

# PREVALENCE OF SLEEP BRUXISM AND ASSOCIATED FACTORS IN TANTA PRESCHOOL CHILDREN

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## ABSTRACT

**INTRODUCTION:** Bruxism is a common condition in the pediatric dentistry clinics; it is reported more frequently in children than in adults and has different effects on a person's quality of life.

**OBJECTIVES:** The aim of this study was to assess the prevalence of sleep bruxism and associated factors among (4-6) years-old preschool children of Tanta city.

**MATERIALS AND METHODS:** The work was a cross sectional observational design. The sample consisted of 1000 four to six years old children attending public and private kindergarten in Tanta city. Data was collected through a parent/ guardian based questionnaire and clinical inspection of participating children that was done by the same inspector.

**RESULTS:** The results of the work revealed that the prevalence of sleep bruxism among the sample children was 17.6%. There were significant differences regarding family history of sleep bruxism, presence of newborn and gastro-intestinal disorders. A relationship between bruxism and nail/tongue biting, mouth breathing and sleep with hand on face was found in addition to TMJ disorders. Also, by doing regression test analysis gastro-intestinal disorders, family history of sleep bruxism and molar relation as distal relation was found to be the most affecting variable to bruxism.

**CONCLUSIONS:** The prevalence of sleep bruxism among a sample of preschool children was 17.6%. There was no significant difference between gender, age and bruxism, but there was a significant relation between presence of new born, gastro intestinal disorder and bruxism. The feeding way either normal or artificial had no relation to sleep bruxism. There was a relationship between sleep bruxism and nail-biting habit, mouth breathing, tongue biting and sleep with hand on face. There was no significant correlation between bruxism and occlusion except with molar relation. TMD had significant correlation with bruxism.

**KEYWORDS:** sleep bruxism, preschool children, and questionnaire

**RUNNING TITLE:** sleep bruxism in preschool children.

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## INTRODUCTION

Bruxism is an oral condition of great interest to both researchers and clinicians in the dental, neurological and sleep medicine fields. It is reported more frequently in young than in adults and has different effects on a person's quality of life (1, 2). In 2013, Lobbezoo et al proposed that Bruxism is a repetitive jaw-muscle activity characterized by clenching or grinding of the teeth and/or by bracing or thrusting of the mandible. It has two distinct circadian rhythms; during sleep indicated as sleep bruxism (SB) or during wakefulness indicated as awake bruxism (1).

Bruxism has been connected with psychosocial impacts such as tension or anxiety, and central or pathophysiological reasons including brain neurotransmitters or basal ganglia and peripheral causes such as tooth malocclusion (3). In 2001, Kato et al (4) discovered a clear order of autonomic activation that preceded jaw motor action in subjects with bruxism. In

2007, Zarowski et al reported that stress, autonomic abnormalities, medical issues, and genetics have been connected to bruxism (5, 6).

Like most parafunctional habits, bruxism can compromise the stomatognathic system, with consequences to orofacial structures (7). Bruxism can cause joint problems, muscle pain, root/crown fractures, restoration failures. Moreover, the hyperactivity of the masticatory structure may lead to tooth wear, also injuries to the bone structures and periodontium (8).

There are several methods to measure bruxism activity as questionnaires being the most usually used method, clinical evaluation, and objective polysomnography sleep test (9). The routine method for diagnosing bruxism in children is parental information of grinding the teeth (10, 11). Therefore, parents/caregivers play a main role in the detection of sleep bruxism in

children. However, detection is often impeded by lack of prior knowledge regarding bruxism (12).

The prevalence of bruxism in children ranges from 8-40%. A linear decrease of sleep bruxism was reported by 14 % in children to 8 % in adults to 3 % in people over 60 years of age. The wide variety in the reported occurrences of bruxism outcome occurred due to the different methodologies available with different reliabilities in data collecting (5, 13).

In the Middle East and Africa, there are a few eligible studies performed in those populations (14). Additionally, no studies have been conducted neither to assess the prevalence of sleep bruxism in preschool children of Tanta city nor to determine aspects associated with the incidence of this habit. Therefore, aim of the present work was carried out to assess the prevalence of sleep bruxism and some of the factors, which might be associated with it among a group of (4-6) years-old preschool children in Tanta city.

## METHODS

### Study design

The observational descriptive cross-sectional design was adopted in the study.

### Study setting

The study was carried out at public and private kindergartens in Tanta city between September 2018 and May 2019.

### Study population

The study population consisted of 4-6 year-old children in public and private kindergartens in Tanta city.

### Sample size

The sample size was calculated using computer software Epi-info version 7. Assuming that estimated the occurrence of bruxism is 50% with a 5% margin of error, at 95% confidence level and design effect in the power analysis is 2, the size of the sample was more than 385. The sample size was increased to 700 to improve the validity of the results.

### Sample selection

A pilot study was carried out to measure the response rate of parents to the questionnaire, evaluated using IBM SPSS software package version 20.0. It was found to be 2.8%, accordingly, a questionnaire, consent, and a letter explaining the objectives of the study were attached to the homework of 2000 randomly chosen children. Only children of responding parents were involved in the work.

Tanta city was separated into two geographical districts: East district and west district. East district contained 25 kindergartens (16 public and 9 private). West district contained 25 kindergartens (15 public and 10 private). Stratification was performed by district and type of day-care centers.

### Inclusion criteria

Healthy Egyptian children aged 4 - 6 years.

### Exclusion criteria:

Children were excluded from the study if having any of the following:

Mental disability

Systemic disorders.

Sleep disorders e.g. obstructive sleep apnea

Children whose parents were not aware of their child's bruxism

### Ethical considerations

Approval for this study was obtained from the Research Ethics Committee at the Faculty of Dentistry, Tanta University, Ministry of Education, Education affairs, and school authorities. An Informed Consent to inspect the children was taken from parents after sending letters to explain the objective of the study according to the guidelines of the Research Ethics Committee at Faculty of Dentistry, Tanta University.

### Organization of the study

#### a) Scheduling

The planned schedule had included time for introducing the examiner to the school directors and class teachers as well as choosing an appropriate classroom to carry out the examination in each school and setting up the equipment.

#### b) Infection control methods

The examiner was responsible for maintaining adequate infection control by:

Wearing protective barriers (white coat, face mask, and disposable latex gloves).

Using disposable tongue blades and towels.

Proper and gentle management of the oral tissues, hence reducing the risk of cross-infection.

#### c) Data collection (questionnaire and clinical examination)

Data was collected through a parents/ guardians-based questionnaire and clinical inspection of participating children that was carried out by the same examiner.

A pre-survey calibration was performed on a group of 50 school children to assess the reliability. The children were examined twice in a week interval and the results of the two examinations were subjected to statistics.

Arabic-translated form of the survey was prepared and a pre-test survey was undertaken with a group of children's parents to ensure uniform acceptance of the questions by the participants. Accordingly, adjustment of words and rephrasing of some questions was done until an acceptable level of understanding was obtained. And the result of calibration and statistics showed good agreement which validated the procedure.

The questionnaire elicited information about the child's sleep bruxism, which was recorded as present or absent, socio-demographic data, medical history, childbirth either full-term or premature, type of feeding during infancy and parafunctional habits possibly associated with bruxism as, biting objects, nail, lip, and tongue, mouth breathing and sleep with a hand on face. Appendix 1

### Clinical examination

Only children of responding parents were examined. The inspection was done according to WHO criteria (15) for oral health survey. The students were seated on their straight-backed chairs facing good natural daylight to allow proper visibility, while the examiner was standing opposite to them wearing protective barriers. A portable lighting device was used to provide more illumination for more accurate details if needed. The teeth were cleaned from food remains with cotton for good visibility. Disposable tongues blades and towels were used

in the examination to avoid cross- infection. All information was recorded with the help of the class teacher at previously prepared examination charts.

#### Assessment of malocclusion

1-Inspection of anterior open bite: occurs when the front teeth fail to touch and no overlap between the upper and lower incisors.

2-Inspection of overjet: the amount of horizontal overlap of the maxillary central incisors over the mandibular central incisors to see if it was greater than or equal to 4mm.

3-Inspection of anterior crossbite, where maxillary anterior teeth are located palatal to the mandibular anterior teeth.

4- Inspection of anterior crowding in the upper and lower arches.

5-Inspection of posterior crossbite whether its unilateral or bilateral.

6-Primary canines and molar relationship was recorded.

7- Recording aspects about the teeth such as rotated teeth, sharp tooth edges, high restorations, and extensive tooth caries.

8- Inspection of the teeth indentations on cheek mucosa and tongue.

9- TMJ problems were examined by hand on the joint and ask the child to open and close to record any pain or sound of clicking.

#### Statistical analysis

Data were served to the computer and evaluated using IBM SPSS software package version 20.0. (Armonk, NY: IBM Corp). Qualitative data was described using numbers and percent. The Kolmogorov-Smirnov test was used to validate the normality of distribution. The significance of the obtained results was judged at the 5% level.

## RESULTS

A questionnaire was attached to the homework of 2000 randomly chosen children. Only 1000 children whose parents answering to the questionnaire, were involved in the study, aged between 4 - 6 years-old.

Results showed that the highest percentage of participants were in the age group of five years and less than six years (44.9%). In addition, males represented 51.7% of the sample. Moreover, 86.6% of the children's mothers and 84.9% of their fathers had a university education.

The highest percentage of participants had one sibling (52.8%), whereas participants having more than three siblings represented only 2.5 % of the study sample. The percentage of presence of newborns was (14 %). Furthermore, (98.2%) of the whole sample were born full-term, and the highest percentage of participants' mothers with a partner (96.4%), and mother was the main caregiver with percentage (97.2%) of the sample. Results demonstrated that 10.7% of the participant children had gastrointestinal disorder.

The relationship between socio-demographic characteristics and sleep bruxism was revealed in (Table 1). The chi-square test reveals a non-significant difference between sleep bruxism and socio-demographic features of the study sample including age, sex, mothers' education,

fathers' education, number of siblings, childbirth, mothers' status, and main caregiver ( $p > 0.05$ ).

On the other hand, the statistical analysis highlighted a significant connection between a child with newborn siblings and bruxism ( $p = 0.045$ ), the occurrence of bruxism in children with a newborn siblings is 23.6% while in children without newborn sibling 16.6%, also there was a significant correlation between children with gastrointestinal disorders and bruxism ( $p = 0.001$ ), as the prevalence of bruxism in children with gastrointestinal disorders is 35.5% while in children without gastrointestinal disorders 15.4%, as showed in Table (1). Regarding the prevalence of sleep bruxism, the outcomes of the present work revealed that sleep bruxism was found in 176 Children representing 17.6% of the study sample, and family history of sleep bruxism was found in 15.6 % of the study sample, result demonstrates a significant connection between family history and nocturnal bruxism with ( $X^2 = 113.50$ ,  $P = 0.001$ ), (figure 1).

The results showed that the highest percentage of participants had mixed feeding with a percentage reached 42.7% of the whole sample. The statistical analysis showed that no significant relationship between bruxism and type of feeding ( $p = 0.836$ ), with the prevalence of bruxism in normal feeding (17.0%), (19.1%) in artificial feeding, and (17.6%) in children had both types of feeding. Relation between bruxism and parafunctional habits showed in (figure 2). Regarding thumb sucking, statistics showed no significant correlation between bruxism and thumb sucking as  $p$ -value = 0.106, likewise pacifier use ( $p = 0.664$ ) and biting objects ( $p = 0.635$ ). On the other hand, statistics revealed that there is a relationship between bruxism and nail- biting habits ( $p = 0.010$ ).

Regarding lip biting, statistical analysis demonstrated no significant difference between bruxers and non-bruxers with a  $p$ -value = 0.481, furthermore, statistics showed no correlation between bruxism and cheek biting with  $p$ -value = 1.

On the other hand, there was a significant connection between bruxism and children with tongue biting habits ( $p = 0.011$ ), Furthermore, data analysis showed a correlation between bruxism and mouth breathing ( $p = 0.032$ ). Also, data found a significant association between bruxism and sleep with a hand on face habit ( $p = 0.020$ ).

In (Table 2) the relation between bruxism and occlusion is shown. The statistical analysis showed only a significant association between bruxism and molar relation ( $p = 0.012$ ). While, no significant relationship between bruxism and anterior open bite, increased overjet, anterior crossbite, upper anterior crowding, lower anterior crowding, posterior crossbite, and canine relation ( $p > 0.05$ ).

The results revealed that 4.1% of the participants had rotated teeth, 4.4% had sharp tooth edges, 2% had high restoration and 26.7% had extensive tooth caries. Additionally, the percentage of teeth indentation reached 28.9% on cheek mucosa and 5.4% on the tongue. Finally, 1.4% of the participants had TMJ problems.

The statistical test showed no correlation between bruxism and tooth conditions including rotated teeth

( $p=0.611$ ), sharp tooth edge ( $p=0.917$ ), high restoration ( $p=0.575$ ), and extensive tooth caries ( $p=0.091$ ). (Figure 3).

The statistical test shown no significant connection between bruxism and tooth indentation on cheek mucosa ( $p=0.262$ ), the occurrence of bruxism in children with tooth indentation on cheek mucosa was 19.7%, while it was 16.7% in children without tooth indentation. Furthermore, no significant relationship between bruxism and tooth indentation on the tongue ( $p=0.855$ ), as the occurrence of bruxism in children with tooth indentation on the tongue was 18.5%, while 17.5% in children without tooth indentation.

The test analysis showed a significant correlation between bruxism and the TMJ problem ( $p=0.047$ ).

In (Table 3), a logistic regression analysis for the parameters affecting sleep bruxism was done. The test analysis showed a significant correlation between bruxism and the presence of a newborn as the odds ratio 1.542 (1.004– 2.370), gastrointestinal disorder with odd ratio 3.013 (1.949– 4.657), family history with an odd ratio of 6.565 (4.506–9.564), nail-biting with odd ratio 1.650 (1.124–2.422), tongue biting with odd ratio 8.002 (1.894–33.801), mouth breathing with odd ratio 1.527 (1.036–2.250), sleep with a hand on the face with odd ratio 1.580 (1.071–2.331), molar relation (distal step) with odd ratio 0.404 (0.183–0.892), and TMJ problem with odd ratio 3.600 (1.233–10.509). As a multivariate parameter, the test analysis showed that the gastrointestinal disorder with odd ratio 2.090 (1.268–3.444), family history with odd ratio 5.752 (3.873–8.541), and molar relation (distal step) with odd ratio 0.338 (0.145–0.790) are significant with sleep bruxism.

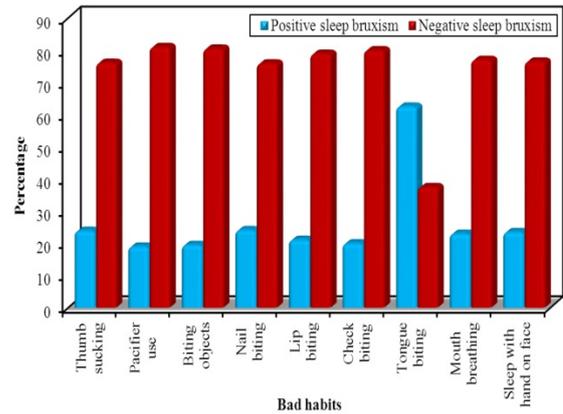


Figure (2): Relationship between parafunctional habits and sleep bruxism.

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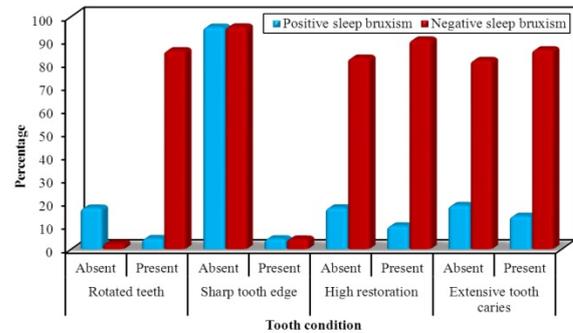


Figure 3: Relationship between tooth condition and sleep bruxism

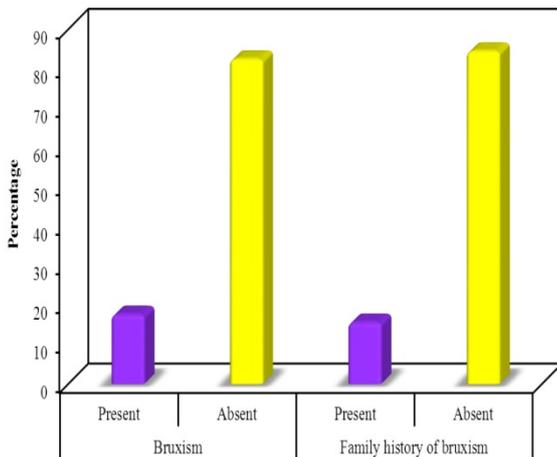


Figure 1: Distribution of studied participants in relation to bruxism and family history

Table 1: Relationship between socio-demographic characteristics and sleep bruxism

Socio-demographic variables	Positive sleep bruxism		Negative sleep bruxism		Total		X <sup>2</sup>	p	
	n	%	n	%	n	%			
<b>Age in years</b>								0.261	0.878
4-	36	17.3	172	82.7	208	100			
5-	82	18.3	367	81.7	449	100			
≥6	58	16.9	285	83.1	343	100			
<b>Sex:</b>								0.250	0.617
Males	4	8.2	23	1.8	517	100			
Females	82	17.0	401	83.0	483	100			
<b>Mothers' education</b>								1.293	0.524
Primary/secondary	14	14.3	84	85.7	98	100			
High institute	8	22.2	28	77.8	36	100			
University	154	17.8	712	82.2	866	100			
<b>Fathers' education</b>								0.261	0.878
Primary/secondary	19	17.0	93	83.0	112	100			
High institute	8	20.5	31	79.5	39	100			
University	149	17.6	700	82.4	849	100			

Number of siblings							0.931	0.628
0-1	98	18.6	430	81.4	528	100		
2-3	73	16.3	374	83.7	447	100		
>3	5	20.0	20	80.0	25	100		
Presence of newborn							4.003	0.045*
No	143	16.6	717	83.4	860	100		
Yes	33	23.6	107	76.4	140	100		
Child birth							FE	0.052
Full term	169	17.2	813	82.8	982	100		
Premature	7	38.9	11	61.1	18	100		
Mothers' status							1.410	0.236
With partner	167	17.3	797	82.7	964	100		
Without partner	9	25.0	27	75.0	36	100		
Main care giver							FE	0.489
Mothers	173	17.8	799	82.2	972	100		
Others	3	10.7	25	89.3	28	100		
Gastro-intestinal disorders							26.51	0.001*
Present	38	35.5	69	64.5	107	100		
Absent	138	15.4	755	84.5	893	100		

$\chi^2$ : Chi square test  
 Exact  
 p: p value for association between Sleep bruxism and different categories  
 FE: Fisher  
 Exact  
 p: p value for association between Sleep bruxism and different categories  
 \*: Statistically significant at  $p \leq 0.05$

**Table (2):** Relationship between sleep bruxism and occlusion.

Occlusion	Positive sleep bruxism		Negative sleep bruxism		Total		p	
	Count	%	Count	%	Count	%		
<b>Anterior open bite</b>							0.701	0.402
Absent	46	7.2	04	2.8	50	100		
Present	9	0.0	19	0.0	48	100		
<b>Over jet</b>							0.202	0.274
Absent	43	7.0	97	3.0	40	100		
Present	2	0.6	25	9.4	57	100		
<b>Anterior cross bite</b>							0.801	0.371
Absent	68	7.9	72	2.1	40	100		
Present		3.3	2	6.7	0	100		
<b>Upper anterior crowding</b>							E	0.000
Absent	75	7.6	20	2.4	95	100		
Present		0.0		0.0		100		
<b>Lower anterior crowding</b>							0.196	0.658
Absent	60	7.8	40	2.2	00	100		
Present						100		

sent	6	6.0	4	4.0	00	00		
<b>Posterior cross bite</b>							E	0.489
Absent	73	7.8	99	2.2	72	100		
Present		0.7	5	9.3	8	100		
<b>Canine relation</b>							0.922	0.382
Class I	35	8.0	14	2.0	49	100		
Class II	6	7.8	66	2.2	02	100		
Class III		0.2	4	9.8	9	100		
<b>Molar relation</b>							0.813	0.012*
Mesial step	65	9.0	04	1.0	69	100		
Distal step		.6	4	1.4	1	100		
Flash terminal plane		.0	6	2.0	0	100		

$\chi^2$ : Chi square test  
 Exact  
 p: p value for association between Sleep bruxism and different categories  
 FE: Fisher  
 Exact  
 p: p value for association between Sleep bruxism and different categories  
 \*: Statistically significant at  $p \leq 0.05$

**Table (3):** Logistic regression analysis for the parameters affecting sleep bruxism (n = 1000)

Parameter	Univariate		#Multivariate	
	p	OR (95% C.I)	p	OR (95% C.I)
Presence of a newborn	0.048*	1.542 (1.004–2.370)	0.385	1.236 (0.766–1.995)
Gastro intestinal disorder	<0.001*	3.013 (1.949–4.657)	0.004*	2.090 (1.268–3.444)
Family history	<0.001*	6.565 (4.506–9.564)	<0.001*	5.752 (3.873–8.541)
Nail biting	0.011*	1.650 (1.124–2.422)	0.147	1.374 (0.895–2.111)
Tongue biting	0.005*	8.002 (1.894–33.801)	0.124	3.441 (0.712–16.628)
Mouth breathing	0.033*	1.527 (1.036–2.250)	0.379	1.218 (0.785–1.891)
Sleep with hand on face	0.021*	1.580 (1.071–2.331)	0.847	1.045 (0.669–1.631)
Molar relation				
Mesial step @	–	–	–	–
Distal step	0.025*	0.404 (0.183–0.892)	0.012*	0.338 (0.145–0.790)
Flash terminal plane	0.061	0.371 (0.132–1.045)	0.077	0.373 (0.125–1.111)
TMJ problem	0.019*	3.600	0.068	3.061

(1.233– 10.509)	(0.919– 10.189)
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OR: Odd's ratio

C.I: Confidence interval      LL: Lower limit  
UL: Upper Limit

#: All variables with  $p < 0.05$  was included in the multivariate

\*: Statistically significant at  $p \leq 0.05$

## DISCUSSION

In the present work, the overall prevalence of sleep bruxism in the sample of preschool children was 17.6%. This outcome approximated the results of Fonseca et al., (2011) who reported that 15.29% in their study sample (16). However, it is lower when compared to studies conducted by Insana et al., (2013) and Soares et al., (2016). They reported a higher prevalence of sleep bruxism in their studies among preschool students as 36.8% and 45.0 %a respectively (17, 18). These different results may be attributed to the alternation in the age groups evaluated and the methods employed (18).

In the present study, the results discovered that there was no association between age and bruxism. This result is in agreement with results of the previous studies Seraj et al., (2010), Vieira-Andrade et al., (2014), and Miamoto et al., (2011) which showed that no significant association between age and bruxism in a pediatric population (19-21). In contrast, this result disagreed with Soare et al., (2018) (22) who found a significant relationship between age and bruxism.

In the current study, the results revealed that there was no significant relationship between gender and bruxism ( $p=0.250$ ). This result agreed with the previous studies by Fonseca et al., (2011), Seraj et al., (2010) and Demirbag et al., (2014) which showed that no significant association between gender and bruxism (16, 19, 23). On the contrary to some researchers Cheifetz et al., (2005) (24) and Soares et al., (2018) (22) who reported that bruxism is more prevalent in boys. This may be due to different sample sizes, and conduction of the study in the pediatric dental offices.

The results of the present study revealed a significant relationship between sleep bruxism and the presence of newborn as it was 23.6%. This result agreed with a study carried by Seraj et al., 2010 (19) who reported that the birth of a new child is one of the distressing events in the child's life and it was significantly associated with the prevalence of bruxism.

Regarding gastrointestinal disorders, the present study demonstrated a significant correlation between bruxism and gastrointestinal disorders, this result agreed with the results of a study carried out by Tehrani et al., (2010) (25). Their findings suggest that pathogenic parasites may serve as the cause of initiation of bruxism habits among children due to anxiety and restlessness caused by the toxins and waste released by the parasites into their bodies.

On the other hand, this result contraindicated the result of Díaz-Serrano et al., (2008) (26) who did not find

evidence of a positive association between bruxism and intestinal parasitic infection in the surveyed pediatric population. This difference may be because the current study didn't specify a gastrointestinal disease or make a parasitological analysis. Also, some parents don't take their child's stomach complaints seriously.

In the current study, the results revealed that the prevalence of bruxism was 47.4% in children with a family history of bruxism and demonstrates a significant relation. This result agreed with the study carried out by Seraj et al., (2010) (19) who found a straight relation between genetics and bruxism. Bruxism happened 2.6 times more in kids who had a family history of bruxism. On the other hand, this result is not in agreement with Demirbag et al., (2014) (23) who reported no connection between childhood bruxism and parent with bruxism

Concerning the feeding types, the results of the present work pointed out non-significant relation between bruxism and way of feeding This result confirmed by the findings of, Simões-Zenari et al., (2010) (7) Fonseca et al., (2011) (16), Soares et al., (2016) (18), and Demirbag et al., (2014) (23) who reported no significant association between feeding and bruxism.

Regarding oral habits, the existing study pointed out a significant relation between nail-biting and bruxism with a prevalence of 24.1% and this result is in agreement with studies by Simões-Zenari et al., (2010) (7) and Drmound et al., (2019) (27) who found a significant connection between bruxism and nail-biting with a prevalence of 53% and 51.8% respectively. On contrary these results disagreed with Chiefetz et al., (2005) (24) and Seraj et al., (2010) (19) who found no relation between bruxism and nail-biting, this may be explained by the child with emotional and/or psychological problems, may adopt harmful oral habits as a compensation mechanism to release pressure, tension, and anxiety (28).

Likewise, the present study confirmed the significant association between bruxism and mouth breathing with a prevalence of 23.0%, this result was in agreement with a study previously informed by Simões-Zenari et al., (2010) (7) and Motta et al., (2014) (29). On contrary, the study by Soares et al., (2018) (22) found few children with mouth breathing had bruxism. These differences may be due to variability in the number of samples, and they used diagnosis test of mouth breathing besides the questionnaire.

Also, the current study demonstrated a significant relationship between bruxism and sleep with a hand on the face with a prevalence of 23.5%, This is in agreement with Soares et al., (2016) (18) who found a relation between bruxism and sleep with a hand on face, as the multifactor etiology of this habit, including emotional factors that can also affect one's position when sleeping (30).

Regarding the occlusion, in this study, results revealed that prevalence of bruxism in children with open bite was 20.0%, overjet 20.6%, anterior crossbite 13.3% , and posterior crossbite 10.7% with no significant relationship to bruxism. The result comes in a line with Gonçalves et al., (2010) (31) and Ghafournia et al., (2012)

(32) who found no statistically significant relationship between bruxism and any occlusal factors.

The current study highlighted a significant relationship between bruxism and molar relationship including a mesial, distal, and flush terminal plane with the highest prevalence of bruxism in the group of children with mesial molar relationship 19.0%. This finding agreed with Ghafournia et al., (2012) (32). On the contrary, it contradicts with the study of Junqueira et al., (2013) (33), who found a non-significant relationship between bruxism and molar relationship. This may be due to different methodology and the clinical examination done by three previously trained orthodontists.

Furthermore, In the current study, the results revealed no relationship between bruxism and tooth condition, these results are in agreement with Gome et al., (2018)(34) that found no relation between bruxism and tooth condition including a history of toothache, dental caries, and traumatic dental injury

The results of the current study revealed no significant relationship between bruxism and tooth indentation on cheek mucosa and tongue, this was confirmed by the findings of Emodi-Perlman et al., (2012) (35). However, the results disagreed with a study carried by Sapiro et al., (1992) (36) who has found that the buccal mucosa ridging and tongue indentation be reliable indicators of bruxism movement, and the presence of these clinical signs regularly indicates sleep bruxism.

Additionally, the results of this study showed that the prevalence of bruxism in children with TMJ disorder was 42.9% with a significant relationship, this was in line with a study by Widmalm et al., (1995) (37) Winocur et al., (2001) (38) and Seraj et al., (2010) (19).

Concurrently, the results disagreed with Cheifetz et al., (2005) (24) who found no significant relationship between TMD and bruxism that found only 5% of parents reported that their children had TMD symptoms. In review, De Souza Barbosa et al., (2008) (39) suggested that the unreliability of the clinical assessment of bruxism reduces confidence in conclusions about its relationship with TMD.

Finally, the present study has the limitations inherent to a cross-sectional design, the absence of polysomnographic for the sleep bruxism diagnoses, and the answers to the questionnaire may have been subjected to information bias. The under-notification of bruxism can arise when parents/caregivers are unconscious of this habit in their children. Thus, longitudinal studies should be conducted to gain a better understanding of the causality of factors in the occurrence of this parafunctional habit.

## CONCLUSION

The prevalence of sleep bruxism among a sample of preschool children was 17.6%. There was no significant difference between gender, age, and bruxism, but there was a significant relationship between the presences of newborn, gastrointestinal disorder, and bruxism. The feeding way either normal or artificial had no relation to sleep bruxism. There was a relationship between sleep bruxism and nail-biting habit, mouth breathing, tongue

biting and sleep with a hand on the face. There was no significant correlation between bruxism and occlusion except with molar relation. TMD had significant correlation with bruxism.

## CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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