

Sleep Duration And Depression Among Adolescents From Two ASEAN Countries

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ABSTRACT - Of particular concern from a health perspective is the evidence that many adolescents appear to get insufficient amounts of sleep. Sleep patterns change considerably from childhood to early adulthood, with dramatic shifts occurring during adolescence, with a tendency towards delayed sleep times and wake-up times. Poor or altered sleep in adolescent patients may trigger and maintain many psychiatric. This study aimed to measure the relationship between sleep duration and depression among adolescents from Indonesia and Philippines. The design of this study was cross-sectional and included 187 senior high students from selected schools in both countries. Instrument were sleep diary and short mood and feeling questionnaire. Data were analyzed by logistic regression test. The result showed that p-value of 0.007, means that there is significant relationship between sleep duration and depression. The Odd ratio analysis demonstrated that the lower is the sleep duration, the higher is the chance of having depression. It is concluded that short sleep duration is correlated with depression. It is recommended that the local school district also limit extra-curricular activities in the late-afternoon.

Keywords: sleep duration, depression

1. INTRODUCTION

The onset of adolescence is also a time of both physiological and social changes that affect sleep. Of particular concern from a health perspective is the evidence that many adolescents appear to get insufficient amounts of sleep; this is seen in the context of a growing recognition of the importance of sleep not only for physical health, but also for cognitive and affective function (Sadeh, Dahl, Shahar, & Rosenblat-Stein, 2009). Sleep patterns change considerably from childhood to early adulthood, with dramatic shifts occurring during adolescence, with a tendency towards delayed sleep times and wake-up times (Ouyang et al., 2009). Similarly, many students and their families do not understand the impact of poor sleep on health and what constitutes poor or good sleep habits (Olds, Maher, Blunden, & Matricciani, 2010). Amounts of sleep reported by adolescents vary across countries and regions; however, the overall patterns of later sleep timing and diminished sleep across adolescence are reported by most investigators (Carskadon, 2011). Poor or altered sleep in adolescent patients may trigger and maintain many psychiatric and physical disorder or combination of these conditions, which presumably hinder recovery and may cross into later stages of life (Brand & Kirov, 2011). Short sleep duration could play a role in the etiology of depression. Rates of depression dramatically increase during adolescence (Lock & La Via, 2015). Anthropologists have identified sleep behaviors strongly conditioned by cultural beliefs and practices. There are human variations in sleep practices and patterns exist, but little documentation of cross-cultural variation in sleep is available. This lack of attention is at least partly a reflection of the long-held assumption that sleep is entirely biological (Knutson, 2013). Many sleep-related studies were conducted in western countries but very few in Asian countries which have different culture that affect sleep habits.

2. MATERIALS AND METHOD

This study used quantitative-non experimental method, particularly _descriptive comparative design with cross-sectional approach. Instruments in this consist of sleep diary and Short Mood Feeling Questionnaire (SMFQ-C). Sleep diary was formulated by researcher and was validated and approved by research experts. The respondents were asked to keep a record of their bedtime and their wake-up time both daytime sleep and night sleep for 2 consecutive weeks prospectively. Sleep duration was grouped into ≤ 6.59 hours, 7.00 to 7.59 hours, 8.00 to 8.59 hours, and ≥ 9.00 hours. Group 8.00 to 8.59 hours as the standard group for the recommended sleep duration. The second instrument was Short Mood and Feeling Questionnaire is self-reported by children (Angold, Costello, Pickles, Winder, & Silver, 1987).

This study was conducted in selected high schools in Demak City, Central Java Province, Indonesia and City of Manila, Philippines. Respondents of the study included students grade level 10 from State of High School 1 Demak City and Juan Sumulong High School, City of Manila as many as 187 students which was ninety five (95) and ninety two (92) Indonesia and Philippines respectively. To determine the relationship between sleep duration and depression, logistic regression was used.

3. RESULTS AND DISCUSSION

Profile Variables among Respondents in terms of:

Table 1. Frequency and Percentage Distribution of Respondents according to Country.

Country	f (n)	%
Indonesia	95	50.8
Philippines	92	49.2
Total	187	100

The result of the study clearly indicates that the majority of the students were Indonesian.

Table 2. Frequency and Percentage Distribution of Respondents according to Gender.

Gender	f (n)	%
Male	79	42.2
Female	108	57.8
Total	187	100

Based on the results of the study, majority of the respondents of the study were females.

Table 3. Relationship between Sleep Duration and Depression of the Respondents in Indonesia and in the Philippines.

Average sleep duration	Indonesia		Tot	OR & 95% CI	P value
	No depression f (n)	Depression f (n)			
≥ 9.00	5	0	5	0.000 (0)	0.001
.00 to ≤ 8.59	23	8	31	-	
.00 to ≤ 7.59	23	15	38	1.875 (0.67-5.28)	
≤ 6.59	6	15	21	7.188 (2.08-24.9)	
Average sleep duration	Philippines		Tot	OR & 95% CI	P value
	No depression f (n)	Depression f (n)			
≥ 9.00	3	1	4	0.51 (0.05-5.48)	0.436
.00 to ≤ 8.59	20	13	33	-	
.00 to ≤ 7.59	13	17	30	2.01 (0.74-5.49)	
≤ 6.59	13	12	25	1.42 (0.50-4.06)	

As illustrated in Table 3, the p value of 0.001, means that the null hypothesis is rejected, while the p value

of 0.436 means that the null hypothesis is accepted. It also means that there is significant relationship between sleep duration and depression of the respondents in Indonesia, while there is no significant relationship between sleep duration and depression in the Philippines.

Table 4. Relationship between Sleep Duration and Depression in both countries

Average sleep duration	No Depression f (n)	Depression f (n)	Total	OR and 95%CI	P value
≥ 9.00	8	1	9	0.256 (0.03–2.18)	0.007
8.00 to ≤ 8.59	43	21	64	-	
7.00 to ≤ 7.59	36	32	68	1.82 (0.90–3.69)	
≤ 6.59	19	27	46	2.91 (1.33–6.38)	

As shown in Table 4, out of forty six (46) of respondents who slept less than six hours and fifty nine minutes (≤ 6.59), twenty seven (27) or 14.4% had depression. Then, from sixty eight (68) respondents who slept seven to seven hours and fifty nine minutes (7.00 – 7.59), thirty two (32) or 17.1% were depressed. The p value of 0.007, means that there is significant relationship between sleep duration and depression.

Increasing changes and activities during adolescence makes respondents at high risk of having short sleep time. Furthermore, adolescents people may sleep restlessly as their mind reworks the day's tension; even long periods of sleep, therefore may not leave them feeling refreshed. As a consequence, the teens are at high risk of getting psychological disorders.

The Odd ratio analysis demonstrated that respondents who slept less than six hours and fifty nine minutes (≤ 6.59), tend to experience depression 7.18 times higher than those who slept eight (8) hours (standard group). Then, respondents who slept for seven to seven fifty nine (7.00 – 7.59), tend to have depression 1.87 times than those in standard group. It means that the lower the sleep duration, the higher is the possibility of having depression. The p value of 0.436, means that there is no significant relationship between sleep duration and depression of the respondents in the Philippines. This insignificant relationship was observed in the Odd ratio analysis which demonstrated that respondents who slept less than six hours and fifty nine minutes (≤ 6.59), tend to experience depression 1.42 times higher than those who slept eight (8) hours (standard group). Then, respondents who slept for seven to seven fifty nine (7.00 – 7.59), tend to have depression 2.01 times higher than those in standard group (8.00 to 8.59).

The difference of effect size between Indonesia and Philippines is moderately high. Effect size is specified by the difference between the proportion of subjects expected to have the outcome (depression) in one group and the proportion expected in the other group. The effect size in Indonesia is 0.2 while in the Philippines is 0.06. Therefore, the results for the relationship between sleep duration and depression in Indonesia is significant. This means that the findings support the prediction or outcome. It is certain that sleep duration has something to do with depression. But in the Philippines, it can not be said that sleep hours is the reason of depression. Presumably, there are other factors that cause depression in the Philippines.

According to DeLaun and Ladner, (2011) the sleep-wake cycle influences and regulates physiological function and behavioral responses. Circadian rhythms influence the pattern of major biological and behavioral functions. The predictable changing of mood depend on the maintenance of the 24-hour circadian cycle. The typical adolescent is subject to a number of changes such as school demands, and after-school social activities, which reduce the time spent sleeping. Shortened sleep time often results in excessive daytime sleepiness.

This matches with the finding of the study conducted by (Pasch, Laska, Lytle, & Moe, 2011) that explored how weekday and weekend sleep patterns are related to adolescent depressive symptoms, from 242 youth (age 16.4 years). This is consistent with the study of (Glozier et al., 2010) that discovered shorter sleep duration was linearly associated with psychological distress: relative risk (RR) 1.14 (95%CI 1.12 to 1.15). Roman, Walstra, Luiten, & Meerlo, (2005), explained that frequently disrupted and restricted sleep is a

rapidly increasing problem that may contribute to the development of diseases such as depression. One of the proposed neurobiological mechanisms underlying depression is a disturbance in the brain's serotonergic neurotransmission, particularly a desensitization of the serotonin (5-HT)_{1A} receptor system. This matches well with Novati et al., n.d. (2008) and also confirms earlier findings that sleep restriction for a week caused a blunted pituitary ACTH response. The blunted pituitary response may be related to reduce sensitivity of serotonin-1A receptors and/or receptors for corticotropin-releasing hormone (CRH), since sleep restricted showed similar reductions in ACTH release. Importantly, the desensitization of the 5-HT_{1A} system persisted for many days even with unlimited recovery sleep. Normalization occurred gradually but required at least 7 days.

The rate of adolescent depression rapidly increases in teens and is higher during developmental period relative to childhood and adulthood. The rapid peaking of these psychiatric conditions in teens is associated with the behavioral changes that hallmark adolescence. Preserving normal overnight sleep architecture appears critically important for successful physical, cognitive, and psychological functioning (Brand & Kirov, 2011).

The characteristics of adolescents people therefore is subject to a number of changes which deplete the time used for sleeping. The persisted sleep restriction may induce alterations in neurotransmitter receptor systems and neuroendocrine reactivity in a manner close to that noticed in depression. As a result, sleep problems may be preconditions for depression. The shorter the sleep duration, the higher is the chance of having depression. Since the sleep duration is the predisposing factor of depression, it is important to maintain adequate sleep for youths as protective for depression.

To sum up, there are a lot of studies showing that limited sleep hours have great impact on depression. Therefore, it is very crucial to preserve reasonable sleep duration during life span.

4. CONCLUSION

Short sleep duration is correlated with depression. The lower is the sleep duration, the higher is the chance of having depression. It is recommended that the local school district also limit extra-curricular activities in the late-afternoon.

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