BITE FORCE ANALYSIS IN DIFFERENT TYPES OF ANGLE MALOCCLUSIONS

Análise da força de mordida nos diferentes tipos de maloclusões dentárias, segundo Angle

Sarah Cueva Candido Soares de Araújo [(1)], **Marilena Manno Vieira** [(2)],
Christiane Aparecida Gasparotto [(3)], **Silvana Bommarito** [(4)]

ABSTRACT

Purpose: to analyze the maximum bite force in individuals with normal occlusion and types of Angle's malocclusion; to observe the frequency of occurrence of each type of occlusion; to analyze whether there is any difference between measurements of force and relate bite force to body mass index (BMI). **Methods:** the sample was composed of 100 students of the Speech and Language Pathology School at UNIFESP, with ages between 17 and 25 years. Individuals with ATM disfunctions, mental or genetic disorders and those who had already undergone miotherapy were excluded. Each individual went through an evaluation, which consisted of: 1) gathering personal information, personal diet, chewing preference, weight and height. 2) evaluation of dental occlusion as normal occlusion or malocclusion Class I, Class II 1st division, Class II 2nd division or Class III. 3) evaluation of bite force, performed by using a digital dynamometer. Different techniques were used for statistical analysis. **Results:** individuals with normal occlusion were those who had the greatest bite force, followed by Classes I, II 1st and 2nd divisions and Class III, respectively; there was higher occurrence of malocclusion Class I, followed by normal occlusion, Class II 1st and 2nd divisions and Class III; There was an increase of the average force between the first and third measurements for both sides; there was no correlation between bite force and BMI. **Conclusion:** the type of occlusion influenced bite force, the greatest force being obtained on the third measurement; there was no relation between BMI and bite force.

KEYWORDS: Dental Occlusion; Malocclusion; Bite Force; Stomatognathic System

INTRODUCTION

Mastication is the group of phenomena that occur in the mouth and provide the mechanical degradation of food, transforming it into small particles that are joined by saliva and finally form the food bolus.One qualification of the process of mastication may be measured by the number of bites it takes to process and swallow food, or by the ability to break it.Chewing is extremely important for the stomatognathic system as it comprises the first step in the process of food digestion, called the oral phase[1].

Inefficient mastication may lead to a change in the choice of foods selected to compose an individual's diet, which may negatively influence his health, and consequently lead to pathological conditions such as malnutrition, for example. One of the main factors that may influence the process of mastication is bite force during chewing, as well as the number of lateralizations and the number of occlusal contacts presented by the individual[2].

Bite force is defined by the force of mandible muscles that determines the amount of energy available to cut or grind food. Its intensity is determined mainly by muscle capacity and may be related

(1) UNIFESP/EPM, São Paulo, SP, Brazil.

(2) Speech Language Pathology Department of UNIFESP/EPM, São Paulo, SP, Brazil

(3) SOEBRAS – FUNORTE Núcleo Santo André, Santo André, SP, Brazil

(4) Speech Language Pathology Department of UNIFESP/EPM, São Paulo, SP, Brazil

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to several anthropometric measurements, such as, for example, weight and height[3,4].Furthermore, there seems to be a consensus in specialized literature concerning maximum bite force, according to sex, where it is greater in men, due to the larger muscle fibers present in this sex[3,5].

Since the condition of occlusion is needed in order to obtain bite force, it is verified that, in order to have normal occlusion, the first superior molar should occlude its mesiovestibularcusponto the sulcus of the first inferior molar.A malocclusion is any deviation of the relationship among teeth that takes them out of their normal occlusion and, according to Angle[6], may be classified in three great groups named Class I, Class II and Class III. This classification takes the occlusion of the first superior molars as a reference, since Angle believed that the position of this tooth in the dental arch was immutable, since it is the first permanent tooth to form and erupt – the so-called "six year molar".For this reason, this tooth was considered by Angle as the "key of occlusion"[6].

Thus, the relationships between bite force and the type of dental occlusion have been studied for some time, without a present consensus in literature.Many studies justify that muscles, as well as teeth play an important role in the direction of the course of bite force and that muscle anatomy may both cause and reflect mandible movements and, thus the relative importance of the components of bite force may be associated to the different muscle anatomy of each one[4].In addition, maximum bite force increases with the number of teeth that are present and the association between maximum bite force and the amount of occlusal contacts is more relevant in the posterior region and, as a consequence, the loss of molars, for instance, would result in a reduction of bite force[7].There are studies that have found statistically significant differences between force measurements and the different types of occlusion, measured directly – using a force transducer -, with the smallest force having been found in individuals with malocclusion[7,8].Studies conducted with prognathous patients before and after orthognathic surgery, measuring force in this same way, have shown that the parameters of bite force improve after surgery, although none reached the values of individuals with normal occlusion[9-13].

Considering chewing performance as an indicative factor of the quality of mastication, other authors have observed that the number of occlusal contacts are determinant for satisfactory chewing performance and that individuals with malocclusion would be less efficient in this task than others with normal occlusion[14,15].

Another characteristic – more subjective, however valid in the relationship of bite force and dental malocclusion – is the activity of chewing muscles, measured through surface electromyography. These studies have been verifying a difference between muscle activity in individuals with different types of malocclusion[16,17].

However, in spite of what has been described, there are authors who did not find in their studies any relationship between bite force and malocclusion[4,18].

From the standpoint of the considerations made on obtaining a maximum bite force and occlusion condition, and mainly due to the need to deal in clinical practices with patients who mostly have a disorder in their mastication function, the purpose of the present study was to analyze the maximum bite force in individuals with different types of dental occlusion, namely: normal occlusion and Angle's Class I malocclusion, Class II division 1, Class II division 2 and Angle's Class III. Furthermore, the secondary aims were to analyze the frequency of occurrence of the different types of occlusion in the studied population, to analyze the difference between the first and third measurement of maximum bite force and to relate bite force with the body mass index (BMI).

METHODS

This study was approved by the University's Research Ethics Committee in November 2010 (CEP 1639/10). It was conducted in the Orofacial Motricity outpatient unit of the Speech-Language Pathology Department, and begun only after the free consent term was signed by each of the participants of the study. This is a cross-sectional prospective study.

The sample was composed of 100 university students, enrolled in the speech-Language Pathology program, in between 17 and 25 years of age. Individuals with temporomandibular disorders, those with mental and/or genetic disorders and those who were undergoing Speech-Language Pathology treatment, specifically in the field of Orofacial Motricity were excluded from the study.

Each student was submitted to a Speech-Language Pathology evaluation, as shown in Figure 1. This assessment was composed of the following steps:

1) Anamnesis, composed of:

a) Personal identification data, where information such as name, sex, age, address, telephone number, schooling were gathered;
b) Information about the type of daily meals: each participant was asked how a usual day was in terms of meals, from waking up until

the time to go to sleep; this information was collected in order to guarantee that all participants ate all kinds of food consistencies, with no restriction regarding the consistency of the food;

- Weight: was obtained through a digital scale, of the X-Life brand, that was calibrated with the weight of a professional scale in order to guarantee the accuracy of the measurement. The participants had to be barefoot and remove heavy objects from their bodies (coats, cell phones, belts);
- Height: was measured using a tape measure, and each participant was barefoot with their heels against a wall at the moment of measurement;

These last two items (weight and height) were measured during the evaluation; each volunteer's body mass index (BMI) was calculated using the formula [weight (kg)/ height² (m)] and used for posterior analysis.

2) Dental occlusion evaluation – Dental occlusion evaluation was conducted by direct observation. The analysis was carried out by sitting the patient in the horizontal plane, and the relationship in between the upper and lower dental arches was measured, using the first permanent molars as reference. In order to assure precision in the analysis, the researcher, using hygienic gloves, drew a line in the middle of the mesiovestibular cusp of the first permanent superior molar using a copy pencil.Normal occlusion is considered when the mesiobuccal cusp of the first superior molar rests in the buccal sulcus of the first inferior molar and the teeth have an aligned occlusion in the arches (ideal occlusion).If the analysis considered the case a malocclusion, it was classified according to Angle (1899), as Class I, II (division 1 or division 2) or III.

Angle Class I occurs when the mesiodistal relationship between the maxillaand the mandible, evidenced by the relationship between the superior and inferior first molars is neutral (neutroclusion), however, there are disorders in the individual dental positions in overjet and overbite (Angle 1899). Class II is found when the mesiovestibular sulcus of the first inferiorpermanente molar is distalized in relationship to the mesiovestibular cusp of the first superior permanent molar, and may be subdevided into division 1 when the superior incisor teeth are typically projected towards vestibular, causing an excessive overjet, or division 2 when the central superior incisor teeth are almost in their normal position or are in slight linguoversion, while the superior lateral incisors have a vestibular or mesial inclination.Finally, Class III is seem when the mesiovestibular sulcus of the first inferior permanent molar is mesialized in relation to the mesiovestibular cusp of the first superior molar.

3) Bite force evaluation – Bite force was assessed by measuring the maximum bite force, using a digital dynamometer type DDK/M (Kratos, São Paulo, Brasil). This device was developed to determine a force applied by an individual at the moment of a bite – has a scale in Kgf, N orlbf, a set zero key that enables the exact control of the obtained values and also a peak register, that makes it easier to read the maximum force applied during value measurement (capacity of up to 100 Kgf, adapted to mouth conditions). This value is shown in a digital screen that enables this reading. Each individual was asked to bite three times on each side, alternating right and left, so that the mean of the three measurements could be calculated afterwards.

The procedure was conducted at the Orofacial Motricity outpatient unit at the University.During examination, each student remained comfortably seated in a chair with feet on the ground and head parallel to the horizontal plane. Each participant received detailed instructions about the procedure and, before the assessment began, tests were performed where the subject bit the device before the real records, in order to assure procedure reliability.

In order to measure maximum bite force, the device was positioned in the region of the student's first molar teeth, on each side of the dental arch, alternately, and the student was instructed to bite it as hard as possible. Three records were made for each side, with a two-minute rest in between each record. The maximum bite force was recorded in Newtons (N) by recording the force peak shownon the screen. The values were written on each volunteer's record sheet, for posterior analysis.

After each procedure, the dynamometer was cleaned with 70% alcohol and protected with disposable latex finger gloves positioned in the device's bite sticks, as a biosafety measure.

After the examination and data record, the data was submitted to statistical analysis by a professional in this field. Since the analyzed population presented continuous and quantitative data, most tests selected for analysis were parametric. However, before the selection of the tests, the Kolmogorov-Smirnov normality test was conducted in order to verify the normality of the residues of the chosen statistical model. After verifying that all had a normal distribution, which guarantees the use of such tests, the statistical analysis followed with the following tests:

To verify if there was a statistically significant difference between bite forces in the right and left side in each measurement and to compare the difference in force between the 1st and 3rd measurements, the T-Student Paired test was conducted;

- To analyze the distribution of the relative frequency (percentage) of the types of occlusion in the studied population, the Test of Equality of Two Proportions was used;
- To analyze force in comparison with the types of occlusion according to the force measurements and the different types of occlusion, the ANOVA test was used;
- Finally, to determine between which types of occlusion there was a statistically significant difference after the ANOVA Test, the Tukey Multiple Comparison test (in which paired data are analyzed) was conducted.

To verify if there was a relationship between bite force and the body mass index (BMI) of each individual Spearman's Test (non-parametrical) was used, in order to observe the dependence between two variables.In order to conduct this test, it was established that when the values of two analyzed elements had a directly proportional growth relationship, the correlation would be *positive*; when the *p-value* was close to zero, it would mean that there was no linear tendency among the elements. When both values were perfectly related, Spearman's correlation coefficient would be equal to 1.

For the parametric tests, the significance level was established at 5% (p-value 0.05). The results with a statistically significant difference were identified with an asterisk (*).

RESULTS

In order to answer the question in the general purpose of the study, the sample was initially distributed according to the type of occlusion. The characterization of the frequency distribution (percentage) according to occlusion group is shown in Figure 2.

It was verified that the most prevalent type of dental occlusion (48%) was Class I malocclusion, and this result was confirmed when a second analysis about the existence of difference between the groups, comparing them two by two was conducted. Thus, Table 1 shows only the p-values of the comparisons among the types of dental occlusion, confirming the result shown in Figure 2.

IDENTIFICATION INFORMATION

Name:

Date ofBirth: Age:
Gender:
Height:
Weight:
ContactTelephoneNumber:
email:

MYOFUNCTIONAL ASSESSMENT

Mastication

Chewing preference ( ) One side R or L
( ) Both sides

How are your meals during the entire day, from the time you wake up from the time you go to sleep?
____
____
____

Normal Occlusion( ) yes ( ) no

Angle Malocclusion
( ) Class I
( ) Class II - ( ) division 1; ( ) division 2
( ) Class III

Maximum bite force
Right side:
Measurement 1:
Measurement 2:
Measurement 3:

Left side:
Measurement 1:
Measurement 2:
Measurement 3:

Figure1–Analysis protocol of bite force and malloclusion

Then, there was a need to verify whether there was a statistically significant difference of the force measurements between the two sides of the dental arch; for this purpose, an analysis was made comparing the forces between the right and left side in each measurement. Table 2 shows this comparison.

It was observed that even though there is a mean difference between the sides for force in the three measurements, these differences may not be considered statistically significant (all p-values > 0.05). Thus, it is concluded that there is no difference (effect) in sides in the result of force.

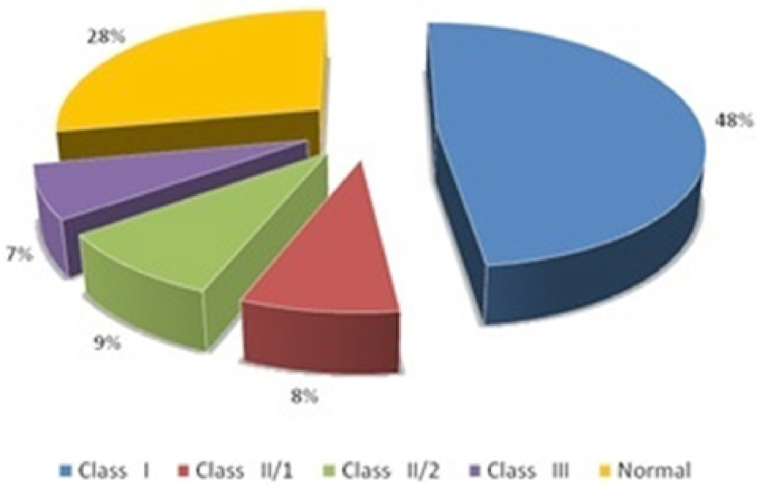

Figure 2 –Sample Distribution according to type of occlusion

Table 1 - P-values of the comparisons between types of dental occlusion

	Class I	Class II/1	Class II/2	Class III
Class II/1	<0.001*			
Class II/2	<0.001*	0.800		
Class III	<0.001*	0.788	0.602	
Normal	0.004*	<0.001*	<0.001*	<0.001*

Tukey's Multiple Comparisontest.

Then, the population was analyzed in the division according to the types of occlusion, using the right and left sides of the face simultaneously and with the three measurements to analyze force in comparison to the types of occlusion. This analysis evidenced a statistically significant difference between mean bite force and types of occlusion (Table 3). To determine precisely in between which types of occlusion this difference was present, all occlusion types were compared in pairs (Table 4).

When analyzing Table 4, it is concluded that there were statistically significant diferences (p-values < 0.05) observed between:

Table 2 – Compares the Right Side and Left Side by Measurement (N)

Force	1st Measurement		2nd Measurement		3rd Measurement	
	Right	Left	Right	Left	Right	Left
Mean	323.5	329.2	341.8	342.3	352.3	351.8
Median	288.0	300.0	335.4	320.8	326.4	327.0
Standard Deviation	157.2	146.0	152.0	148.9	151.3	151.3
Min	64.5	74.1	87.5	73.6	74.9	86.3
Max	723.4	791.8	828.5	708.1	709.8	724.9
N	100	100	100	100	100	100
CI	30.8	28.6	29.8	29.2	29.7	29.7
p-value	0.526*		0.942*		0.939*	

ANOVA Test

a) normal occlusion and Classes II and III malocclusions;
b) Class I and Class III malocclusions.

In order to answer the other questions in the purpose, a comparison of bite force of the first and third measurements was studies. This comparison is expressed by Figure 3.

After the statistical analysis, a statistically significant difference was verified in between the mean bite force in the first and third measurements on both sides (right and left) and also in general. It was seen that there was an increase in mean bite force in all situations, such as in the general measurement that increased from 326.4 to 352.1N.

Finally, in order to answer the last question, the mean force in all six measurements was calculated for each individual and these values were compared with each one's BMI. These comparisons are represented in Figure 4.

After conducting a specific test for this analysis, evidenced in Table 5, and after verifying in Figure 4 there was a great dispersion of the findings, it was possible to conclued that there was no statistically significant correlation of linear growth or decrease between the variables bite force and BMI.

Table 3–Comparison between forces according to types of Occlusion (N)

Occlusion	Normal	Class I	Class II	Class III
Mean	372.2	342.6	311.6	265.1
Median	368.1	316.7	291.2	259.5
Standard Deviation	133.8	153.6	170.3	105.9
Min	81.4	91.0	64.5	113.4
Max	693.0	828.5	698.3	461.1
N	168	288	102	42.0
CI	20.2	17.7	33.0	32.0
p-value	<0.001*	<0.001*	<0.001*	<0.001*

ANOVA test
Key:min: lowest force valuefound in thesample;
max: highest force valuefound in thesample;
N: numberofpeople in eachtypeofocclusion
CI: confidenceinterval

Table 4–Comparison between the types of occlusion

	Class I	Class II	Class III
Class II	0.479		
Class III	0.024*	0.543	
Normal	0.329	0.018*	0.001*

Tukey's Multiple Comparison test

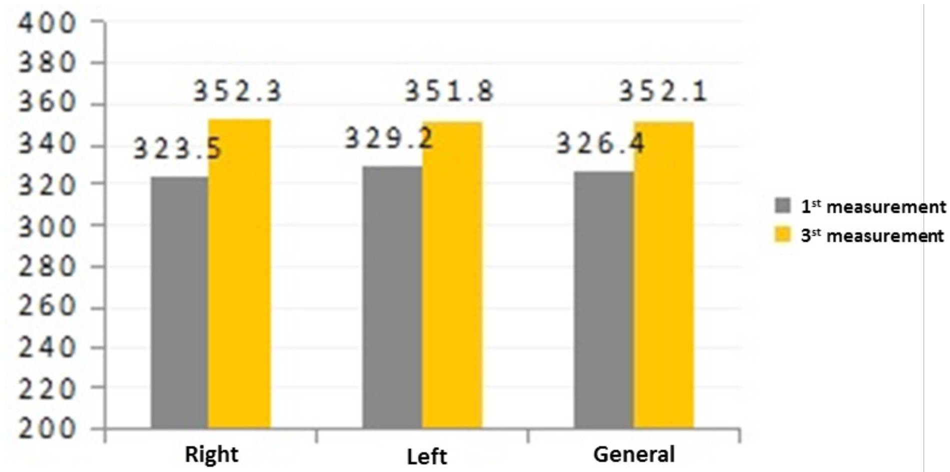

Figure 3 – Compares 1st and 3rd measurements, in each side and in general

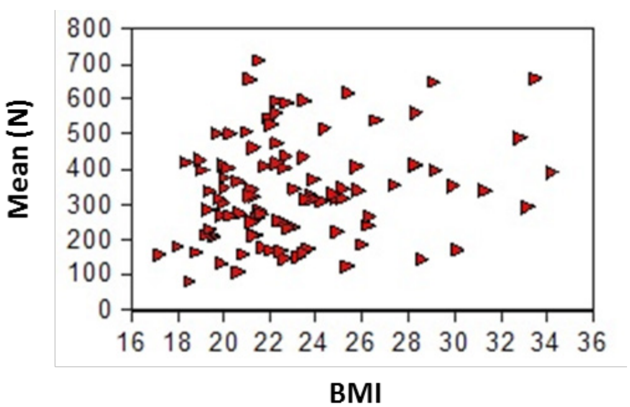

Figure 4 – Comparison between mean bite forces and body mass index

Table 5–Spearman's Coefficient and p-value

Spearman Coefficient	0.19
P-value	0.06

Spearman Test

DISCUSSION

One of the most important variables to establish an accurate comparison between bite force and dental occlusions is determining the prevalence of each group so that result interpretation and analyses are not biased. Thus, in Figure 2 and Table 1 that regard the frequency of occurrence of the type of dental occlusion, it is seen that there was a greater occurrence of Angle's Class I malocclusion. These findings are in agreement with the studies byArashiro et al.[19]that have found a greater prevalence of Class I malocclusion (39,7%) in their study, followed by Class II malocclusion (36%) and Class III (11,7%).Still in agreement with the data obtained in this investigation, there is a study byBrito, Dias, Gleiser[20]where, knowing that the knowledge of the population's epidemiological situation is important to plan the execution of dental services in a determined population, have conducted a study with the purpose of assessing the prevalence of malocclusions in city-run school children in between 9 and 12 years of age in the city of Nova Friburgo, Rio de Janeiro. The sample was composed of 407 individuals, 191 males and 216 females who were clinically assessed by a trained professional. It was observed that Angle's Class I malocclusion was the most prevalent type of occlusion, followed by normal occlusion, Class II malocclusion and Class III malocclusion.

The same was found and reported by Bittencourt and Machado[21]who conducted an epidemiological investigation with 4776 Brazilian children in between 6 and 10 years of age with no distinction of race or sex without previous orthodontic treatment of any kind, in 18 states and the Federal District of Brazil. They found that 40.6% of the children had Class I malocclusion, followed by Class II with 21.6% and class III with 6.2%. Only 31.6% of the analyzed population had normal occlusion.

However, Waked et al[22]found higher prevalence of Class II malocclusion (52.6%), followed by Class I malocclusion (36.8%) and Class III (10.5%) when analyzing the records of 76 patients, of both genders with ages varying between 7 and 18, with a mean age of 13. However, it must be taken into account that the sample was collected at an orthodontics school, and thus it is assumed that in this environment, patients with more severe malocclusions seeking treatment are the ones who are more prevalent.

Table 2 shows that there was no statistically significant difference between force measurements of the right and left sides. These findings agree with studies by some authors (Guimaraes, Carlsson, Marie, 2007; Kogawa, et al., 2006 *apud* Silva)[5] who have also not found statistically significant differences between both sides. However, Silva[5]found na increase in bite force on the left side for all studied groups (individuals with normal occlusion and Angle's malocclusion Classes II and III.Tables 3 and 4 analyzed bite force according to the type of dental occlusion and it was verified that the group with normal occlusion had statistically significant higher mean bite force when compared to the groups with Angle's malocclusion Classes II and III. The same was true for Class I when compared to Class III. However, these two types of occlusion (normal and Class I) had no statistically significant differences among themselves.These results are in accordance to those in a study by Bakke[7], who, in the bibliography review about the relationship between bite force and malocclusion, reported that the maximum bite force increases with the number of present teeth and that the association between maximum bite force and the number of occlusal contacts is more relevant in the posterior region.One hypothesis for the absence of a statistically significant difference between bite force in the groups with normal occlusion and Class I malocclusion may be that the posterior teeth (first molars) are in the same position in both occlusions, and thus, molar relationship in both normal occlusion and in Class I malocclusion is the same.

The results are also similar to those reported by Kamegaiet al[8], who conducted a research with the purpose of analyzing bite force and dental occlusion in a sample of 2594 children in between 3 and 17 years of age.Among the findings, they observed that the presence of malocclusion influenced bite force, and the mean values showed a pattern of statistically significant reduction in the presence of occlusion discrepancy after the age of nine. Trawitzkiet al.[13]albeit using a sample of patients who had been referred to orthognathic surgery (Angle's Class II and III), also found a significant reduction in bite force, when compared to a group with normal occlusion.

In the studies reported by Haradaet al., Iwase et al. andBraber et al. [9,10,12], the authors assessed bite force, occlusion areas and chewing performance in prognathous and retrognathic patients, before and after orthognathic surgery, as well as in individuals with normal occlusion.Both studies verified that at the end of the follow-up period (that varied between six months and five years, depending on the study) bite force, occlusion areas and chewing performance of the groups with malocclusion were significantly better than in the period before surgery. However, these values were still lower than those of the control group, even years after intervention.

Observing studies by authors such as English et al. and Toro et al.[14,15], that report that the number of occlusal contacts are determinant for a satisfactory chewing performance and that individuals with malocclusion would be less efficient in this task than those with normal occlusion, it would be possible to justify that as verified in the present study, the individuals who had lower bite force were those with Class III malocclusion, those with fewer occlusal contacts.

In the present study, one hypothesis is that the difference in bite force found in individuals with normal/Class I malocclusion and Class II and Class III malocclusion may have occurred due to incorrect positioning of the molar teeth, in the case of Classes II and III dental malocclusions that have altered molar relationships, which makes occlusal contact and, consequently, the employment of bite force, more difficult. According to Herring[2], the activation and the coordination of mastication muscles determine the direction of mandible movement, the control of the force of occlusion and different types of cranial deformation. Muscles, as well as teeth, play an important role in the direction of the course of bite force. The author also explains that muscle anatomy may cause, as well as reflect mandible movements, and, therefore, the relative importance of the components of bite force may be associated to each being's different muscle anatomy.Bakke[7], in his literature review, hasalso reported that there is a positive and intimate relationship between bite force and electromyographic activity of the mandible's elevator muscles (temporal, masseter and medial pterygoid) during isometric contractions.

Moreno et al.[16]performed an electromyography of mastication muscles during dental clenching in a healthy population with Angle's Class I, II and III malocclusions, and found that the parameters of occlusion influence the activity of the muscles of the stomatognathic system. Class III individuals had higher activity for all muscles in maximum effort (except for the digastric muscle). In addition, an investigation conducted by Gadotti, Bérzin andBiasotto-Gonzaléz[17]with individuals with Class I and II malocclusions, analyzed females with the purpose of verifying the values of the activity of the temporal and masseter muscles on both sides.A deviation in the activity pattern of mastication muscles in individuals with Class II malocclusion was observed when compared to Class I individuals (especially in regards to the temporal muscle, that was more active in the first group). The individuals with Class I malocclusion also had a more functional activity pattern than those with Class II malocclusion.

However, the results above disagree with those found by Sonnesen and Bakke[18]who, aiming to establish relationships between mastication force and malocclusion, facial dimensions and head posture in children, observed that bite force did not vary significantly among the types of malocclusion. In addition, Lemoset al[4] did not find statistically significant differences when relating bite force to dental occlusion, but it should be noted that the age group of the individuals analyzed in these investigations were children aged 13 or younger, a factor that may have been determinant in obtaining the reported results.

Regarding the measurement of bite force of the individuals in three consecutive trials, it is seen in Figure 3 that there was a statistically significant difference of mean force between the first and third measurements obtained in both sides of the face (right and left), with a medium increase of this force. No studies were found in literature that have performed similar analyses, but when observing the obtained bite forces, it is believed that asking one to bite hard on the dynamometer may be exploratory at first for the individual who is part of the sample and, only during the third measurement the subject feels comfortable enough to bite according to the examiner's instructions.Based on this analysis, it is suggested that the measurement of bite force should be performed at least three times, according to the results obtained in this study.

Figure 4 shows the correlation between mean bite forces and body mass index (BMI) and Table 5 shows Spearman's coefficient as well as the p-value between the paired values.Observing this table, it may be verified that the findings are very disperse and, after completion of a specific test, it was concluded that there was no statistically significant correlation of linear growth or decrease between the variables bite force and BMI.These findings are in agreement with those described in the study byBraun et al.[3], who conducted an investigation with the purpose of assessing the maximum human bite force and correlate it to several variables, among which are weight and height.The sample was composed of 142 individuals of both genders in between 26 and 41 years of age, and, in order to conduct the measurements, a transducer that measured the force in Newtons (N) was used. The correlation coefficients for weight and height were low. Lemos et al[4]also reported a weak correlation between these variables in their investigation – they studied the maximum bite force in children with mean age of 9, considering each one's occlusion condition and body variations (BMI), with the hypothesis that these characteristics could be correlated. However, as in the present study, the results showed that bite force had a weak correlation with BMI values.

CONCLUSIONS

It may be concluded that the type of occlusion influenced bite force, with greater bite force in individuals with normal occlusion, followed by Classes I, II and III, respectively; there was higher frequency of occurrence of Class I malocclusion, followed by normal occlusion, Class II divisions 1 and 2 and Class III; there is an increase in mean bite force between the first and third measurement and that there was no correlation between bite force and body mass index (BMI).

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RESUMO

Objetivo: analisar a máxima força de mordida na oclusão normal e maloclusões de Angle; observar a frequência de ocorrência dos tipos de oclusões; analisar a existência de diferença entre as medidas desta força e relacionar a força de mordida com índice de massa corpórea (IMC) de cada indivíduo. **Métodos:** a amostra foi composta por 100 estudantes do curso de Fonoaudiologia, com faixas etárias entre 17 e 25 anos. Cada indivíduo realizou: 1) Anamnese: composta por dados de identificação pessoal, informações sobre alimentação diária; preferência mastigatória; peso e altura. 2) Classificação da oclusão dentária em: normal ou Classe I, II subdivisão 1ª e 2ª ou Classe III. 3) Avaliação da força de mordida por meio de um dinamômetro digital. Os resultados foram submetidos aos testes estatísticos: Kolmogorov-Smirnov, T-Student Pareado, Teste de Igualdade de Duas Proporções, Teste ANOVA, Comparação Múltipla de Tukey e Teste de Spearman. **Resultados**: as maiores forças de mordida foram obtidas nos indivíduos com oclusão normal, seguida das maloclusões Classes I, II subdivisão 1ª e 2ª e III, respectivamente; houve maior frequência de ocorrência da maloclusão Classe I, seguida da oclusão normal, maloclusão Classes II subdivisão 1ª e 2ª e III; houve aumento da força média entre a primeira e terceira medida em ambos os lados; não houve correlação entre força de mordida e o índice de massa corpórea (IMC). **Conclusão:** o tipo de oclusão influenciou na força de mordida, sendo a maior força obtida após a terceira mensuração e não houve relação entre IMC e força de mordida.

DESCRITORES: Oclusão Dentária; Má Oclusão; Força de Mordida; Sistema Estomatognático

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Mailing address:
Sarah Cueva C. S. de Araújo
Rua Igati, 25, São Paulo - SP
CEP: 04673-040
E-mail: cueva.scsa@gmail.com