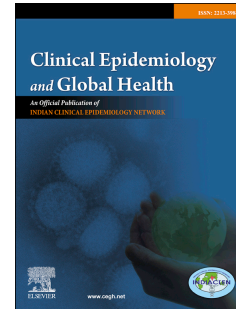# Accepted Manuscript

Sleep pattern, common bedtime problems, and related factors among first-grade students: Epidemiology and predictors

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Sleep Pattern, Common Bedtime Problems, and Related Factors among First-Grade Students: Epidemiology and Predictors

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Abstract

Objectives: Investigating sleep patterns and prevalence of sleep problems among children, particularly at the first year of school, is the main objective of the current study. After evaluating sleep pattern and common bedtime problems among children, a number of factors related to these issues were also addressed.

Methods: The statistical population of the cross-sectional study includes all the first-grade students of elementary schools around Kermanshah City in western Iran, among which a sample of 644 participants were selected. The sampling method was a multi-step clustering method and the obtained data were analyzed using Pearson's correlation and binary logistic regression analyze.

Results: The results of the study show that 30.7% of the participating children suffer from resistance to falling asleep, 15.8% suffer from resistance to waking up from sleep, 13.9% suffer from waking up during sleep, 26.1% suffer from insufficient sleep, and finally 11.2% suffer from sleep-disordered breathing. Accordingly, sleep quality among 7.6% of the children was poor; this factor was 5.1% among girls and 10.3% among boys (P<0.01). Moreover, there was a significant relationship between sleep hygiene and sleep problems (P<0.001). Especially, components of planning/worrying (OR=0.49-1.84) and exercise (OR=0.73-1.34) are main predictors of sleep problems.

Conclusions: Based on the results of the study, it can be said that 57% of the first-grade students suffer from at least one sleep problem. Poor sleep hygiene is an important predictor for sleep problem in the first-grade students.

Keywords: Children, school, sleep, sleep hygiene.

1. Introduction

Healthy sleeping is an essential component for the natural development of a child. Moreover, it is highly important for the general health and the development of learning skills in school.[1, 2] Research on children shows that the prevalence of sleep problems is between 14 to 45 percent.[3, 4] Sleep problems reported among children generally include behavioral sleeping problems, problems with falling asleep, waking up during the night, parasomnia, and symptoms related to sleep-disordered breathing.[5, 6] Recent studies show that sleep problems are highly prevalent among children.[7-9] Since sleep problems among children are often related to psychological complications and illnesses, identifying related factors are of utmost importance.[10-12] It is argued that sleep problems during childhood are related to mental health,[13] and physical and bodily health.[14] Furthermore, some studies show that sleep problems in children are related to emotional problems such as anxiety and depression in later stages of their lives.[15-17]

Many social and demographic factors influence sleep disorders such as the education level of parents, living in urban areas, and lack of sufficient hygiene.[18] Socioeconomic status, side-effects of some drugs, psychological factors, environmental factors, and the interactions between children and parents can also affect sleep.[19] Parents' attention to the schoolchild's sleep plays an important role in this regard.[11] This is referred to as "sleep hygiene", which is considered in the current study.

An undeniable fact is that sleep pattern changes when we age. Generally, the mechanism for the start and continuation of sleep has different patterns from infancy to adulthood. It is believed that there is a reverse relationship between sleep efficiency (quality of sleep) and aging. The effect of age on sleep patterns is a complex process, which cannot be readily understood. Assessing sleep characteristics during life can contribute in this regard and increase our understanding of the functions of sleep and how to improve sleep quality.[20]

Given the roles the children will play in future society, paying attention to their issues and complications, particularly their sleep quality, are an inevitable necessity. By studying sleep quality among children we can acquire more knowledge in this regard and by identifying the factors affecting it we can obtain strategies to help better improve their sleep quality. On the other hand, the first year of school can affect the children's sleep patterns due to the new conditions it creates for these children. Therefore, the current study aims to evaluate sleep patterns, prevalence of common sleep problems, and the related factors among first-grade students.

2. Materials and Methods

2.1. Design, Participants, and Data Collection

The current study was a cross-sectional one utilizing survey method by using questionnaires. The statistical population of the study included all the male and female firs-grade students of public elementary schools in Kermanshah City in 2017. The sample size was determined to be 322 participants using Cochran's Formula. However, by considering factors such as participant influx, lack of cooperation, and increased accuracy, the sample size was doubled and in general, 644 participants were selected. Finally, the data for 606 participants were analyzed. The sample of the study was selected using multi-step sampling method. In order to select the participants, first we considered each one of the three zones of the Organization for Education and Training of Kermanshah City as a distinct cluster. Then, among the schools in each zone, we selected two female and two male schools. The sample size was distributed among the schools based on the population of the students and gender proportions were also followed for selecting the participants.

The entrance criteria for the study included items such as being free of any chronic or underlying psychological illness and not using any psychoactive drugs, which was determined based on parents' reports and the student health documents. Moreover, the students had to be local to Kermanshah City and their parents had to be still together.

The data were gathered two weeks after the education year started and this process continued for a month. The data gathering process started after acquiring the necessary permits from related organizations. The researcher would go to the schools, contact the mothers of the students and after their consent to participate in the study, the questionnaire would be distributed among them. After getting consents from the parents of participating students, we ensured them that their responses would remain confidential and only be used for research purposes.

2.2. Instruments

Questionnaire for Evaluating Sleep Disorders in Children (BEARS): This questionnaire was developed in School of Medicine in Brown University. Its objective is to evaluate sleep problems among kindergarten and elementary school children based on five dimensions. These dimensions include bedtime problems (B), excessive daytime sleepiness (E), awakening during the night (A), regularity and duration of sleep (R), and sleep-disordered breathing (S).[21]

Detailed Sleep Evaluation Questionnaire (DSEQ): This questionnaire was used to gather more details regarding sleep problems of children. Responses to BEARS and DSEQ are yes or no responses and the parents will answer the questions based on their observations with regards to the behaviors and sleep patterns of their children.[21]

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Sleep Hygiene Index (SHI): Sleep hygiene index (SHI) is a 13-item measure for evaluating environmental and behavioral variables which can increase unhealthy sleep. This measure was developed in 2006 by Mastin et al. In this questionnaire, each question is scored based on a five-option spectrum (always, repeatedly, sometimes, seldom, never). Researchers calculated a Cronbach's Alpha Coefficient of 0.66 for this questionnaire and a coefficient of 0.71 for the retest. Moreover, the correlation between this index and the Eporth Sleepiness Measure was reported as 0.24 and between this index and Pittsburg Sleep Measure was reported as 0.48.[22] This questionnaire has been standardized in Iran and its internal consistency has been reported as 0.83. Also, three factors including sleep-wake cycle behaviors, bedroom factors, and behaviors affecting sleep have been extracted from it. The results for the standardization in Iran show that the SHI has a significant correlation with Pittsburg Sleep Quality Questionnaire, Eporth Sleepiness Questionnaire, and Insomnia Intensity Index.[23] It is worth mentioning that in this study, the parents filled out the questionnaires; however, the questions were changed so that their child would be the person evaluated. Cronbach's Alpha Coefficient for the Sleep Hygiene Index (SHI) in this study was obtained as 0.89.

2.3. Data analysis

In order to analyze the obtained data, SPSS-21 software application was used. Measures such as means and standard deviation were used for describing the selected variables, chi-square test was used for comparing group frequencies, Pearson's correlation test was used for evaluating the relationship between the variables, and non-adjusted binary logistic regression was used for predicting the dimensions of sleep problems based on sleep hygiene items. The odd ratio for 95% confidence interval and significant levels were reported as $P < 0.05$.

3. Results

The sample of the study included 606 participants, among which 312 participants (51.5%) were girls and 290 participants (47.9%) were boys, the gender of four participants were unknown (missing data). The average age of the study sample was 6.72±0.58. In the sample of mothers, 10 people (1.7%) were illiterate, 86 people (14.2%) had under diploma education, 252 people (41.6%) had a diploma, and 242 people (39.9%) had a college degree. In the case of fathers, 4 people (0.7%) were illiterate, 50 people (8.3%) had under diploma education, 228 people (37.6%) had a diploma, and 308 people (50.8%) had a college degree. The status of education was unknown in the remaining cases. Table 1 presents the frequency and percentage of various dimensions of sleep problems based on gender.

(Table 1)

The results in Table 1 show that in our sample, 30.7% of the participants have the problem of resistance to falling asleep and regarding this variable there is no significant difference between boys and girls students. Moreover, 15.8% of the participants have difficulty waking up and 13.9% of them wake up during the night; with regards to this variable there is no significant difference between boys and girls students. However, the results show that with regards to "insufficient sleep", reported by 26.1% of participants, there is a significant difference between boys and girls students; 20.5% of the girl's participants don't have sufficient sleep while 32.4% of boy's participants have this problem. On the other hand, the results show that 11.2% of the participants have sleep-disordered breathing and snoring problems; there was no significant difference between boys and girls participants in this regard. As can be seen from Table 1, "resistance to falling asleep" is more prevalent than

other problems among the participants. Generally, the results show that about 57% of the participants have at least one of the sleep difficulties considered in the study.

(Table 2)

The results in Table 2 show that 56.1% of the participants nap during the day, 51.5% has a pre-determined time for going to bed, and 61.1% of the participants have their own bedrooms, with no significant difference between boys and girls students. Moreover, the results show that 86.5% of the participants have their own bed sheets; 91% of the girls and 81.4% of the boys. Furthermore, in 59.1% of cases, when the children are sleep, the parents stay awake. 15.8% of the participants report that their children wake up during the night and 21.8% of them reported that their children have difficulty getting out of bed in the morning. Generally, the results show that for 7.6% of the participants, sleep quality is low, which is 5.1% among the girls and 10.3% among the boys, which means a higher percentage of boys have lower sleep quality ($P<0.01$). The frequency and prevalence percentage of sleep problems at the present and the daily performance of the participants are presented in Table 3 based on gender. In addition, Table 4 shows the means and standard deviation at general sleep history.

(Table 3)

(Table 4)

(Table 5)

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Results in Table 5 show that there is a significant negative relationship between parents' education level and the selected variables (except for bedtime problems). Moreover, there is a significant relationship between sleep hygiene and the selected variables (except for general history). In order to predict the dimensions of sleep problems based on sleep hygiene, logistic regression was used and the results of the analysis are presented in Table 6.

(Table 6)

The results of binary logistic regression, depicted in Table 6, show that for the dimension of "bedtime problems", the components of sleep hygiene all together can predict 18-25% of the variance. Evaluating individual sleep hygiene components shows that computer games [OR= 0.56 (0.44 -0.72)] and complaining and worrying [OR= 0.49 (0.40-0.61)] can predict "bedtime problems". For the dimension of "excessive daytime sleepiness", all the sleep hygiene components together can predict 12-20% of the variance and evaluating the components shows that taking naps [OR= 1.45 (1.08-1.94)], going to bed at different times [OR= 0.61 (0.43-0.88)], exercise [OR= 1.29 (0.98-1.71)], playing video games [OR= 0.54 (0.41-0.72)], and complaining and worrying [OR= 0.75 (0.58-0.98)] can predict this variable. Moreover, the results show that sleep hygiene components can predict 11-19% of variance in "awakening during the night", 21-31% of the variance in "regularity and duration of sleep", and 5-10% of the variance in "sleep-disordered breathing". Other ORs are visible in the Table 6.

4. Discussion

The results of our study show that 30.7% of the participating children have the problem of resistance to falling asleep, 15.8% have difficulty waking up in the morning, 13.9% wake up during the night, 26.1% of them don't have sufficient sleep, and 11.2% suffer from sleep-disordered breathing and snoring. In fact, "resistance to falling sleep" was more prevalent than other problems among the participants. Generally, based on parents' reports, 7.6% of the children have low sleep quality, 5.1% among girls and 10.3% among boys, which shows that a higher percentage of boys have lower sleep quality. Compared to similar studies on "bedtime problems", 21.05% of school children in Tehran had this problem, and 16.6% of the school children in the U.S. had the problem. With regards to "excessive daytime sleepiness", the prevalence rate in the Tehran study was 32.46% and in the U.S. study, it was 5.6%. With regards to "regularity and duration of sleep", the prevalence rate in the Tehran study was 17.54% and in the U.S. study, it was 5.7%. With regards to "sleep-disordered breathing", the prevalence rate in the Tehran study was 10.53% and in the U.S. study, it was 13.1%.[21, 24]

Sleep problems among school age children is a common complication in a way that various studies report its prevalence to be between 20 and 45%.[25-28] This is while based on our study; about 57% of the children are suffering from at least one of the sleep problems. While patterns of insufficient sleep and sleep disorders during childhood vary in different cultures,[18] the prevalence of sleep disorders in childhood has been reported differently depending on the study sample and the treatment providing center. The prevalence of sleep disorders among children of western countries is reported to be 24-40%,[29] among Asian children, it is reported to be 70-80%,[30] and in Iran, it is reported between 30 and 50%.[31, 32]

A study on sleep habits among Brazilian children evaluated these habits based on age, gender, and the school time (mornings, afternoons). The sample of this study included 2482 children between the ages of 7 and 10 years. The results show that 61% of the children have

pre-bedtime rituals; drinking milk before sleeping was higher among seven-year olds compared to others; as age increases, the time lights are on decreases; compared to boys, girls tended to give up their activities and go to bed; compared to children who went to school on afternoons, children who went to school in the mornings had a shorter sleep time, went to bed earlier, and had more naps during the day. Based on these results, it can be concluded that school shifts can have a significant impact on the children's sleep habits.[33]

Another study evaluated the prevalence of sleep problems and sleep habits among elementary school children in Saudi Arabia. The results show that daytime fatigue with 37.5% had the highest prevalence among sleep problems followed by resistance to going to bed with 26.2%, and difficulty with waking up in the morning with 11.8%. Sleeping with the parents was reported among 12.4% of the participants (this was 39% for our study) and taking naps during the day was reported for 40.8% of the participants.[34] In our study, 56% of the participants reported taking naps during the day. Compared to the study in Saudi Arabia, the participants in our study have an undesirable state.

Another study evaluated sleep habits among school children in Texas, U.S. The results show that fear of sleep is prevalent among 43% of the elementary school participants (which was 7.9% in our study) and resistance to going to bed, delay in falling asleep, and staying up late were higher among elementary school children than other groups. The results of this study indicate that with the increase in age, the sleep will become more natural.[35] Another study evaluated sleep pattern, sleep habits, and sleep problems among elementary school children in Japan. The results show that going to bed is delayed more among older children and they have shorter sleep times. Sleep problems were reported higher for first and second grade students than others.[36]

There is a gap in the literature on children's sleep at the first year of school. There is only one study of this nature in Australia whose results show that 12.8% of children of this age have

sleep problems. The results of this study show that using video and audio devices and the difference between the sleep schedule of school nights and non-school nights are among risk factors of sleep problems at this age range.[37] Therefore, compared to the results of this study, the Iranian children have more worrisome issues with regards to sleep problems.

Sociocultural factors such as the economic state of the family, environmental stress sources, watching television, and lifestyle,[38-43] are among factors that can affect children's sleeping patterns. Reducing the number of daytime naps among three to five-year-old children is a very important factor which reduces the sleep duration. School time is related to sleep time.[44] In fact, the day and night sleep rhythm is influenced by the specific time the child goes to school.[44] The behavioral interactions between the parents and the child and the sleep-awake cycles play an important role in children's sleep problems. While these relations are complex and multi-layered, they should be considered carefully.[45]

In another section, the results of our study show that there is a relationship between sleep hygiene and children's sleep habits. A number of previous studies emphasize the importance of regular sleep scheduling.[45-47] confirmed by the results of the current study. There have been other studies that mention the role of sleep hygiene among children.[38-44] Whose results are in line with the results of our study. The results of previous studies show that pre-sleep behaviors such as watching television, using screens, or doing homework can be some of the factors affecting children's sleep,[48, 49] indicating the role of sleep hygiene. Generally, the results of previous studies show that sleep hygiene among Iranian people is very low,[50] which can be one of the reasons for the high levels of sleep problems in the selected sample of the current study.

The results of our study show a relatively weak relation between parents' education level and children's sleep patterns and habits. However, there is no significant relationship between parents' education and sleep problems in general. Compared to previous studies,

the results of a study show that there is no relationship between parents' education level and children's sleep.[51] Higher-educated parents have more information about sleep hygiene and they have a higher ability to teach sleep hygiene to their children. On the other hand, it seems that higher-educated parents have more suitable communication strategies for interacting with their children, resulting in their children being more relaxed and calm. Moreover, the child will follow the request of the parents to go to bed early because they want to get the approval of the parents and this is probably how parents affect their children's sleep.

The results of the current study show that for the selected sample, the participants go to bed at 10:22 at school nights and wake up at 6:49. Compared to previous studies, the results of a study show that children in Asian countries go to bed late (about 10:05 pm); however, children in Caucasus go to bed earlier (7:45 pm),[52] which is in line with the results of the current study.

Finally, considering the results of the current study and the studies carried out in various countries, it can be argued that sleep patterns, habits, and problems vary based on country and culture. In fact, sleep pattern can be influenced by cultural varieties and the scheduled sleep planned by the family and the culture.

One of the strengths of the current study was the fact that it was carried out on a population with a homogenous culture and language over a specific age range, which is different from previous studies. However, the results are based on the reports of the children's mothers, which is one of the limitations of the current study.

Conflict of Interest

None of the authors have conflicts of interest to report.

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Table 1. Comparison of percentages of sleep problems in each domain of BEARS questionnaire among boy and girl groups

Components of BEARS	Total	Girls	Boys	P-value	In Tehran	In USA
Bedtime problems	186 (30.7)	86 (27.6)	100 (34.5)	0.060	21.05	16.3
Excessive daytime sleepiness	96 (15.8)	44 (14.1)	52 (17.9)	0.210	42.98	5.6
Awakenings during the night	84 (13.9)	42 (13.5)	42 (14.5)	0.789	32.46	18.4
Regularity and duration of sleep	158 (26.1)	64 (20.5)	94 (32.4)	0.001	17.54	5.7
Sleep-disordered breathing	68 (11.2)	34 (10.9)	34 (11.7)	0.690	10.53	13.1

Table 2. Frequency and percentages of general sleep history and general sleep problem

General sleep history	Total	Girls	Boys	P-value
Child takes a nap	340 (56.1)	178 (57.1)	160 (55.2)	0.716
Does the child have a regular bedtime routine?	312 (51.5)	152 (48.7)	158 (54.5)	0.178
Does the child have his/her own bedroom?	370 (61.1)	202 (64.7)	166 (57.2)	0.074
Does the child have his/her own bed?	524 (86.5)	284 (91)	236 (81.4)	0.001
Is a parent present when your child falls asleep?	358 (59.1)	196 (62.8)	158 (54.5)	0.048
General sleep problem	Total	Girls	Boys	P-value
Child resists going to bed?	214 (35.3)	98 (31.4)	116 (40)	0.031
Child has difficulty falling asleep?	50 (8.3)	18 (5.8)	32 (11)	0.019
Child awakens during the night?	96 (15.8)	46 (14.7)	50 (17.2)	0.399
After nighttime awakening, child has difficulty falling back to sleep?	26 (4.3)	12 (3.8)	14 (4.8)	0.575
Child is difficult to awaken in the morning?	132 (21.8)	64 (20.5)	68 (23.4)	0.380
Child is a poor sleeper?	46 (7.6)	16 (5.1)	30 (10.3)	0.015

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Table 3. Frequency and percentages of current sleep problem and current daytime symptoms

Variable		Total	Girls	Boys	P-value
current sleep problem	Difficulty breathing when asleep	58 (9.6)	24 (7.7)	34 (11.7)	0.083
	Snores	58 (9.6)	26 (8.3)	32 (11)	0.249
	Restless sleep	46 (9.6)	14 (4.5)	32 (11)	0.002
	Sweating when sleeping	82 (13.5)	38 (12.2)	44 (15.2)	0.268
	Daytime sleepiness	50 (8.3)	22 (7.1)	28 (9.7)	0.246
	Poor appetite	128 (21.1)	74 (23.7)	54 (18.6)	0.138
	Nightmares	48 (7.9)	18 (5.8)	30 (10.3)	0.036
	Sleepwalking	16 (2.6)	10 (3.2)	6 (2.1)	0.395
	Sleep talking	48 (7.9)	26 (8.3)	22 (7.6)	0.775
	Screaming in his/her sleep	52 (8.6)	22 (7.1)	30 (10.3)	0.156
	Kicks legs in sleep	108 (17.8)	58 (18.6)	50 (17.2)	0.643
	Wakes up at night	20 (3.3)	14 (4.5)	6 (2.1)	0.105
	Gets out of bed at night	100 (16.5)	54 (17.3)	46 (15.9)	0.663
	Trouble staying in his/her bed	30 (5)	14 (4.5)	16 (5.5)	0.520
	Resists going to bed at bedtime	94 (15.5)	44 (14.1)	50 (17.2)	0.257
	Grinds his/her teeth	56 (9.2)	32 (10.3)	2 (7.6)	0.275
	Uncomfortable feeling in his/her legs; creepy-crawly feeling	40 (6.6)	18 (5.8)	22 (7.6)	0.345
	Wets bed	16 (2.6)	2 (0.6)	14 (4.8)	0.001
current daytime symptoms	Trouble getting up in the morning	166 (27.4)	78 (25)	88 (30.3)	0.116
	Falls asleep in school	50 (8.3)	16 (5.1)	34 (11.7)	0.003
	Naps after school	210 (34.7)	108 (34.6)	100 (34.5)	0.924
	Daytime sleepiness	28 (4.6)	14 (4.5)	14 (4.8)	0.812
	Feels weak or loses control of his/her muscles with strong emotions	22 (3.6)	12 (3.8)	10 (3.4)	0.798
	Reports unable to move when falling asleep or upon waking	22 (3.6)	6 (1.9)	16 (5.5)	0.018
	Sees frightening visual images before falling asleep or upon waking	70 (11.6)	32 (10.3)	38 (13.1)	0.260

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Table 4. The means and standard deviation at general sleep history

Variable	Total	Girls	Boys	P-value
The child's usual bedtime (On school days)	10.22 ± 0.80	10.20 ± 0.84	10.24 ± 0.75	0.562
The child's usual wake time (On school days)	6.94 ± 0.68	7.07 ± 0.86	6.82 ± 0.39	0.001
The child's usual bedtime (On weekends)	10.50 ± 2.45	10.59 ± 2.28	10.46 ± 2.63	0.538
The child's usual wake time (On weekends)	9.54 ± 1.12	9.60 ± 1.04	9.48 ± 1.19	0.202
The amount of time the child spends in his/her bedroom before going to sleep (minutes)	17.74 ± 13.09	14.18 ± 0.82	11.91 ± 0.70	0.931

Table 5. The correlations between variables

Variable	Sleep hygiene	Father's education	Mother's education
Sleep problem	-0.39**	0.04	0.04
General sleep history	0.04	-0.21**	-0.22**
General sleep problem	-0.24**	-0.15**	-0.10*
Current sleep problem	-0.20**	-0.10*	-0.10*
Current daytime symptoms	-0.27**	-0.11**	-0.10*

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 5. The correlations between variables

Table 6. Binary logistic Regression Models for Child Sleep Problem

Sleep hygiene	Components of BEARS				
	Bedtime problems	Excessive daytime sleepiness	Awakenings during the night	Regularity and duration of sleep	Sleep-disordered breathing
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Taking nap	1 (0.80-1.25)	**1.45 (1.08-1.94)**	1.25 (0.93-1.68)	**0.55 (0.43-0.71)**	1.21 (0.88-1.65)
Going to bed at different times	0.98 (0.74-1.31)	**0.61 (0.43-0.88)**	1.18 (0.83-1.68)	0.96 (0.71-1.30)	**0.60 (0.41-0.89)**
Getting out of bed at different times	1.21 (0.91-1.59)	1.19 (0.82-1.73)	**0.56 (0.40-0.80)**	**1.39 (1.02-1.89)**	1.10 (0.75-1.64)
Exercising	0.93 (0.74-1.17)	**1.29 (0.98-1.71)**	**0.73 (0.54-0.98)**	**1.31 (1.04-1.65)**	**1.34 (1.03-1.72)**
Staying in bed longer	0.81 (0.65-1)	0.86 (0.67-1.10)	1.02 (0.78-1.34)	1.07 (0.84-1.36)	0.96 (0.73-1.25)
Using tobacco or caffeine	1.31 (0.94-1.83)	1.27 (0.86-1.84)	**0.52 (0.36-0.76)**	0.80 (0.56-1.13)	0.82 (0.54-1.24)
Playing video games	**0.56 (0.44 -0.72)**	**0.54 (0.41-0.72)**	1.01 (0.75-1.36)	1.17 (0.90-1.55)	1.05 (0.74-1.48)
Feeling stressed, angry, upset, or nervous	0.94 (0.73-1.22)	1.18 (0.84-1.65)	**0.71 (0.53-0.97)**	1.08 (0.82-1.42)	1.09 0(.74-1.59)
Watching television	0.94 (0.76-1.14)	0.99 (0.77-1.28)	0.83 (0.64-1.07)	**0.66 (0.53-0.83)**	0.87 (0.64-1.16)
Uncomfortable bed	0.99 (0.76-1.29)	0.85 (0.64-1.15)	1.12 (0.83-1.51)	0.79 (0.60-1.06)	0.88 (0.61-1.25)
Uncomfortable bedroom	0.99 (0.75-1.30)	0.84 (0.62-1.13)	1 (0.70-1.42)	1.14 (0.84-1.55)	1.13 (0.76-1.67)
Doing works	1.06 (.86-1.30)	1.24 (0.96-1.60)	1.04 (0.79-1.38)	**1.40 (1.12-1.75)**	1.04 (0.79-1.35)
Planning and worrying	**0.49 (0.40-0.61)**	**0.75 (0.58-0.98)**	**0.72 (0.55-0.94)**	**0.49 (0.39-0.62)**	**1.44 (1.16-1.95)**
Cox & Snell R Square	0.18	0.12	0.11	0.21	0.05
Nagelkerke R Square	0.25	0.20	0.19	0.31	0.10

Boldface indicates statistically significant ($P < 0.05$).