

Knowledge and attitude on bruxism among International Islamic University Malaysia (IIUM) students

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Abstract

Bruxism is an oral habit of clenching and grinding teeth. In 2014, the prevalence of bruxism among youth has been increased to 51.2% which is higher than previous studies. Effects of bruxism can affect the quality of life. Hence, this study aimed to examine the level of knowledge and attitude among IIUM Kuantan students by developing a questionnaire as a research tool in this study, identifying the level of knowledge and attitude, determining the sociodemographic characteristics that contribute to the level of knowledge and attitude, and determining the correlation between the knowledge and attitude on bruxism. The domains such as type, symptom, risk factor, effect, prevention, and treatment on bruxism was assessed in the questionnaire. Data from 129 respondents was collected through Google form by using convenience sampling. As the result, the development of questionnaire as the research tool was completed by literature review, and pilot study ($\alpha=0.844$). Both of knowledge and attitude on bruxism were poor. Significant differences were detected using Kruskal Wallis test in term of knowledge between respondents' age ($p=0.008$), faculty ($p=0.009$), and level of study ($p=0.024$). Similarly sociodemographic characteristics which were age ($p=0.001$), kulliyah ($p<0.001$), and level of study ($p=0.002$) detected significant differences in term of attitude on bruxism. A fair positive correlation was determined by Spearman coefficient between knowledge and attitude on bruxism among the respondents ($r=0.461$, $p<0.001$). In conclusion, it is recommended for the healthcare authorities conducting an educational program to increase the level of knowledge and attitude on bruxism among the population.

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Introduction

Bruxism is a condition of clenching and grinding the teeth. A study by Phuong *et al.* (2020) found that the prevalence of bruxism among Vietnamese students was 51.2%, which is higher compared to the range of bruxism's prevalence in previous studies, that is 8% to 31%. It can be categorized as awake and sleep bruxism, or primary and secondary bruxism. According to Guaita and Högl (2016), Inchara *et al.* (2020), and Abd Salam (*n.d.*), the common symptoms of

bruxism are headaches, jaw muscle and facial pain, dental wear, and broken teeth or fillings.

The risk factors of bruxism can be categorized as biological, psychological, and exogenous factors. Biological factor is including genetic, while the psychological factors include depression, anxiety, and stress. According to Smardz *et al.* (2019), the exogenous factors that can cause bruxism are consumption of certain drugs, alcohol, caffeine, and smoking. Chewing gum also has been identified as a habit that can lead to

bruxism (Aguilera *et al.*, 2017). Worsening bruxism can be prevented by regular dental examination and used of the occlusal splint to prevent further damage towards the teeth as it able to protect teeth during clenching and grinding habit (Guaita & Högl, 2016).

Changing lifestyle is needed by avoiding the exogenous factors especially for those who have bruxism as their family history background. The treatment for bruxism is non-steroidal anti-inflammatory drug. Besides, the injection of botulinum toxin also has been used in patient with severe bruxism that do not respond to any medication that has been provided (Guaita & Högl, 2016). Prolonged period of bruxism can cause further oral health problem such as temporomandibular disorder.

This study will be focusing on the assessment of knowledge and attitude on bruxism among IIUM Kuantan Campus students. The results of this study assist in alerting the relevant authorities in increasing the level of knowledge and attitude on bruxism among IIUM Kuantan students by conducting a campaign, and continuous educational program in the future. The exposure towards the type, symptoms, risk factors, effect, prevention, and treatment of bruxism can help in the early detection of bruxism. This intervention is hoped to reduce trends of symptoms, risk factors and effects of bruxism and improve the quality of life.

Materials and Methods

Ethical approval

Ethical approval was obtained from Kulliyyah Postgraduate and Research

Committee (KPGRC), Kulliyyah of Allied Health Sciences and followed by approval from IIUM Research Ethical Committee (IREC).

Study design and setting

The study adopted a cross sectional study design. It was conducted online through Google form to collect the data from the respondents in IIUM, Kuantan Campus from February until August 2021.

Sample size

The sample size has been calculated by using single proportion formula using 95% confidence interval, and 0.09 precision decided. The proportion in population used was from prevalence of bruxism among students in Vietnam which is 51.2% (Phuong, 2020). The total number of respondents for this study was 129 respondents including 10% of non-response rate.

Sampling method

This quantitative study employed a convenience sampling.

Inclusion criteria

Targeted population for this research included the undergraduate, postgraduate, local, and international students of IIUM Kuantan Campus.

Exclusion criteria

Students that unable to read and understand English were excluded as the questionnaire was available in English version only

Table 1. Knowledge items and references.

Questions	References
<p>Type Bruxism occurs during sleep. Improper alignment of teeth occurred due to bruxism. #</p>	<p>Phuong <i>et al.</i> (2020) Abd Salam (n.d.)</p>
<p>Symptom Headache is a symptom of bruxism. Bruxism usually remains unrecognized until the condition is worsened. Patients with bruxism are usually experienced jaw pain.</p>	<p>Abd Salam (n.d.) Smardz <i>et al.</i> (2019) Abd Salam (n.d.)</p>
<p>Risk factor Bruxism can be inherited. Severe bruxism may lead to depression, anxiety, and stress. # Smoking increases the risk of having bruxism. Bruxism patient will be advised to stop drinking coffee immediately. Reduce alcohol intake can lower the risk of bruxism. Consumption of antidepressant drug can reduce the risk of having bruxism. #</p>	<p>Ahlberg <i>et al.</i> (2020) Afridi (2018) Kuhn & Türp (2018) de Baat <i>et al.</i> (2020) de Baat <i>et al.</i> (2020) Smardz <i>et al.</i> (2019)</p>
<p>Effect Bruxism is more likely to affects teeth condition compared to muscle disorder. #</p>	<p>Inchara <i>et al.</i> (2020)</p>
<p>Treatment Treatment for bruxism will be focused on the teeth. #</p>	<p>Guaita & Högl (2016)</p>
<p>Prevention Worsen bruxism can be prevented by regular dental examination. Occlusal splint (mouth guard) can prevent teeth damage in bruxism.</p>	<p>Abd Salam (n.d.) Guaita & Högl (2016)</p>

Note: Negative items are identified with (#).

Table 2. Attitude items and references.

Questions	References
Type	
I think bruxism can be control if the patient is staying awake. #	Phuong <i>et al.</i> (2020)
I am aware that sleep disorder is associated with bruxism.	Abd Salam (n.d.)
Symptom	
I believe that grinding noise during sleep is a symptom of bruxism.	Abd Salam (n.d.)
I believe that excessive force of grinding can lead to fracture of teeth.	Guaita & Högl (2016)
Risk factor	
I believe that bruxism tends to occur in person with family history of bruxism.	Ahlberg <i>et al.</i> (2020)
I believe that smokers are more likely to have bruxism.	Kuhn & Türp (2018)
I believe that the relationship between bruxism and stress is a myth. #	Afridi (2018)
I think antipsychotic drug can prevent teeth grinding. #	Abd Salam (n.d.)
I think bruxism tends to worsen after alcohol consumption.	de Baat <i>et al.</i> (2020)
I believe gum chewing is a type of exercise that can reduce the effect of bruxism. #	Aguilera <i>et al.</i> (2017)
Effect	
I think bruxism can lead to joint disorder.	Abd Salam (n.d.)
Treatment	
I think medical doctor can help me when I have any pain or discomfort of jaw. #	Singh <i>et al.</i> (2020)
I think pain killer is included in treatment of bruxism.	Guaita & Högl (2016)
Prevention	
I think avoiding dental check-up is a reason of bruxism remains undetected.	Abd Salam (n.d.)
I think consumption of medicine is more effective than the used of occlusal splint (mouth guard) for treating bruxism. #	Guaita & Högl (2016)

Note: Negative items are identified with (#).

Questionnaire development

The questionnaire has been divided into three sections. First section consisted of sociodemographic data, including age, gender, course and year of study, academic performance, routine visit for dental check-up, underlying oral condition, hours spend on physical activities and sleep disturbance experienced. Second and third sections of questionnaire was developed to evaluate the knowledge an attitude on bruxism, respectively. It consists of six domains that will be assessed in the questionnaire, which are type, symptom, risk factor, effect,

prevention, and treatment of bruxism. The questions for knowledge and attitude of bruxism are presented in Table 1 and Table 2 respectively. The knowledge section will be on 'True', 'I am not sure', and 'False' choices. Correct answer will be given two marks, while incorrect and 'I am not sure' options will be given zero mark. Likert scale will be used in attitude section which consists of 'Strongly agree', 'Agree', 'Neutral', 'Disagree', and 'Strongly disagree'. Reverse coding is done for the negative items.

Pilot study

Twelve respondents have been involved in this study based on the suggestion from Connelly (2008). An additional section is provided in Google form for the respondents to point out their view on questionnaire and suggesting for improvement. The value of Cronbach’s alpha was calculated by using Statistical Package for the Social Sciences (SPSS) version 12.0.

Data collection

Data collection have been done from March to May 2021. Consent from the respondents

have been obtained directly at the beginning of online survey.

Data analysis

All data were analyzed by using SPSS version 12.0. The level of knowledge and attitude was evaluated based on the percentage of marks gained. It was categorized into three groups, which was shown in Table 3 by using modified Bloom’s cut-off point (Ramli *et al.*, 2018).

Table 3. Categorization for level of knowledge and attitude on bruxism among IIUM Kuantan students.

Percentage (%)	Knowledges	Attitudes	Level of knowledge and attitude
80-100	24-30	48-60	High
60-79	18-23	36-47	Moderate
≤ 59	0-17	0-35	Poor

Normality of the raw data have been checked before pursuing any of statistical analysis by checking the histogram, comparing means, and skewness. For the first objective, which is to identify the knowledge and attitude on bruxism among IIUM Kuantan Campus students, descriptive frequency was used. As for second objective, which is to find the related sociodemographic characteristics that contribute to the level of knowledge and attitude on bruxism, Kruskal Wallis and Mann-Whitney U tests were used. Lastly, the correlation analysis, Spearman correlation coefficient was used to determine the correlation between knowledge and attitude on bruxism among IIUM Kuantan Campus students.

Results

Questionnaire development

The questionnaire consists of three sections which are sociodemographic data,

knowledge on bruxism, and attitude on bruxism. The items were developed based on the current information that have been obtained from journals, articles, and Ministry of Health websites which were published between 2016 and 2020. The developed questionnaire in knowledge and attitude sections which consists of 30 items was tested by conducting a pilot study. According to the statistical analysis, the Cronbach’s alpha for knowledge on bruxism is 0.878, while the value for attitude on bruxism is 0.809. The overall value for Cronbach’s alpha is 0.844.

Descriptive analysis of the respondents

A total of 129 valid questionnaire responses were received which fulfilled the sample size requirement. The variables that have been collected for sociodemographic data were age, gender, kulliyah or faculty, level of study, academic performance, routine visit

for dental check-up, underlying oral condition, frequency on physical activities per week, and experience of sleep disturbance. The frequency and percentage

of respondents according to their sociodemographic characteristics was presented in Table 4.

Table 4. Sociodemographic data of respondents (n=129).

Sociodemographic Characteristics	Frequency	Percentage (%)
Age		
20	25	19.4
21	22	17.1
22	51	39.5
23	21	16.3
24	7	5.4
25	3	2.3
Gender		
Male	26	20.2
Female	103	79.8
Kulliyah		
Kulliyah of Medicine	11	8.5
Kulliyah of Dentistry	10	7.8
Kulliyah of Pharmacy	23	17.8
Kulliyah of Allied Health Sciences	53	41.1
Kulliyah of Nursing	17	13.2
Kulliyah of Sciences	15	11.6
Level of Study		
Year 1	25	19.4
Year 2	28	21.7
Year 3	59	45.7
Year 4	14	10.9
Year 5	3	2.3
Postgraduate	0	0
Academic Performance		
CGPA 3.50 and above	68	52.7
CGPA 2.80 to 3.49	38	29.5
CGPA 2.00 to 2.79	1	0.8
CGPA below than 2.00	0	0.0
Pass	22	17.1
Fail	0	0.0
Routine Visit for Dental Check-up		
At least once a year	41	31.8
Every 2 years	5	3.9
Less frequents than every 2 years	8	6.2
Only go to dentist when I have problem	75	58.1
Routine Visit for Dental Check-up		
At least once a year	41	31.8
Every 2 years	5	3.9
Less frequents than every 2 years	8	6.2
Only go to dentist when I have problem	75	58.1

Do you have any of these underlying oral conditions?		
None	64	49.6
Improper alignment of teeth	38	29.5
Development of teeth problem	9	7.0
Loss of tooth structure	4	3.1
Having more than one underlying oral condition	14	10.9
During last week, how many hours did you spend on physical activities?		
5 hours or more	11	8.5
Between 2.5 and 5 hours	32	24.8
Less than 2.5 hours	60	46.5
None	26	20.2
Do you experience sleep disturbance?		
Yes	18	14.0
No	111	86.0

Note: The total of highest frequency from each category is highlighted in bold.

Level of knowledge and attitude on bruxism

Both level of knowledge and attitude on bruxism were reported as poor. The

frequency for each category were presented in Table 5.

Table 5. Level of knowledge and attitude on bruxism.

Categories	Frequency	Percentage (%)
Knowledge		
Poor	119	92.2
Moderate	10	7.8
High	0	0
Attitude		
Poor	75	58.1
Moderate	53	41.1
High	1	0.8

Note: The total of highest frequency from each category is highlighted in bold.

Sociodemographic characteristics that contribute to level of knowledge and attitude on bruxism

There was a significant different in term of knowledge on bruxism between the respondents' age ($p=0.008$) among 20 years old ($\bar{X}=8.40$, $M=8.00$) and 25 years old ($\bar{X}=19.33$, $M=18.00$), and 23 years old ($\bar{X}=7.43$, $M=6.00$) and 25 years old ($\bar{X}=19.33$, $M=18.00$). Besides, there was also a significant different in knowledge on bruxism between the Kulliyyah of respondents ($p=0.009$) which were between Kulliyyah of Pharmacy ($\bar{X}=7.48$, $M=8.00$),

Kulliyyah of Dentistry ($\bar{X}=15.00$, $M=14.00$), and Kulliyyah of Nursing ($\bar{X}=8.00$, $M=8.00$). Next, a significant different is found in term of knowledge between respondents' level of study ($p=0.024$), which were between year 1 ($\bar{X}=7.84$, $M=8.00$) and year 5 ($\bar{X}=19.33$, $M=18.00$). The comparison between sociodemographic characteristics in knowledge is shown in Table 6.

A significant difference in term of attitude on bruxism was found between the respondents' age group ($p=0.001$) among 20 years old ($\bar{X}=33.12$, $M=33.00$) and 25 years

old (\bar{X} =42.67, M=41.00). There was also a significant different in attitude on bruxism between the respondents' Kulliyah ($p < 0.01$) which were between Kulliyah of Nursing (\bar{X} =32.47, M=32.00), Kulliyah of Allied Health Sciences (\bar{X} =36.06, M=36.00), Kulliyah of Dentistry (\bar{X} =38.60, M=39.00), and Kulliyah of Sciences (\bar{X} =33.20, M=34.00). Lastly, there were a significant different in term of attitude on bruxism

between respondents' level of study ($p=0.002$) students. There were significant different between year 1 (\bar{X} =33.00, M=33.00) and year 3 (\bar{X} =35.53, M=35.00), and year 1 (\bar{X} =33.00, M=33.00) and year 5 students (\bar{X} =42.67, M=41.00). The comparison between sociodemographic characteristics in attitude is shown in Table 7.

Table 6. Comparison between sociodemographic characteristics in knowledge.

Sociodemographic Characteristics	Mean	Median	p-value
Age			
20	8.40	8.00	0.008*
21	8.73	10.00	
22	10.47	12.00	
23	7.43	6.00	
24	11.14	12.00	
25	19.33	18.00	
Kulliyah			
Kulliyah of Medicine	9.27	10.00	0.009*
Kulliyah of Dentistry	15.00	14.00	
Kulliyah of Pharmacy	7.48	8.00	
Kulliyah of Allied Health Sciences	10.26	12.00	
Kulliyah of Nursing	8.00	8.00	
Kulliyah of Sciences	8.27	10.00	
Level of Study			
Year 1	7.84	8.00	0.024*
Year 2	8.93	11.00	
Year 3	9.97	10.00	
Year 4	9.71	12.00	
Year 5	19.33	18.00	

Note: (*) Statistically significance is displayed

Table 7. Comparison between sociodemographic characteristics in attitude.

Sociodemographic Characteristics	Mean	Median	p-value
Age			
20	33.12	33.00	0.001*
21	34.50	34.00	
22	35.73	36.00	
23	34.43	35.00	
24	37.57	38.00	
25	42.67	41.00	
Kulliyah			
Kulliyah of Medicine	35.27	35.00	<0.001*
Kulliyah of Dentistry	38.60	39.00	
Kulliyah of Pharmacy	34.26	35.00	
Kulliyah of Allied Health Sciences	36.06	36.00	
Kulliyah of Nursing	32.47	32.00	
Kulliyah of Sciences	33.20	34.00	
Level of Study			
Year 1	33.00	33.00	0.002*
Year 2	34.82	34.50	
Year 3	35.53	35.00	
Year 4	35.64	36.50	
Year 5	42.67	41.00	

Note: (*) Statistically significance is displayed.

However, there was no significant different that has been found in term of knowledge and attitude on bruxism between gender, academic performance, routine visit for dental check-up, underlying oral condition, frequency in physical activities, and sleep disturbance experience.

Correlation between knowledge and attitude on bruxism

The value for Spearman’s correlation coefficient was 0.461, which indicated that there was a fair positive correlation. The p-value indicate that there is a statistically significant between knowledge and attitude scores on bruxism as the p-value was less than 0.001.

Discussion

Bruxism is an involuntary oral habit of clenching and grinding the teeth. A study by

Machado (2014) reported that the prevalence of bruxism among youth was 13%. However, the current study by Phuong (2020) found that the prevalence of bruxism has increased to 51.2%. Bruxism remains unrecognized by the bruxers as its only can be detected by dentist due to excessive wear of tooth.

According to Abd Salam (n.d.), there are many signs and symptoms of bruxism such as headache, jaw and facial pain, tooth wear, and sleep disturbance, which are able to affect the individuals’ quality of life. Decision by the bruxers to do dental check-up might be too late as the condition can be worsen and cause another episode of oral condition which is temporomandibular disorder (Achmad *et al.*, 2020).

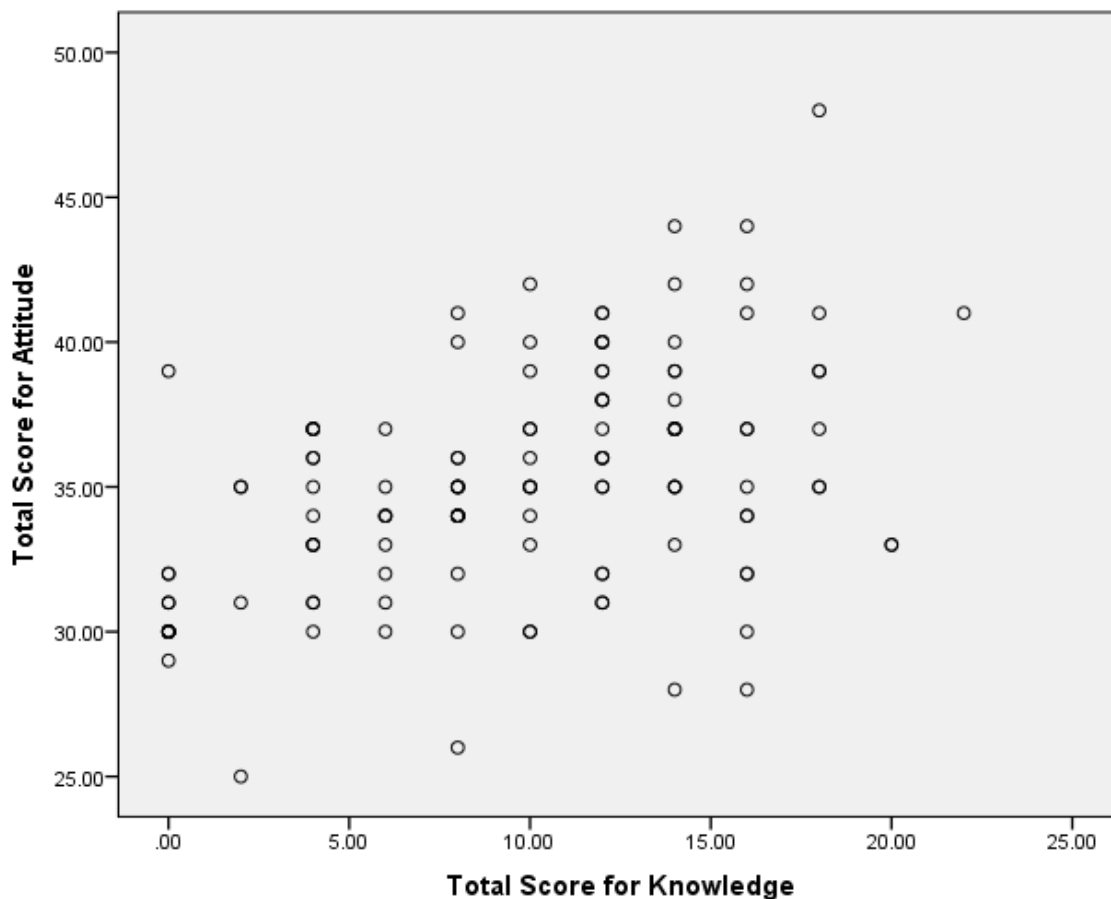


Figure 1. Correlation between knowledge and attitude on bruxism.

The first objective was to develop the questionnaire as a tool for this research. The questionnaire was developed through literature review and tested by pilot study. The advantage of developing questionnaire was to gain accurate information that needed in the study. As there was a limitation of time, the validation from expert were failed to be done. The result shown that the overall value of Cronbach alpha for knowledge and attitude on bruxism was 0.844. According to Stephanie (*n.d.*), the Cronbach's alpha value between 0.800 and 0.900 was considered as good internal consistency and reliable.

The second objective was to identify the level of knowledge and attitude on bruxism among IIUM Kuantan Campus. Both knowledge and attitude on bruxism among the respondents were poor. The result was aligned to a study in Dakshina Kannada, India by Singh *et al.* (2020) which has

reported that there is poor knowledge on bruxism. This study agreed that lack of spreading the information regarding term, risk factor, prevention and treatment of bruxism is the main reason on low knowledge among the population. The study by Inchara (2019) has also reported on low knowledge level among the bruxers. There was no study that measure the level of attitude on bruxism. Therefore, it can be concluded that lack of spreading information on bruxism lead to low knowledge and attitude among the respondents.

The highest frequency of answers by respondents was 'I am not sure'. A study by Singh *et al.* (2020) on the bruxism awareness found that the respondents were unaware on the treatment domain, as the respondents were not aware on the various treatment options. It was aligned with this study which reported that most of the respondents were not sure that the treatment on bruxism

include teeth and muscle as bruxism can lead to facial pain and headache. Besides, most of the respondents were also more comfortable to consult a physician compared to dentist when they have any jaw discomfort which the result was in agreed with the study by Singh *et al.* (2020), as the respondents were unaware on the dentist profession that actually covers on teeth and also jaw problem. The lack of awareness in this issue was due to the low spreading information towards the population.

The third objective was to determine the sociodemographic characteristics that contributes to the level of knowledge and attitude on bruxism among IIUM Kuantan Campus students. This objective was achieved by comparing the sociodemographic characteristics of the respondents which might contributes to level of knowledge and attitude on bruxism. The discussion was focusing on the knowledge and attitude based on sociodemographic characteristics of the students regarding to the oral related health as there is no previous study on level of knowledge and attitude on bruxism among students to be compared. It was found that there was significant difference in term of knowledge and attitude on bruxism between age groups. Surprisingly, this result was contrary from the finding by Abdullah *et al.* (2016) in Bertam, Penang and Abeer (2016) in Riyadh as there were no significant differences between the level of knowledge and attitude with age of the respondents as individual has different capability in understanding the knowledge and awareness that they gain despite of their age. However, it can be seen that the oldest age among the respondents in this study which was 25 years old had a higher level of knowledge (\bar{X} =19.33, M=18.00) and attitude (\bar{X} =42.67, M=41.00) on bruxism compared to other age groups. Thus, respondents with age of 25 years old have more knowledge on bruxism and able to understand it better than the other age group which will influence their attitude. Besides, different target group between previous and current study may cause the contrary findings.

Next, the result shows that there was a significant difference in term of knowledge and attitude between respondents' kulliyah or faculty. According to this result, it can be concluded that the respondents from Kulliyah of Dentistry have a better knowledge and attitude on bruxism as this study is more related to their discipline compared to the other field of study. Kulliyah of Dentistry has been reported as the highest mean score for knowledge and attitude. It is because dentistry students have a better exposure towards dental problem compared to other faculties. Therefore, the field of study was able to influence the level of knowledge and attitude on related issue, as the dentistry students have better knowledge and attitude on bruxism.

Besides, there were also a significant difference in term of knowledge and attitude between the respondents' level of study. The mean for knowledge and attitude on bruxism among Year 5 students was higher compared to other level of study, which indicated that they might have increase in knowledge and better attitude as they have gained more knowledge and awareness throughout their prolonged period of study. However, it is contrary with the finding from Malekzadeh (2018) that discovered there was no significant different in term of knowledge with students in different semesters as this study has only involved the respondents from two different semester only. There will be no difference in term of knowledge as the duration of study is about the same. Therefore, it can be said that the duration of study will contribute to the level of knowledge and attitude as there will be more exposure on the issue throughout their academic studies.

The fourth objective was to determine the correlation between knowledge and attitude on bruxism among IIUM Kuantan Campus students. It has been found out that an adequate knowledge can lead to positive attitude on the certain issue. This indicated that the lack of knowledge will be resulted in poor attitude on bruxism.

Conclusion

It is important to alert the relevant authorities regarding the output of this study. The outcome from this study recommends that there is a need of conducting an educational program that related to bruxism. This program can increase the knowledge on bruxism and its prevention. It is also hoped that the trend of symptoms, risk factor, and effects of bruxism can be reduced.

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References

- Abd Salam, S. N. (n.d.). Treatment of bruxism (Teeth grinding). *myHealth Portal*.
- Abdullah, N. F., Roslan, H., & Noor, S. N. F. M. (2016, December). Knowledge, attitude and practice of tooth wear among adults in Bertam, Penang. *In AIP Conference*, 1791(1), 20008.
- Achmad, H., Wahyuni, S., & Ramadhany, Y. F. (2020). A review the relationship of bruxism with temporomandibular disorders in children. *Systematic Reviews in Pharmacy*, 11(6), 136-142.
- Afridi, Y. M. (2018). Correlation between perceived stress and bruxism in students. *Dentistry*, 8(512), 2161-1122.
- Abeer, A., Alousaimi, M., Geeverghese, A., Ali, A., & El Metwally, A. (2016). Oral health knowledge, attitude and behavior among students of age 10-18 years old attending Jenadriyah festival, Riyadh. *The Saudi Journal for Dental Research*, 7(1), 45-50.
- Aguilera, S. B., Brown, L., & Perico, V. A. (2017). Aesthetic treatment of bruxism. *The Journal of Clinical and Aesthetic Dermatology*, 10(5), 49.
- Ahlberg, J., Piirtola, M., Lobbezoo, F., Manfredini, D., Korhonen, T., Aarab, G., ... & Kaprio, J. (2020). Correlates and genetics of self-reported sleep and awake bruxism in a nationwide twin cohort. *Journal of Oral Rehabilitation*, 47(9), 1110-1119.
- Connelly, L. M. (2008). Pilot studies. *Medsurg Nursing*, 17(6), 411.
- de Baat, C., Verhoeff, M., Ahlberg, J., Manfredini, D., Winocur, E., Zweers, P., & Lobbezoo, F. (2020). Medications and addictive substances potentially inducing or attenuating sleep bruxism and/or awake bruxism. *Journal of Oral Rehabilitation*. 48(3), 343-354.
- Guaita, M., & Högl, B. (2016). Current treatments of bruxism. *Current treatment options in neurology*, 18(2), 10.
- Inchara, R., Devi, R. G., & Jyothipriya, A. (2019). Knowledge and awareness toward bruxism during sleep. *Drug Invention Today*, 11(5).
- Kuhn, M., & Türp, J. C. (2018). Risk factors for bruxism. *Swiss Dental Journal*, 128(2), 118-124.
- Machado, E., Dal-Fabbro, C., Cunali, P. A., & Kaizer, O. B. (2014). Prevalence of sleep bruxism in children: A systematic review. *Dental press journal of orthodontics*, 19(6), 54-61.
- Malekzadeh, M., Nosrati, M., & Maleki, D. (2018). Assessment of dental student knowledge of tooth wear: diagnosis, prevalence and treatment: A randomized questionnaire-based cross-sectional study. *Journal of Dentomaxillofacial*, 7(3), 123-128.
- Phuong, N. T. T., Ngoc, V. T. N., Linh, L. M., Duc, N. M., Tra, N. T., & Anh, L. Q. (2020). Bruxism, related factors and oral health-related quality of life among Vietnamese medical students. *International Journal of Environmental Research and Public Health*, 17(20), 7408.
- Ramli, N., Rahman, N. A. A., & Haque, M. (2018). Knowledge, attitude, and practice regarding osteoporosis among allied health sciences students in a public university in Malaysia. *Erciyes Medical Journal/Erciyes Tip Dergisi*, 40(4).
- Singh, I., Shetty, M., Hegde, C., & Shetty, B. R. (2020). Knowledge and awareness regarding bruxism and its management in Dakshina Kannada population. *Indian Journal of Public Health Research & Development*, 11(7), 318.
- Smardz, J., Martynowicz, H., Wojakowska, A., Michalek-Zrabkowska, M., Mazur, G., & Wieckiewicz, M. (2019). Correlation between sleep bruxism, stress, and depression—A polysomnographic study. *Journal of Clinical Medicine*, 8(9), 1344.
- Stephanie Glen. (n.d.). Cronbach's alpha: Simple definition, use and interpretation. Retrieved from: [StatisticsHowTo.com](https://www.statisticshowto.com)
- Wieckiewicz, M., Paradowska-Stolarz, A., & Wieckiewicz, W. (2014). Psychosocial aspects of bruxism: the most paramount factor influencing teeth grinding. *BioMed Research International*, 2014,469187
- Wieckiewicz, M., & Winocur, E. (2020). Sleep bruxism—the controversial sleep movement activity. *Journal of Clinical Medicine*, 9(3),880.