

ASSOCIATION OF SLEEP DURATION AND INSOMNIA WITH MENSTRUAL SYMPTOMS AMONG YOUNG WOMEN IN UTAR SUNGAI LONG: A CROSS SECTIONAL STUDY

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Abstract-

Background: Insomnia have been a common sleeping problem encountered by many people in this era of globalization. Studies have shown higher prevalence of insomnia occur in women, especially those with menstrual symptoms during their menstruation. However, the exact cause of this phenomenon had not been investigated and studied further.

Objective: To investigate the association between insomnia, sleeping duration with menstrual symptoms among young women in University Tunku Abdul Rahman, UTAR in Sungai Long.

Methods: Questionnaires are distributed randomly to young women in UTAR Sungai Long through Google Form due to the outbreak of the global pandemic, Covid-19. The target participants aged between 18 to 25 years old. 393 responses are selected after careful filtration and screening.

Results: Three hundred and ninety-three responses are selected after careful filtration and screening among all the responses from the participants aged between 18 to 25 years old. Most of the participants with menstrual and premenstrual symptoms showed a higher prevalence with insomnia in the study.

Conclusion: In conclusion, strong association and correlation between menstruation with insomnia is identified, but fairly association has been indicated between premenstrual and menstrual symptoms with duration of sleep among all the female participants. Headache during the premenstrual period, taking pain medication and backache during menses are the exception.

Keywords: sleep duration, insomnia, menstrual symptoms.

I Introduction

Sleep is a complex repetitive phenomenon and behaviour of humans. Sleep deprivation will cause adverse effects and consequences to individuals, not only affecting the individual's concentration to work, it may even bring issues to physical, psychological health and memory deterioration (American Sleep Society, 2019). Cyclical changes in the development in oestradiol, follicle stimulating hormone, luteinizing hormone, progesterone, prolactin and growth hormone indicate the normal menstrual cycle in a healthy woman (Driver and Baker, 1998). A normal, complete menstrual cycle is 28 days. The menstrual cycle starts with menstruation (usually for 3 to 5 days). Issues of premenstrual and menstrual symptoms are very general in adolescents. Students at university complain of unable to attend classes, pay attention to study, doing homework and housework tasks due to severe PMS. The factors that lead to PMS is because of academic stress, anxiety and depression (Balaha *et al.*, 2010). Average sleeping hours for undergraduate students is less than six hours. Students always decided to study for examinations to sacrifice their sleep (Zeek *et al.*, 2015). Insomnia is a common condition but have been known to occur more during the time of menstruation. Women with premenstrual syndrome (PMS) have more insomnia as compared to women with no PMS. Though the cause of menstrual disturbances is not clear, adapting sleep as a preventive measure for menstrual issues can be advantageous as disrupted sleep habits like poor sleep quality, difficulty initiating or maintaining sleep, or short sleep duration are common in women who have menstrual issues every and discomfort every month.

II Research Methods

A cross-sectional study was used to conduct in this research to identify the association between the duration of sleep and insomnia with menstrual symptoms among young female in UTAR Sungai Long. The sampling method is simple random sampling. Young women in aged 18 to 25 years, who are willing to participate in the study and students that

have insomnia were eligible to participate as well. Total collection of 404 participants, 393 students were selected. Additional 10% of sample size was included. Menstrual symptom questionnaire and Pittsburgh sleep quality index questionnaire are used as instruments.

III Result and Discussion

Question of figure 12: I feel irritable, easily agitated, and am impatient a few days before my period

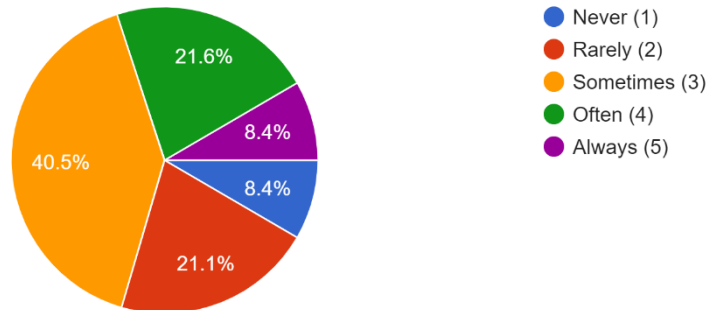
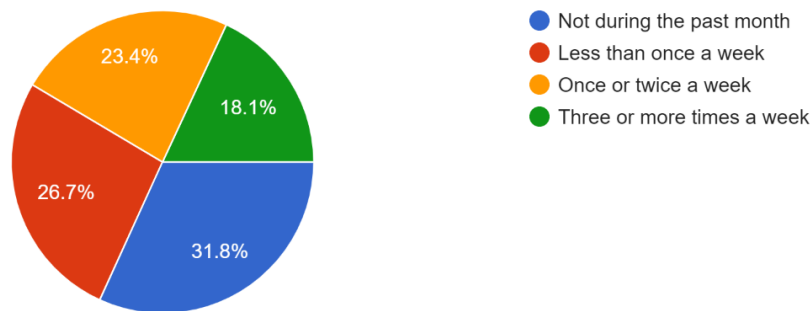


Figure 12: Pie Chart for Irritation, Agitation and Impatience of Participants

Among the 393 participants, 159 participants (40.5%) occasionally experienced agitation, irritation and impatience a few days before her period. 21.6% of the total participants experienced this phenomenon and 33 of the totals (8.4%) always experienced these phenomena before their period.

During the PAST month, how often have you had trouble sleeping because you cannot get to sleep within 30 minutes



From the PSQI questionnaire, 92 participants (23.4%) of the total 393 participants cannot get to sleep within 30 minutes for once or twice in a week. There are up to 71 of the total participants (18.1%) in our university experience difficulties in sleep initiation for more than three times in a week. However, still have 125 participants (31.8%) did not have issue of sleep within 30 minutes over the past month.

	PSQI Score		
	Insomnia (>5)	No Insomnia (<5)	Grand Total
Premenstrual symptoms			
Never (1)	406	612	1018
Rarely (2)	624	616	1240
Sometimes (3)	628	468	1096
Often (4)	358	265	623
Always (5)	195	151	346
Grand Total	2211	2112	4323
Menstrual symptoms			

Never (1)	699	822	1521
Rarely (2)	660	615	1275
Sometimes (3)	683	519	1202
Often (4)	375	347	722
Always (5)	196	193	389
Type 1: Yes	123	108	231
Type 2: Yes	93	71	164
Grand Total	2829	2675	5504

Table 3: PSQI scores for Premenstrual and Menstrual Symptoms of Participants

Based on the PSQI questionnaire calculation, to compare the insomnia problem during premenstrual period or menstrual period over the 393 responses. This table shows that most of the young females in UTAR Sungai Long have bad sleep during the follicular phase rather than in the luteal phase due to the beginning of the menstruation. Before the menstruation period begins, over all the young females reported that premenstrual symptoms affect them to have insomnia more than no insomnia during the past month. Most of the time, females will have bad sleep when the menses start. Participants who are in Type 1 or Type 2 dysmenorrhea dominantly have bad quality of sleep.

Symptoms	Insomnia n (%)	No insomnia n (%)	POR (95% CI)	P-value
Premenstrual				
Premenstrual irritability	-	-	1.933 (1.244-3.006)	0.004
Yes	155 (56.0)	122 (44.0)		
No	46 (39.7)	70 (60.3)		
Premenstrual depression	-	-	1.033 (0.689-1.549)	0.918
Yes	123 (51.5)	116 (48.5)		
No	78 (50.6)	76 (49.4)		
Premenstrual abdominal pain (1 day)	-	-	2.680 (1.780-4.035)	<0.001
Yes	133 (62.1)	81 (37.9)		
No	68 (38.0)	111 (62.0)		
Premenstrual fatigue	-	-	1.284 (0.847-1.948)	0.245
Yes	137 (53.3)	120 (46.7)		
No	64 (47.1)	72 (52.9)		
Premenstrual tension	-	-	1.307 (0.876-1.950)	0.221
Yes	121 (54.0)	103 (46.0)		
No	80 (47.3)	89 (52.7)		
Premenstrual backache	-	-	1.604 (1.075-2.394)	0.026
Yes	103 (57.5)	76 (42.5)		
No	98 (45.8)	116 (54.2)		
Premenstrual breast tenderness	-	-	1.345 (0.905-2.000)	0.158
Yes	107 (54.9)	88 (45.1)		
No	94 (47.5)	104 (52.5)		
Premenstrual weight gain	-	-	1.485 (0.962-2.292)	0.080
Yes	69 (58.0)	50 (42.0)		
No	132 (48.2)	142 (51.8)		
Premenstrual abdominal discomfort (more than 1 day)	-	-	1.700 (1.120-2.582)	0.015
Yes	84 (59.6)	57 (40.4)		
No	117 (46.4)	135 (53.6)		
Premenstrual abdominal bloating	-	-	1.287 (0.866-1.913)	0.227
Yes	110 (54.2)	93 (45.8)		
No	91 (47.9)	99 (52.1)		
Premenstrual headache	-	-	1.907 (1.175-3.096)	0.011

Yes	57 (63.3)	33 (36.7)		
No	144 (47.5)	159 (52.5)		
Menstrual				
Menstrual cramps	-	-	1.033 (0.689-1.549)	0.918
Yes	123 (51.5)	116 (48.5)		
No	78 (50.6)	76 (49.4)		
Know menstrual onset by calendar	-	-	1.734 (1.136-2.645)	0.011
Yes	145 (55.8)	115 (44.2)		
No	56 (42.1)	77 (57.9)		
Menstrual prescription pain medication	-	-	0.808 (0.541-1.207)	0.309
Yes	111(48.9)	116 (51.1)		
No	90 (54.2)	76 (45.8)		
Menstrual weakness	-	-	1.437 (0.689-2.998)	0.361
Yes	19 (54.4)	13 (40.6)		
No	182 (50.4)	179 (49.6)		
Menstrual diarrhoea	-	-	1.343 (0.892-2.022)	0.177
Yes	83 (55.7)	66 (44.3)		
No	118 (48.4)	126 (51.6)		
Menstrual aspirin	-	-	2.237 (1.030-4.858)	0.043
Yes	22 (68.8)	10 (31.3)		
No	179 (49.6)	182 (50.4)		
Menstrual lower back/ abdominal pain	-	-	1.483 (0.996-2.208)	0.055
Yes	117 (55.7)	93 (44.3)		
No	84 (45.9)	99 (54.1)		
Menstrual heat comfort	-	-	1.073 (0.709-1.624)	0.752
Yes	132 (51.8)	123 (48.2)		
No	69 (50.0)	69 (50.0)		
Menstrual constipation	-	-	1.292 (0.806-2.070)	0.339
Yes	51 (56.0)	40 (44.0)		
No	150 (49.7)	152 (50.3)		
Menstrual pain spasm	-	-	1.521 (1.011-2.288)	0.049
Yes	133 (55.2)	108 (44.8)		
No	68 (44.7)	84 (55.3)		
Dull continuous pain	-	-	1.126 (0.751-1.687)	0.607
Yes	124 (52.3)	113 (47.7)		
No	77 (49.4)	79 (50.6)		
Menstrual backache	-	-	1.963 (1.313-2.934)	0.001
Yes	112 (59.9)	75 (40.1)		
No	89 (43.2)	117 (56.8)		
Menstrual nausea	-	-	1.465 (0.984-2.181)	0.069
Yes	106 (56.1)	83 (43.9)		
No	95 (46.6)	109 (53.4)		
Dysmenorrhea type	-	-	1.266 (0.747-2.144)	0.422
Yes	170 (52.1)	156 (47.9)		
No	31 (46.3)	36 (53.7)		
Total number (N)	201 (51.1)	192 (48.9)	-	-

Table 4: Prevalence Odds Ratios and Confidence Intervals with P-values of Premenstrual and Menstrual Symptoms in Association with Insomnia

**Assumption made:

1. With symptoms (calculation for options sometimes, often and never); No symptoms (calculation for options never and rarely)
2. For question 25, assume that with symptoms (Type 1, Type2 and both); No symptoms (none of both)

3. n = numbers
4. % =percentage
5. POR= prevalence odds ratio

Discussion

All the participants are young women aged between 18 to 25 years old. Among the 393 respondents in 53.9% are aged between 18 to 20 years old, 45% aged between 21 to 24 years old and only 1% of the total respondents aged above 25 years old. Most of the participants, 45.3% out of the total participants in this study, sleep in an average of six to seven hours per day. 27.2% of the participants sleep more than seven hours per day. 25.2% of the total 393 participants sleep for about five to six hours per day. Only 2.3% of the participants sleep less than 5 hours. This suggests that young women have a relative inadequate sleeping hours per day in reference to the general sleeping duration requirement of seven to nine hours for an adult to support optimal health (National Sleep Foundation, 2020). Nearly half of the participants experience premenstrual irritability before menstruation during the luteal phase, about 22% women often experience mood irritability and up to 9% of total female participants always have this before their menstruation. Upto 30% of the women participants sometimes feel depressed, 20% often have low mood levels and up to 6% of the participants always feel depressed.

Symptoms such as premenstrual irritability (p value = 0.004), premenstrual abdominal pain on one day (p value = <0.001), premenstrual backache (p value = 0.026), , premenstrual headache (p value = 0.011), took aspirin during menstruation (p value = 0.043), menstrual pain spasm (p value = 0.049) and menstrual backache (p value = 0.001) have shown p-value < 0.05 with a relatively higher probability in occurrence, associated with insomnia phenomenon. Thus, we suggested that there is a strong association between premenstrual symptoms, menstrual symptoms and insomnia with the support of evidence from other in-line studies. As for sleeping duration, the percentages of occurrence of the premenstrual and menstrual symptoms are quite inconsistent among the responses. In short, young female students had six to seven hours of sleep for the past month but still facing the problem as others who sleep less than 5 hours. However, sleeping more than 7 hours every day is the second highest vote to distressing the same issues. Somehow, there are three exception shows that the p value < 0.05 meaning that only these 3 symptoms out of 25 symptoms are correlated with duration of sleep which are premenstrual headache (p value = 0.016), menstrual prescription pain medication (p value = 0.033) and menstrual backache (p value = 0.051). Thus, it is suggested that premenstrual and menstrual symptoms have weak association with sleep duration.

IV Conclusion

In conclusion, sleep is important during menstruation to relieve the menstrual symptoms. Premenstrual irritability, premenstrual abdominal pain, low back pain backache, premenstrual abdominal discomfort, premenstrual headache, are strongly association and correlation with insomnia. Premenstrual and menstrual symptoms are fairly associated with duration of sleep among all the female participants. Headache during the premenstrual period, taking pain medication and backache during menses are the exception.

However, more studies and investigation are needed to understand the mechanism and relationship better. Larger sample size from different or larger geographical areas and settings should be considered to improve the reliability of the results among different age groups of women.