

ARAŞTIRMA / RESEARCH ARTICLE

Prevalence of bruxism in Istanbul primary school children and association with the age groups

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Istanbul'da ilkököl çağı çocuklarında bruksizm prevalansı ve yaş gruplarıyla ilişkisi

Amaç: Bizim bu geniş saha çalışmasındaki amacımız ilkököl çağı çocuklarında bruksizm prevalansını bulmak ve bunun yaş gruplarıyla olan ilişkisini ortaya koymaktır.

Yöntem: Bu çalışma İstanbul Kartal'da rastgele seçilen 4 ilkököl'de yapıldı. Çocukların anne ve babalarına bruksizm ile ilgili sorular içeren anket formu doldurtuldu. Bruksizm ve yaş grupları arasındaki ilişki χ^2 testi ile değerlendirildi.

Bulgular: Çalışmamız 1041 (539 erkek ve 502 kız) ilkököl çağı çocuğu üzerinde yapıldı. Çocuklar 3 yaş grubuna bölündü, 5-7 yaşındaki çocuklar Grup I (n=199), 8-10 yaşındaki çocuklar Grup II (n=452) ve 11-14 yaşındaki çocuklar Grup III (n=390) olarak ayrıldı. Çalışmamızda bruksizm prevalansını %23 (240) olarak bulduk. Bruksizm ile cinsiyet arasında anlamlı bir ilişki bulamadık. Yapmış olduğumuz geniş saha çalışmasında bruksizmin en fazla görüldüğü grubu Grup I olarak saptadık.

Sonuç: Bruksizm özellikle çocuk yaş grubunda görülen ve tedavi edilmediği takdirde çok ciddi diş problemlerine yol açabilen bir hastalıktır. Biz çalışmamızda İstanbul Kartal'da bruksizm prevalansını %23 olarak bulduk. Bruksizmin etyolojisi çok tartışmalı olup etyolojik faktörlerin kesin ortaya konması için ileri çalışmalara ihtiyaç vardır.

Anahtar Sözcükler: Bruksizm, ilkököl çağı çocukları, prevalans.

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Abstract

Objectives: The purpose of this large field study is to investigate the prevalence of an existing association between bruxism according to age groups in primary school children.

Methods: The study was performed in four primary schools which were chosen randomly in Kartal, İstanbul. The children's parents were asked to fill out a questionnaire that included questions concerning the associated symptoms of bruxism. The interrelations between age groups and bruxism items were examined by chi-square tests.

Results: The study population consisted from 1041 (539 boys and 502 girls) primary school children. The children were divided into three groups as 5-7 years old children in Group I (n=199), 8-10 years old children in Group II (n=452) and 11-14 years old children in Group III (n=390). Prevalence of bruxism in the study sample was found as 240 (23%). There was no statistically significant association between bruxism and gender. In our large field study, bruxism was observed mostly in Group I and the overall prevalence was estimated as 23%.

Conclusion: Bruxism is especially seen in children and may lead to serious dental problems if it is left untreated. In our study we found the prevalence of bruxism as 23% at Kartal, İstanbul. As the etiology of bruxism is controversial, further studies are required to clarify the condition.

Key Words: Bruxism, primary school children, prevalence.

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Introduction

Bruxism is a non-functional activity characterized by repeated tooth clenching or gnashing which may occur during the day or more commonly at night in an unconscious manner.^{1,2} Bruxism can occur during the day or night,^{3,4} characterized in awake individuals, by voluntary or semivoluntary jaw clenching (so-called awake bruxism) and, on rare occasions, by tooth gnashing and/or grinding. During sleep bruxism, both clenching and tooth grinding are observed.⁵ In our study we evaluated sleep bruxism in children.

Bruxism can cause pain and irreversible damage to the teeth, periodontium, masticatory muscles and temporomandibular joint. The incidence of sleep bruxism is reported in the literature ranges in children between 6.4 and 20.5%.⁶⁻⁸

Basically, the etiology of bruxism is considered to be multifactorial including local, psychological and neurological factors.⁹⁻¹³ It is obvious that some factors such as allergic rhinitis and adenotonsillar hypertrophy (ATH) may cause upper respiratory obstruction.^{10,14,15} However, an early diagnosis should be made to avoid dental damage. Some authors believe that childhood bruxism does not always need to be treated since the child is in the growing process and is resistant to bruxism.⁹

The purpose of this large-scaled field study is to investigate the prevalence of an existing association sleep bruxism according to the age groups in primary school children.

Materials and Methods

The study was carried out between June and August 2007. A total number of 1041 children (aged from 5 to 14-years-old) attending four primary schools in Kartal, İstanbul were chosen randomly.

Names of schools that are available for the study and a permit to conduct the study were obtained from the Hospital Head Physician and the local National Education Department.

The children were divided into three groups as 5-7-years-old children in Group I (n=199), 8-10-years-old children in Group II (n=452) and 11-14-years-old children in Group III (n=390).¹⁶

A questionnaire about bruxism was constructed. An informed consent was obtained from parents who were asked to answer a questionnaire about their children. The Questionnaire was handed over to the parents of the children a week before the study by 2 ENT specialists and 2 assistants in a sealed envelope. Classroom meetings were also arranged where detailed information regarding the content of the study was provided to parents. A consent form was also attached together with the questionnaire form and delivered to parents in envelopes. A week later examinations were initiated. All examinations were held in school dispensaries or in private rooms by 2 ear-nose-throat specialists and 2 assistants. Questionnaire forms and consent forms were received in closed envelopes from all children prior the examinations. Forms were assessed before examinations and then an examination was held accordingly. Children whom failed to fill a consent form and questionnaire form were excluded from the study. Children were checked for a presence of temporomandibular pain and irregular dental gnashing. A detailed form was filled out for each child.

Data was evaluated by a computer using a statistical package for social sciences (version 11.5 for Windows). The statistical analyses were performed using the chi-square tests. P values less than 0.05 were considered significant.

Results

The study population consisted of 1041 (539 boys and 502 girls) primary school children between 5 and 14 years of age (mean 9.59 ± 2.60 years). The total number of children whom were included for an evaluation in schools was 1411 whereas 370 children were excluded from the study because they failed to deliver the questionnaire and consent forms in a sealed envelope as requested or failed to come to school.

The evaluations of bruxism according to the different age groups are given in Table. Prevalence of bruxism in the study sample was found to 66 (33.2%) in Group I, 116 (25.7%) in Group II and 58 (14.9%) in Group III. There was no statistically significant association between bruxism and gender in the entire Groups of I, II and III. Persistent temporomandibular pain was present in only 31 children (12.91%) out of 240 children with bruxism while tooth gnashing was present in 26 children (10.83%). Bruxism was observed mostly in group I and the overall prevalence was estimated, 23%.

Discussion

Bruxism, defined as the habitual nonfunctional forceful contact between occlusal tooth surfaces,¹⁷ is involuntary, excessive grinding, clenching or rubbing of teeth during nonfunctional movements of the masticatory system.¹⁸ Bruxism can occur during the day or

night,^{3,4} characterized in awake individuals, by voluntary or semivoluntary jaw clenching (so-called awake bruxism) and, on rare occasions, by tooth gnashing and/or grinding. During sleep bruxism, both clenching and tooth grinding are observed.⁵ Sleep bruxism should be distinguished from the daytime-awake bruxism that is mainly related to "stress/anxiety" reactivity and expressed as a jaw muscle clenching habit/tic.¹² Wake bruxism is very rare with little or no sound during clenching rather than the loud involuntary grinding that characterizes sleep bruxism. Reported complications include dental attrition, headaches, temporomandibular joint dysfunction and soreness of the masticatory muscles.¹⁹

Bruxism usually causes tooth wear as evidenced by wear facets that can range from mild to severe and can be localized or found throughout the dentition.²⁰ Other trauma to the dentition and supporting tissues include thermal hypersensitivity, tooth hypermobility, injury to the periodontal ligament and periodontium, hypercementosis, fractured cusps and pulpitis and pulpal necrosis.¹⁵ Preliminary evidence suggests that juvenile bruxism is a self-limiting condition that does not progress to adult bruxism.²¹ According to American Academy of Sleep,²² dental damage with abnormal wear to the teeth is the most frequent sign of the disorders. Other complication is damage to the structures surrounding the teeth which can include recession and inflammation of the gums and resorption of the alveolar bone. Hypertrophy of the muscles of mastication can occur, and bruxism can be lead to temporomandibular joint disorders, often associated with facial pain. Complaints of tooth grinding occurring during sleep decline over time, from 14% in children to 8% in adults to 3% in patients over 60 years of age.²³ In healthy infants, the age of onset of sleep bruxism is about 1 year of age, soon after the eruption of the primary incisors.²²

Table 1. Distribution of bruxism according to different age groups.

Age groups	Bruxism available (n) (%)	Bruxism unavailable (n) (%)	Total (n)
Group I (5-7 years)	66 (33.2%)	133 (66.8%)	199 (19.1%)
Group II (8-10 years)	116 (25.7%)	336 (74.3%)	452 (43.4%)
Group III (11-14 years)	58 (14.9%)	332 (85.1%)	390 (37.5%)
Total	240 (23%)	801 (77%)	1041 (100%)

p:0.001, p<0.01

Reported prevalence in children ranges from 6.4 and 20.5%^{3,5} with girls apparently more frequently affected.²⁴ Our large field study demonstrated an overall prevalence of 23.05%. These results may support the literature. Although preliminary studies suggested the opposite, we found no statistically significant association between bruxism and gender in the entire groups of I, II and III.

Generally, patients clench their teeth throughout the day and gnash and clench them during sleep.²⁴ However, nocturnal bruxism is more frequent; it varies with the individual and has been related to emotional or physical stress.²⁰ The etiology of bruxism is still controversial. Many authors claim a multifactorial cause.²⁵ Three groups of etiologic factors can be distinguished. First, pathophysiologic factors may be involved in the precipitation of bruxism. For example, it has been claimed that bruxism is part of an arousal response, thus linking sleep-related bruxism to the field of sleep disorders.²⁶ There is also evidence that, in younger children, bruxism may be a consequence of the immaturity of the masticatory neuromuscular system.²⁷ Altered brain chemistry (eg, an asymmetric nigrostriatal dopaminergic function) has been associated with bruxism as well.²⁵ Second, psychologic factors may be the cause of sleep bruxism in children. Third, morphologic factors (eg, dental occlusion and anatomy of the orofacial skeleton) are thought to be involved in the etiology of bruxism. Occlusal discrepancies (eg, a slide between retruded contact position and intercuspal position) were historically considered as the most common cause of bruxism.

Bruxism is one of the most common sleep disorders among the children population 6.4-20.5%.^{6,8} Our large field study demonstrated an overall prevalence of 23.05%. These results may support the literature. Some authors may assume that childhood bruxism does not always require a cure since the child is still in the growing process and may be

resistant to bruxism.^{9,21} Our large field study demonstrated a prevalence of bruxism which was higher in group 1, as 33.2%; however, this percentage decreased by age to 25.7% in Group 2 and to 14.9% in Group 3. This study indicated that the incidence of bruxism decreased as the age of the child increased as in Table 1 (p: 0.001). These results have supported the results obtained from the previous study. Neuromuscular masticator system immaturity can be the cause of bruxism which has been seen more in childhood and not progress in elder ages. However, further studies are needed to understand the decrease observed in childhood bruxism and to determine the type of treatment for bruxism.

Conclusion

Bruxism is especially seen in children and may lead to serious dental problems if it is left untreated and etiology of bruxism is still controversial. In our study we found the prevalence of bruxism as 23.05%. We observed that 240 elementary school children out of 1041 had complaints related with bruxism. We also found that the frequency of bruxism may decrease as the age of the child increased whereas the condition was frequent in children whom were 5-7-years-old. As the etiology of bruxism is controversial, further studies are required to clarify the condition.

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Conflict of interest statement:

No conflicts declared.

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