailbiting	1	2	13	11	3	30
Lip biting	--	2	2	--	1	5
Biting shirt collar	1	2	--	3	--	6
Biting Pen/pencil	1	5	9	6	1	22
Biting objects	--	--	--	1	--	1
Bruxism	--	--	1	2	--	3
Total	3	11	25	23	5	67

Table5-Relation between Angle malocclusion and age.

Biting habits Total	AGE					Total	
	6 years old	7 years old	8 years old	9 years old	10 years old	n	%
Class I	11	28	40	30	7	116	82.9
Class II	1	2	6	6	2	17	12.1
Class III	1	3	1	1	1	7	5
Total	13	33	47	37	10	140	100

Table6-Presence and absence of habits related to malocclusion, according to Angle classification.

Malocclusion according to Angle of Classification	Habits					
	Present		Absent		Total	
	n	%	n	%	n	%
Class I	75	64.6	41	35.4	116	100
Class II, division 1	12	70.6	3	17.6	15	88.2
Class II, division 2	2	11.8	--	--	2	11.8

Class III	5	71.4	2	28.6	7	100
Total	94		46		140	

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