ASSOCIATION OF SLEEP DEPRIVATION AND NECK PAIN AMONG INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA (IIUM) CLINICAL YEAR STUDENTS

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ABSTRACT

Background: Sleep deprivation disrupts the quality of life. Neck pain is attributed to sleep deprivation as reported in previous literatures. Clinical students are prone to have sleep deprivation and neck pain due to long study hours. This study aimed to determine the prevalence of sleep deprivation, neck pain and its association among undergraduate students during the clinical years. **Methods**: Cross-section study was performed by selecting 152 students from International Islamic University Malaysia (IIUM) participated in this study. In this study, the Pittsburgh Sleep Quality Index (PSQI), and Nordic questionnaires were used to survey the prevalence of sleep deprivation and neck pain. **Results**: 63.8% of the respondents suffered from sleep deprivation for the past month. The prevalence of neck pain among students during the clinical year was 36.2% for the past week and 50.7% for the past 12 months. Despite the high prevalence of sleep deprivation and neck pain, there is no significant association between sleep deprivation and neck pain both for the past week, $X^2(1, N=152) = 0.149$, $p > 0.05$ and for the past 12 months, $X^2(1, N=152) = 2.694$, $p > 0.05$. **Conclusion:** The prevalence of sleep deprivation and neck pain among IIUM Kuantan were determined despite no significant association between them.

Keywords: sleep deprivation, neck pain, clinical year students

INTRODUCTION

The vital role of sleep in preserving mental health, high-level cognitive functions and general wellbeing gain considerable attention. Hershner (2015) claims that sleep deprivation is related to a college student that they sometimes could not recognize and realize. Clinical students are known to have lesser time of sleeps. 8% were reported to sleep only during day and 30% claimed having poor sleep quality with average time of sleep is at 01:53 am each night (Alsaggaf, Wali, Merdad, & Merdad, 2016). Sleep deprivation can be one of the risk factors of neck pain among adolescent (Auvinen, et al., 2009). Neck pain is described as neck ache associated with cervical pain in which every person will experience it at least once in a lifetime. Any age of people can be affected by neck pain including young adult. Nevertheless, 46% of undergraduate students develop neck pain after 1 year follow up (Kanchanomai, Janwantanakul, Pensri, & Jiamjarasrangsi, 2011). Alshagga, et al., 2013, reported that being in clinical year is twice likely to have neck pain. Probably because they maintain in work posture likes standing for long term period and having occupational stress. This may lead to deprivation of sleep. Individual with sleep deprivation commonly reported developing a musculoskeletal pain in a long-term period (Generaal Vogelzangs, W.J.H, & Dekker, 2017). Therefore, the current study evaluated the association of sleep deprivation and neck pain among clinical years students of Kulliyah of Allied Health Sciences, IIUM Kuantan Campus.

MATERIALS AND METHODS

Subjects

This study was conducted from February to May 2019 at International Islamic University Malaysia, Kuantan Campus. Sample size was calculated using single proportion formula (Charan & Biswas, 2013). 152 respondents were chosen based on convenience sampling. The inclusion criteria of the study were both male and female clinical students having clinical training at hospitals or clinical settings at past months (12 months). Subjects having history of neck trauma due to motor vehicle accidental and sport injury were excluded in the study. The study protocol was approved by the local institution research committee (KPGRC, 087/19) and conducted following the ethical guidelines of the Declaration of Helsinki. All subjects were given informed consent to participate in the study.

Procedures

Pittsburgh Sleep Quality Index (PSQI) questionnaire was used to evaluate the sleep deprivation among the subject population. It is a self-rated questionnaire consist of nineteen individuals items with seven scores of subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction (Buysse, et al., 2008). Nordic questionnaire was used to evaluate the neck pain during the past week and last 12 months. It consists of standardized questionnaire methodology allowing comparison of low back, neck, shoulder and general complaints for use in epidemiological studies (Kuorinka, et al., 1987 & Crawford, 2007). Both questionnaires were distributed to IIUM student with consent information and the personal information of name, age, genders, and year of study.

Statistical Analysis

The statistical analysis was performed by using SPSS Software, Statistical Package for Social Science (version 12.0.1). The prevalence data of neck pain and sleep deprivation was analyzed by using descriptive analysis. The chi-square test was used to find the association between these variables. The values were considered significant at 95% confidence of interval ($P < 0.05$).

RESULTS

One hundred and fifty-two IIUM students participated in this study. Majority of the students were female (88.8%) and the rest were male students (11.2%). About 85.5% from 152 students were in year 4 while 14.5% were in year 5. Most of the students were from medicine (17.8%) while the least was from radiography (3.9%) (Table 1).

Table 1 Demographic characteristic of participants (n = 152)

Variable		*N (152)*	*%*
Gender	Male	17	11.2
	Female	135	88.8
Year of study	4	130	85.5
	5	22	14.5
Course	Physiotherapy	7	4.6
	Audiology	20	13.2
	Dietetic	11	7.2
	Radiology	6	3.9
	Optometry	22	14.5
	Nursing	17	11.2
	Pharmacy	20	13.2
	Dentistry	22	14.5
	Medicine	27	17.8

Majority of the students had a poor sleep (63.8%) while the rest had a good sleep quality (36.2%). Based on the PSQI, most of the student scored 6 (17.1%), indicated poor sleep quality. The highest score of PSQI among the participant was 14 (0.7%) while the lowest score was 2 (3.3%) (Table 2).

Table 2: Total score of PSQI

Total score	**Frequency**	**Percent (%)**
2	5	3.3
3	10	6.6
4	17	11.2
5	23	15.1
6	26	17.1
7	19	12.5
8	15	9.9
9	18	11.8
10	12	7.9
11	2	1.3
12	2	1.3
13	2	1.3
14	1	0.7
Total	152	100.0

The prevalence of neck pain for the past seven 7 weeks was 36.18%. About 50.66% from 152 students claimed having neck pain for the past 12 months (Figure 1)

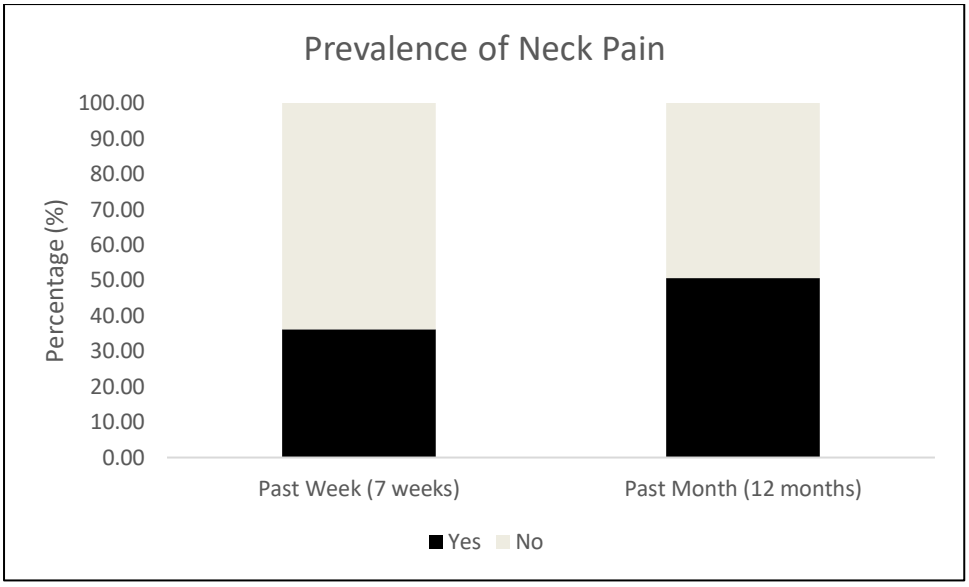

Figure 1 Prevalence of neck pain for the past week (n = 152)

Table 3 Association between sleep quality and neck pain for the past week (n = 152)

Variables		*Neck Pain (past 7 days)*		*Chi-square statistic*	*p-value*
Sleep quality		**Yes**	**No**	**(df)**	
		N (%)	**N (%)**		
	Good sleep	21 (13.8%)	34 (22.4%)	0.149 (1)	0.700
	Poor sleep	34 (22.4%)	63 (41.4%)		

Table 3 shows the association between sleep quality and neck pain. About 22.4% of the participants with poor sleep quality also complained of neck pain. However, most of the participants that suffered from sleep deprivation do not have neck pain (41.4%). In addition, sleep deprivation and neck pain for the past week were not significantly associated, $X^2(1, N=152) = 0.149$, $p > 0.05$.

Table 4 Association between sleep quality and neck pain for the past 12 months (n = 152)

Variables		*Neck Pain (past 12 months)*		*Chi-square statistic*	*p-value*
Sleep quality		**Yes**	**No**	**(df)**	
		N (%)	**N (%)**		
	Good sleep	23 (15.1%)	32 (21.1%)	2.694 (1)	0.101
	Poor sleep	54 (35.5%)	43 (28.3%)		

Table 4 shows the association between sleep quality and neck pain for the past 12 months. It shows that there is no association between sleep deprivation and neck pain for the past 12 months, $X^2(1, N=152) = 2.694$, $p > 0.05$. However, the number of people that sufferred from sleep deprivation and neck pain is higher compared to those not having the pain. About 35.5% of 152 participants having sleep deprivation also complain of neck pain for the past 12 months while the rest does not complain of neck pain (28.3%).

DISCUSSION

The results of this study showed that more than half of the participants sufferred from sleep deprivation. A total of 97 students (63.8%) having sleep deprivation for the past months (12 months). The prevalence of sleep deprivation among IIUM students is higher than a study conducted at King Abdulaziz University, Jeddah, KSA (Alsaggaf, Wali, Merdad, & Merdad, 2016). According to the study, sleep deprivation is common in clinical year medical students. About 30% from 305 students claimed to have poor sleep quality. High level of stress and emotional exhaustion are the main factors of the sleep deprivation among medical students. They are having full schedules of training at the hospital and need to work hard to maintain their grade.

The result of the current study is comparable to a study by Lund, Reider, Whiting, and Prichard (2010) in which the prevalence of poor sleeper among college students is 60%. In a recent study by Patrick et al. (2017) sleep deprivation is common within the college student population due to the burden of academic and performance. This is supported with a study by Hershner & Chervin, 2014, 70% from the subject population reported having insufficient sleep which is much higher compared to the current study with 63.8%. They claim that sleep deprivation is pulling an all-nighter where the students staying up for the whole night or longer. There are many causes of sleep deprivation among students such as caffeine to make them stay awake during the night. They stay awake in the night to study for hoping to get a good result and better performance.

Getting enough and good sleep quality is vital for a college student. However, most of the student did not achieve the recommended duration of sleep for young adult which is 7-9 hours per day (Hirshkowitz, et al., 2015). This shows a huge number of IIUM students have a sleep deprivation specifically during a clinical year.

About 36.2% of the participants having neck pain for the past week. However, the prevalence of participants that having neck pain for the past 12 months reaching up to 50.7%. In our study, some of the participants having neck pain that onset only for the past week. On the other hand, there are also participant having neck pain that onset for the past year, that may persist or not until the past seven days.

The prevalence of neck pain for the past year is higher compared to a study by Kanchanomai, Janwantanakul, Pensri, & Jiamjarasrangsi (2011) in which 46% of 684 undergraduate students develop neck pain after 1 year follows up. Moreover, it becomes much higher when compared to a study conducted at Malaysian Medical College that reported the prevalence of neck pain among medical students for the past 12 months reached up to 41.8%. Similarly, the prevalence of neck pain for the past week is much higher (36.2%) than the previous study (24.1%) (Alshagga, et al., 2013).

On the other hand, another study by Algarni, et al., 2017, shows 56.5% from 265 students claim to have neck pain for the past year which is slightly higher compared to the current study. However, the prevalence of neck pain for the past week is 24.1% (n=113) which is lesser than our study. Thus, it shows a huge number of IIUM students experienced neck pain throughout the last 12 months.

This study found that there is no significant association between sleep deprivation and neck pain for the past week since the p-value is 0.700 ($p > 0.05$). 22.4% of the participants that having poor sleep quality complaint of neck pain for the past week. However, most of the participants that suffer from sleep deprivation do not have neck pain for the past week (41.4%). Similarly, there is no association between sleep deprivation and neck pain for the past 12 months, since the p-value is 0.101 ($p > 0.05$). Despite there is no association between both variables, the number of people that suffer from sleep deprivation and neck pain is higher compared to not having pain. About 35.5% of 152 participants having sleep deprivation, complaint of neck pain for the past 12 months while the rest not complaint of neck pain (28.3%). Nevertheless, it should be noted that other studies indeed reported significant association between sleep deprivation and neck pain. In a study by Auvinen, et al., 2009, sleep deprivation predicted neck pain among adolescent after one year followed up. 87.3% of 137 female adolescents and 60.3% of 41 male adolescents that suffer from insufficient of quality and

quantity of sleep, developed a neck pain after 2 years followed up. This is supported by Generaal, Vogelzangs, W.J.H, & Dekker (2017) and Chun, et al. (2018) that claims there is an association between insomnia and short sleep duration with chronic musculoskeletal pain. Probably as this study is not a long-term study, as both of previous study were conducted within 2 years and 6 years followed up. The current study does not include a follow up from the subject regarding the development of neck pain. Therefore, there is not enough to proof that sleep deprivation can cause neck pain within a short time period.

According to Kanchanomai, Janwantanakul, Pensri, & Jiamjarasrangsi, 2011 and Alshagga, et al. 2013, neck pain is multi-factorial origin that can be caused by individual, physical and psychosocial. For example, excessive computer use may become the factor of computer use. This is supported with a recent study by Riaz, H., 2018, that computer use for a long time and in improper posture can develop a neck pain in future. Based on the study, the position of the computer screen either higher or lower than eye level can increase the muscle activity of neck extensor and neck flexor and increase the compressive loading to the neck. In a long term, it can be harmful and cause injury to the neck.

Based on the prevalence, as mentioned above, it was found that the number of college students that having sleep deprivation and neck pain was high. However, this study still unable to prove that there is a significant association between sleep deprivation and neck pain among student during the clinical year. The previous study only reported there is an association between both factors among adolescent populations.

The result of this research is in contrast with the current hypothesis found that there is an association between sleep deprivation and neck pain. However, the main concern was the high prevalence of sleep deprivation and neck pain among clinical year student is alarming. Based on the finding, indicate the need for primary and secondary prevention measures for sleep deprivation and neck pain among students.

CONCLUSION

Sleep deprivation is common among IIUM student specifically during the clinical year where more than half of the respondents reported having poor sleep for the past month (12 months) . It becomes a major concern because sleep deprivation has a short-term and long-term effect. Apart from that, the study also shows the prevalence of neck pain among students which is half of the respondent complaint of neck pain for the past 12 months. While the percentage of a student having neck pain for the past week almost reach a quarter of the respondents. Despite the high prevalence of sleep deprivation and neck pain, there is no significant association between both variables. Sleep deprivation does not associate with neck pain for the past 12 months. Similarly, there is no significant association between sleep deprivation and neck pain for the past week. More studies are needed to study the relationship of sleep deprivation and neck pain with inclusion of more factors hence giving a better understanding on the issue concerned.

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