



The prevalence of oral habits in preschoolers

A prevalência de hábitos orais em pré-escolares

La prevalencia de hábitos orales en preescolares

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Abstract

Purpose: to estimate the prevalence of oral habits of children attending pre-schools in the mid-south region of Sergipe. **Method:** the sample was consisted after a calculation analysis of 208 preschool children (104 females and 104 males) frequenting two pre-schools in the mid-south region of Sergipe (one public and one private), with ages from two to five years, of both genders. Through an individual form given to their families (part of the clinical history of MBGR Protocol in GENARO et al., 2009), the amount of pre-school children who have oral habits was verified (pacifier, bottle, finger, teeth clenching, tongue suction, bruxism, moistening of lips, nail biting, biting oral mucosa and objects) for further estimate of the prevalence of these habits. The guardians of the participants signed a consent form. The data were submitted to the Equal Proportions and Chi-square tests, adopting a significance level of 5%. **Results:** there was a high prevalence of oral habits (87.02%), and the bottle-feeding the habit with the highest

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Authors' contributions: GCM and JCS - Literature review, data collection in participating institutions, writing of the scientific work, approval of the final version of the content to be published; RBGG and SEZMB - review of the article and approval of the final version of the content to be published; KS- statistical analysis and approval of the final version of the content to be published; CPHARC- idealization, orientation of the work in all its phases and approval of the final version of the content to be published.

This work was produced by the Universidade Federal de Sergipe (Federal University of Sergipe), Department of Speech, Language and Hearing Sciences, Prof. Antônio Garcia Filho campus, Lagarto, Sergipe, Brazil.

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Received: 29/08/2016

Accepted: 18/01/2017



incidence in the study group. The habit of biting objects was more common in females in public pre-school education, statistically significant differences were not revealed in the relation between the other habits and gender. Digital sucking was associated with younger age groups (2 and 3 years), and bruxism with the higher (4 and 5 years). **Conclusion:** the high prevalence of harmful oral habits in preschoolers justifies an interdisciplinary action as soon as possible, so that there is no negative impact on the development of the skull-oro-cervical complex and, consequently, on the oral functions.

Keywords: Habits; Nail biting; Finger sucking; bruxism.

Resumo

Objetivo: estimar a prevalência de hábitos orais em crianças frequentadoras de pré-escolas do centro sul de Sergipe. **Método:** a amostra foi determinada após análise de cálculo amostral e constituída por 208 pré-escolares (104 do sexo feminino e 104 do masculino) frequentadores de duas pré-escolas do centro sul de Sergipe (uma pública e outra privada), com idades entre dois e cinco anos. Por meio de formulário próprio entregue aos familiares, foi verificada a quantidade de pré-escolares que apresentam hábitos orais (chupeta, mamadeira, dedo, apertamento dentário, sucção de língua, bruxismo, umidificar lábios, onicofagia, morder mucosa oral e objetos), para posterior estimativa da prevalência desses hábitos. Os dados obtidos foram submetidos aos Testes de Igualdade de Proporções e Qui-quadrado, adotando-se nível de significância de 5%. **Resultados:** houve alta prevalência de hábitos orais (87,02%), sendo o uso da mamadeira o de maior ocorrência. O hábito de morder objetos foi mais comum no sexo feminino em pré-escolares do ensino público, não sendo reveladas diferenças estatisticamente significantes em relação aos demais hábitos com o sexo. A sucção digital esteve associada a faixas etárias menores (dois e três anos) e o bruxismo, às maiores (quatro e cinco anos). **Conclusão:** a alta prevalência de hábitos orais deletérios em pré-escolares justifica a ação interdisciplinar o mais precoce possível, a fim de que não haja impacto negativo no desenvolvimento do complexo crânio-oro-cervical e, conseqüentemente, nas funções orais.

Palavras-chave: Hábitos; Hábito de roer unhas; Sucção de dedo; Bruxismo.

Resumen

Objetivo: Estimar la prevalencia de hábitos orales en niños preescolares del centro sur de Sergipe. **Método:** La muestra fue constituída tras el análisis del cálculo del tamaño de la muestra y fue compuesta por 208 preescolares (104 de sexo femenino y 104 de sexo masculino), frequentadores de dos preescolas del centro sur de Sergipe (una pública y otra privada), con edades entre dos y cinco años. Por medio de un formulario se verificó la cantidad de los niños en edad preescolar que tienen hábitos orales (chupete, mamadera, dedo, apretar dientes, succión de lengua, bruxismo, umidificar los labios, onicofagia, morder la mucosa oral y objetos), para posterior estimativa de la prevalencia de estos hábitos. Los datos obtenidos fueron sometidos a las Pruebas de Igualdad de Proporciones y Qui Cuadrado, adoptándose el nivel de significación de 5%. **Resultados:** Hubo alta prevalencia de hábitos orales (87,02%), siendo lo uso de la mamadera el hábito con mayor ocurrencia. El hábito de morder objetos fue más común en el sexo femenino, en preescolares de la educación pública, no siendo reveladas diferencias estáticamente significantes en relación a los otros hábitos, con respeto a la variable sexo. La succión digital ha estado asociada a grupos de edad menor (2 y 3 años) y el bruxismo, a edad mayor (4 y 5 años). **Conclusión:** La alta prevalencia de hábitos orales deletéreos en preescolares justifica la acción interdisciplinar lo mas precoz posible, a fin de que no haya impacto negativo en el desarrollo de la compleja estrutura cráneo-oro-cervical y, por consiguiente, en las funciones orales.

Palabras clave: Hábitos; Hábito de comerse las uñas; Succión del dedo; Bruxismo.

Introduction

A habit consists in the recurrence of an act with specific purpose¹, and, oral habits can arise from birth, perpetuating itself during the growth and development of the individual. It is observed that the cultural factor and the use of oral habits by the family contribute to its implantation and maintenance². When these habits cause occlusal and normal facial growth pattern changes, they are classified as deleterious oral habits³, which may compromise the balance of orofacial neuromusculature and cause changes in the stomatognathic system, depending on its period, intensity and frequency⁴.

The existence of oral habits in preschool children is common, already occurring in the early stages of life, since some objects (such as the pacifier) can be part of the pregnant women's layette⁵. This can cause difficulties in breastfeeding⁴, damages to the dental normal occlusion^{3,6} in speech⁷ and may still be influenced by the socioeconomic status of the family, maternal age and schooling of the parents⁸.

The prevalence of deleterious oral habits is quite divergent in the literature, being possible to observe differences according to the oral habit. The use of nursing bottle, which is the habit with the highest prevalence, was cited in the literature from 84.3%⁹ to 18.4%¹⁰ in the research samples, evidencing the multifactorial complexity for the comprehension of risk factors for acquisition and maintenance of these habits.

It is considered that early childhood education institutions constitute a place where children spend most of their time and that there is a high concentration of preschool children who present deleterious oral habits. This study aimed to estimate the prevalence of oral habits of children attending preschools in the southern center of Sergipe, comparing the variables: gender, age group and type of educational institution.

Method

A descriptive, quantitative, cross-sectional, uncontrolled and non-randomized study, approved by CAEE No. 0060.0.214.000-09 of the institution of origin.

In parents' meetings organized by the participating institutions, the family members were invited

to participate in the study and, upon accepting, signed a Free and Informed Consent Term and received an Explanatory Letter about the proposed procedure.

Of the two participating Sergipe preschools, one is public and is located in the municipality of Lagarto. The other is private, located in Salgado. Both receive children between two and five years, in morning and afternoon shifts, and are located in the center of the municipalities involved in the research.

The study included preschool children whose parents or guardians signed the consent term, of both sexes, aged between two and five years. The inclusion of two-year-old children is highlighted because researchers have found that non-nutritive sucking may lead to malocclusions, especially anterior open bite in children in the deciduous dentition phase, regardless of facial pattern¹¹. Wherein an estimate of a particular habit, early measures can be performed, resulting in a better prognosis. Children whose relatives did not return the records (or records that were incomplete regarding their name, age and educational institution or that had undergone previous Speech, Language and Hearing Sciences and orthodontic treatments, and presented poor face formation – cleft lip cracks) were excluded.

In order to determine the number of subjects that would compose the sample, the average of the oral habit with the highest occurrence in the literature consultation^{5,9,10,12-16} was used, obtaining a value of 54.65%. Thus, the standard deviation of the variable over the average and the standardized range amplitude (SRA = total amplitude ÷ standard deviation, with a result equal to 0.378 - which was approximated to 0.4) was applied. With a standardized amplitude of 0.4 and a confidence interval of 99%, the sample size should be 166 subjects. Since 20% of losses are predicted, the abandonment calculation was used, since the sample size should be changed to a factor of (1 [1-0,20] or 1,2517). Thus, the sample should consist of 208 children between two and five years and eleven months old.

Four hundred sheets were sent for data collection, and, afterwards, the eligibility criteria were applied and, from the use of the random variable in an Excel software spreadsheet (Microsoft® Office package), the 208 sheets were obtained. The study lasted for one month.

The instrument used for data collection was divided into two parts. The first one included

information containing identification data, family income and schooling of the parents or guardians and was elaborated by the authors. The second is part of the clinical history of the MBGR Protocol¹⁸, with oral habits being taken from this protocol, such as cigarette and pipe use and the item related to the nursing bottle was transposed into this protocol item. Thus, the items included in the data collection protocol were the use of pacifiers and nursing bottle (containing information of duration and type of nozzle), digital and tongue suction, dental tightening, onicophagy and biting oral mucosa habit (duration), habit of humidifying the lips (period), bruxism (daytime and / or night) and habit of biting objects (object description and duration).

The family members were instructed to return the completed forms to the preschool agenda.

Subsequently, the results were tabulated in the Excel spreadsheet software (Microsoft® Office

package) for descriptive data analysis and were processed by the SPSS® 16.0 for Windows (SPSS Inc., 1989-2006, Chicago, Illinois, USA). Descriptive statistics (frequency distribution and percentage) were used to characterize the population, and the analysis was based on the use of non-parametric tests (Chi-square and Equality Test of Proportions), adopting a significance level of 5%.

Results

The groups were divided according to the Institution of Education. In the municipal public school, 118 preschoolers participated (63 female and 55 male) and, in the private one, ninety children, being 41 female and 49 male. Thus, the sample group totaled 208 preschoolers (104 boys and 104 girls), with average age of 3.92 years old (\pm 0.98, considering the standard deviation, Table 1).

Table 1. Characterization of the sample by age and gender, according to the institutions participating in the study

| AGE / GENDER | Public Institution | | | | Private Institution | | | |
|--------------|--------------------|-------|------|-------|---------------------|-------|------|-------|
| | Female | | Male | | Female | | Male | |
| | N | % | N | % | N | % | N | % |
| 2 years old | 3 | 2,54 | 8 | 6,76 | 5 | 5,55 | 8 | 8,89 |
| 3 years old | 20 | 16,95 | 25 | 21,19 | 6 | 6,67 | 9 | 10 |
| 4 years old | 12 | 10,17 | 8 | 6,79 | 10 | 11,11 | 17 | 18,89 |
| 5 years old | 28 | 23,73 | 14 | 11,87 | 20 | 22,22 | 15 | 16,67 |
| Total | 63 | 53,39 | 55 | 46,61 | 41 | 45,55 | 49 | 54,45 |

Oral habits were present in 181 children (87.02%). The distribution of the occurrence of oral habits according to gender, age group and institution is presented in Tables 2 and 3.

Table 2 shows the results of oral habits analyzed by their occurrence regarding sex, analyzed by the Chi-square test. It is possible to observe that in the public school, the habit of biting objects was statistically significant in the female sex. Other habits did not reveal differences.

Table 3 shows the comparative results between the oral habits of the students of the study institutions. It is possible to observe that the only habit that presented a statistically significant value was the nursing bottle, with the highest occurrence in the private school.

When the analysis variable was the age group, no statistically significant results were found, however, when comparing the age groups with the type of institution, there was a difference for bruxism among preschoolers attending private school ($p = 0.030$).

Table 2. Occurrence of deleterious oral habits according to gender of the preschool children and the institutions participating in the research, by the chi-square test

| Deleterious Oral Habits | Public Institution | | | | P value | Private Institution | | | | P value |
|-------------------------|--------------------|------|--------|------|---------|---------------------|------|--------|------|---------|
| | Gender | | | | | Gender | | | | |
| | Male | | Female | | | Male | | Female | | |
| | Pres. | Abs. | Pres. | Abs. | | Pres. | Abs. | Pres. | Abs. | |
| Nursing Bottle | 35 | 21 | 40 | 22 | >0,05 | 46 | 3 | 39 | 2 | >0,05 |
| Pacifier | 21 | 35 | 31 | 31 | >0,05 | 20 | 29 | 16 | 25 | >0,05 |
| Biting Objects | 13 | 43 | 25 | 37 | <0,05* | 19 | 30 | 18 | 23 | >0,05 |
| Onicophagy | 17 | 39 | 19 | 43 | >0,05 | 11 | 38 | 13 | 28 | >0,05 |
| Bruxism | 14 | 42 | 10 | 52 | >0,05 | 10 | 39 | 13 | 28 | >0,05 |
| Digital Suction | 5 | 51 | 5 | 57 | >0,05 | 3 | 46 | 3 | 38 | >0,05 |
| Tongue Suction | 4 | 52 | 5 | 57 | >0,05 | 3 | 46 | 0 | 41 | >0,05 |
| Humidify the lips | 3 | 53 | 3 | 59 | >0,05 | 3 | 46 | 2 | 39 | >0,05 |
| Biting oral mucosa | 2 | 54 | 2 | 60 | >0,05 | 2 | 47 | 5 | 36 | >0,05 |
| Tooth Tightening | 2 | 54 | 1 | 61 | >0,05 | 1 | 48 | 4 | 37 | >0,05 |

Subtitle: Pres. = Present and Abs. = Absent.
* Smaller value than the stipulated p value

Table 3. Comparison of the occurrence of deleterious oral habits according to the institution of education (public or private), by the test of equality of proportions

| Deleterious oral habits/ Education Institution | Public Institution | | Private Institution | | P value |
|---|--------------------|------|---------------------|------|---------|
| | N | % | N | % | |
| Nursing Bottle | 75 | 63,5 | 85 | 91,1 | < 0,01* |
| Pacifier | 52 | 44,1 | 36 | 40 | >0,05 |
| Biting objects | 38 | 30,5 | 37 | 41,1 | >0,05 |
| Onicophagy | 36 | 30,5 | 24 | 26,7 | >0,05 |
| Bruxism | 24 | 20,3 | 23 | 25,5 | >0,05 |
| Digital Suction | 10 | 8,5 | 6 | 6,7 | >0,05 |
| Tongue Suction | 9 | 7,6 | 3 | 3,3 | >0,05 |
| Humidify the lips | 5 | 4,2 | 5 | 5,6 | >0,05 |
| Biting oral mucosa | 4 | 2,5 | 7 | 7,8 | >0,05 |
| Tooth Tightening | 3 | 2,5 | 5 | 5,6 | >0,05 |

Subtitles: N = Number, % = Percentage e < = Smaller.
* Smaller value than the stipulated p value

Table 4 evidences the results of the association between the habits and the age groups of the study in the private school. It was observed that habits such as bruxism (greater occurrence in older children) and digital suction (greater occurrence in minors) were the only ones that presented statistically significant values, by the Chi-square test. The same analysis was carried out regarding the public school and no association was found.

Regarding the type of pacifier's nozzle, the common one presented a higher occurrence (n = 54, corresponding to 61.37%), and, in the public institution, 33 family members cited its use (37.5%).

In the private, 21 (23,87%). The orthodontic nozzle was used by 22 preschoolers (25%). Thirteen (14.78%) of them from the public institution and nine (10.23%) from the private one. It is noteworthy that 12 family members (13.64%) did not fill the pacifier type of nozzle format, although they affirmatively answered this item.

Regarding the shift in bruxism, the nocturnal occurrence (n = 32 - 68.1%) was higher when compared to daytime (n = 8, 17.4%). Seven relatives (15, 2%) did not report on which shift occurs the bruxism, although they reported that deleterious oral habit.

Table 4. Comparison of the occurrence of deleterious oral habits according to the age range in the private educational institution, by the chi-square test

| Deleterious Oral Habits of the Private School | Age (years old) | | | | P value | Total | |
|---|-----------------|------|---------|------|---------|-------|------|
| | 2 and 3 | | 4 and 5 | | | Pres. | Abs. |
| | Pres. | Abs. | Pres. | Abs. | | | |
| Nursing Bottle | 26 | 2 | 59 | 3 | >0,05 | 85 | 5 |
| Pacifier | 11 | 17 | 25 | 37 | >0,05 | 36 | 54 |
| Biting objects | 13 | 15 | 24 | 38 | >0,05 | 37 | 53 |
| Onicophagy | 5 | 23 | 19 | 43 | >0,05 | 24 | 66 |
| Bruxism | 3 | 25 | 20 | 42 | <0,05* | 23 | 67 |
| Digital Suction | 4 | 24 | 2 | 60 | <0,05* | 6 | 84 |
| Tongue Suction | 0 | 28 | 3 | 59 | >0,05 | 3 | 87 |
| Humidify the lips | 1 | 27 | 4 | 58 | >0,05 | 5 | 85 |
| Biting oral mucosa | 1 | 27 | 6 | 56 | >0,05 | 7 | 83 |
| Teeth tightening | 2 | 26 | 3 | 59 | >0,05 | 5 | 85 |

Subtitle: Pres. = Present and Abs. = Absent.

* Value smaller than the stipulated p value

Discussion

Early childhood is a privileged moment for Speech, Language and Hearing Sciences intervention, since young children are considered susceptible to external influence. Therefore, epidemiological data are necessary for the establishment of interdisciplinary and preventive actions at this stage of life, in order to foster a better development and quality of life.

Several studies have been concerned with the estimation of occurrences of deleterious oral habits, since they are learned and become unconscious¹, being evident from birth and which, according to the literature³, can have several harmful effects.

Scientific evidences^{2,5,10,13,16,20} have revealed the consequences of oral habits already in deciduous dentition, and, if used for a long period, can generate alterations throughout the stomatognathic system, such as decreased tonicity of lips, tongue and cheeks; (suction, chewing, swallowing and phonation), depending on the period, intensity, duration and frequency⁴.

The existence of these habits is quite common, since many relatives offer objects (such as a pacifier) since birth, in order to calm the children or to make them stop crying⁵. In this study, its estimation occurred in the majority of preschool children. This data appeared, because children of two years of age were included. It is hypothesized that, in this age group, most of the relatives believe that nursing bottle feeding (76.92%) and normal pacifier use (42.31%) are necessary, with results similar to those

reported in the literature^{5,9,12,15} and divergent from others^{2,10,13-14,20-22}. It should be noted that the percentages related to the use of pacifier were similar to those of two studies^{14,16}, but they differed when compared to that of the nursing bottle.

It is known that the absence of breastfeeding increases the need for non-nutritive suction - pacifier and / or digital sucking and nutritive suction - in nursing bottle. Although, in the study group, it was not possible to verify whether or not there was such a correlation, because this aspect was not part of the scope of the research and could be considered as a limitation of the study.

Our results revealed that oral habits, for the most part, did not present differences regarding gender, except for biting objects, with higher occurrences in the female children of the public institution. Corroborating with that, there is a study¹⁶, in which it was affirmed that there is no relation between the prevalence of deleterious oral habits and gender, thus, evidencing that there are no distinct preferences between boys and girls.

In the case of a survey conducted in the Brazilian northeast region, in Recife / PE²², the composition of the sample was significantly larger (n = 970) than ours and with larger ages (between five and twelve years of age). It was found that 60.8% of the children presented deleterious oral habits (onicophagy - 44.6%, bruxism - 12.6%, digital suction - 9.7% and pacifier suction - 7.4%). Such divergences may lead to the hypothesis that with advancing age, oral habits tend to decrease, except for onicophagy, which tends to increase. Therefo-

re, researches extending the age group would be interesting to test such a possibility.

Regarding this habit, the literature commented that onichophagy was the most frequent habit in Brazilian mothers and children². Learning this habit in the family social context was also hypothesized. It is added to this hypothesis, the social pressure from the school environment regarding anxiety and imitation, a common behavior in preschoolers.

This habit, when present in childhood, can lead to injury and wear of the incisors' relief and malocclusion, besides affecting oral cavity hygiene, being important an intervention for its elimination²³.

In another study²⁰, the most frequent habit was pacifier suction (76.4%), followed by bruxism (14.7%) and digital suction in 12.2% - in children aged between zero and five years, assisted in the public clinic of Pediatric Dentistry. Another study¹³ found a large index of children who presented these habits. The most prevalent being pacifier use, with 37.2%.

Regarding non-nutritive suction, especially digital and pacifier suction, the literature has pointed to its installation due to the emotional need of children, being used in moments of tension. Depending on their intensity, frequency and duration, it can lead to poor dental occlusion²⁴, usually characterized by anterior open bite^{24,25}. Furthermore, the establishment and permanence of oral habits may occur due to the need to overcome affective deficits arising from the absence of breastfeeding or neural suction. This was a limitation of this study, in which questions were not included about the breastfeeding period.

Most of the oral habits were common in the two educational institutions surveyed, except for the use of the nursing bottle, with higher occurrence in the private institution. Researchers⁹ did not find statistically significant differences between preschoolers in public and private schools, although they conducted research at ages from four to six years old.

Although family income is the criterion used by most researches and studies to define the insertion of individuals in the market of goods and products of a society, it cannot be seen as a delimiting factor exclusive to the social pattern of individuals. A more in-depth analysis is important, from the socio-occupational classification, a variable that would help characterize the stability of the source of income, employment and the expectations of

socioeconomic future that define the lifestyle of the population²⁶.

This was a limitation of our study, which, at the data collection stage, predicted stratification by income, but did not predict socio-occupational classification, which would favor a more realistic analysis of the living and health conditions of the participants of this study.

Another limitation was the non-inclusion of an item that verified, at the data collection stage, the weaning age of the children who participated in the investigation, considering that the use of the pacifier may favor early weaning²⁷ and, in this situation, may compromise the harmony of the development of the stomatognathic system, impairing its functions²⁸.

It was also observed that there was an association between the habits and the age groups of the study in the private school, with bruxism being present in the older children (four and five years old), while digital sucking was associated with the minor ones (two and three years old). Regarding digital sucking, a low frequency was observed in groups of preschool children from public and private schools, with a period of use superior than 36 months. The percentage was 7.1% in public school students⁹, that is, with values close to our study (with an approximate occurrence of 7.5%). It should be noted that the cited study⁹ also found no statistically significant differences between the public and private schools. Because they conducted research with children between four and six years, it was not possible to discuss our findings related to the association of oral habits with smaller ages.

In the same study⁹, bruxism occurred in 22% of the sample, with results close to ours (approximately 20% of the sample), with no differences between public and private schools. The duration of bruxism was, in the cited study, superior to 36 months. This information was not collected in our investigation, being important the addition of this data in future research.

Researchers²¹ verified the prevalence of non-nutritive sucking habits in preschool children between three and five years, with 40.2% of the sample presenting such habits, with 27.7% of pacifier use and 12.5%, digital sucking. They found higher frequency of digital suction in children whose parents had low schooling (elementary school). In this study, the difference between the socioeconomic and cultural profile of the educational institutions

was present only in the aspect related to the parents' schooling. In public education, the majority did not present complete Primary Education. In the private, the majority presented it complete, based on the results of the mentioned researchers. They also found a reduction in the prevalence of oral habits of non-nutritive sucking with increasing age²¹, with results similar to those of this study.

It is important to mention that the elimination of oral habits requires the consent and motivation of the subject who uses them. Therefore, preventive measures should be carried out as early as possible in order to assist such subjects in this arduous task.

In the public institution, the analysis of the association between habits and age groups was carried out, but no association was found.

The frequent use of the oral habit, for a long time, can compromise neuromuscular orofacial balance, causing neuromuscular, occlusal and emotional alterations, justifying interdisciplinary actions to minimize its adverse effects, mainly in Speech, Language and Hearing Sciences with Dentistry, Pediatrics and Psychology.

Conclusion

According to the results obtained, it can be concluded that there was a high prevalence of oral habits in the study sample. No differences were evidenced regarding gender in relation to the use of oral habits, except for the habit of biting objects for the preschoolers attending a public institution, as well as the use of nursing bottle and bruxism for preschoolers of a private institution.

The high prevalence of deleterious oral habits in preschool children justifies the interdisciplinary action as early as possible, so that there would be no negative impact on the development of the cranium-facial-cervical complex and, consequently, on oral functions.

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