

The Prevalence of Sleep Disorders and their Relationship with Anxiety and Behavioral Problems among Primary School Students in Yazd, Iran

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Abstract

Introduction

Sleep disorders can influence either directly or indirectly, on the family, colleagues and finally the community. In the realm of children, the most serious complications of sleep are anxiety and behavioral problems that make them prone to academic failure, family tensions and psychosocial – social trauma.

Materials and Methods

In a descriptive correlational survey, the study population consisted of all female students of second courses of primary schools in Yazd city, Central of Iran, by using Cochran formula with confidence level of 95% and probable accuracy of 5%, a sample size of 259 people was identified. Sampling group was chosen by multistage clustering method and questionnaire: assessment of children s' sleep habits (Evans, 2000), multidimensional scale of children anxiety (March, Parker, Sullivan, Staling and Conrez, 1997) and questionnaire of children s' behavioral problems (Rutter, 1970) were used. The method was based on the data collecting by descriptive – correlation kind.

Results

The results showed that 74.9 percent of students in a low value and 25.1 percent at in a moderate value had sleep disorders. There was a significant and direct relationship between sleep disturbance and anxiety ($r=0/346$ and $p<0.001$). Also there was a substantial and direct relationship between sleep disorders and behavioral problems in students($r=0.545$ and $p< 0/001$). There was no notable difference between sleep disturbance based on educational grade ($P> 0.05$ and $F= 0.089$).

Conclusion

The current study showed that the 2/3 of students had low and 1/3 had moderate sleep disorders. There was a significant and direct relationship between sleep disorders and anxiety and also between sleep disorders and behavioral problems. It is recommended that parents must have a special attention to the children sleep

Keywords: Anxiety, Behavioral problems sleep disturbances, Sleep Disorders, Students.

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Introduction

As one of the most important circadian cycle and biological complex patterns, sleep has a biological cycle that is affected by physiological functions, light and darkness and work plan of peoples. The term insomnia is referred to sleep disorder, despite having enough time and suitable conditions for sleep. Insomnia may include difficulty in falling asleep, discontinuation of a good sleep, waking up in the middle of the night and early morning and inability to continued sleep, or even a combination of these abnormal conditions (1).

Factors such as age, gender, lifestyle, stress and environmental stimuli can affect the quality and quantity of sleep. The sleep disorders in children are very common phenomena that severe forms of it can interfere in the functioning of the patient and his family. Sleep disorders in children means to reduce excessive or over-sleeping commensurate with age, types of abnormal sleep, abnormal behaviors or pathophysiological events during sleep. Sleep disorders are the most common behavioral disorder in children (2).

Sleep disorders in children, including insomnia, sleepiness, sleep-related respiratory disorders, nightmares, waking disorders, rhythmic movement disorders and enuresis. The prevalence of sleep disorders in children and adolescents is 11-47 %. In another study, it has been reported that the prevalence of sleep disorders in children and adolescents is about 25% and 40% respectively (3). Most practical studies have shown that children and adolescents need an average of 9 hours of sleep during the night, but the results of several studies have shown that 45 % of children and adolescents sleep less than 8 hours (4).

Inappropriate habits and some sleep problems are resulted from the physical, psychological, environmental and genetic

conditions that reduce the time of good sleep and threat health, and also can affect the level of stress and anxiety in children and adolescents even in adults. It is clear that sleep deprivation can exacerbate the symptoms of anxiety and on the other hand, sleep disorders may actually lead to anxiety. Anxiety is an unpleasant emotional state that their resources are less clear and is accomplished with physiological complications leading to fatigue and power reduction (5).

Sleep disorders in children and adolescents are from the most common problems in families that can influence on social, emotional and academic function and lead to behavioral problems in them. Several studies have been conducted in the field of sleep disorders in children. Ward et al. (2014) studied the relationship between sleep disorders and behavioral problems among 106 children 6-11 years. The results showed that sleep disorders significantly predicted behavioral problems among children (6).

Cowie et al. (2014) in their study evaluated the sleep in children with anxiety disorders. The results showed that there is a significant relationship between these two variables and factors such as emotional behavior, the behavior of parents and cognitive factors contribute to progress of diseases (7). Hillary et al. (2014) studied the sleep problems and behavioral problems of children with autism. The results showed that sleep problems, affected the challenging behavior of children in such a way that lead to external behavior problems. However, sleep problems (mild to severe) does not change the internal behavior (5).

Modarresi et al. (2012) in a study investigate the relationship between sleep disorders and academic performance in high school students of Isfahan. 565 female and 535 male were studied. The results of this study showed that sleep

problems negatively impact on academic performance in adolescents (4).

Khazaei et al. (2012) studied the sleep patterns and common sleep problems in primary school students in Birjand, Iran. The results showed that the most common sleep problems were resistance to going to bed (20.5%) and talking in sleep (11.1%). The relative frequency of resistance to going to bed, wheezing, and enuresis was higher in male students and sufficient sleep length, was higher in female students (8).

Therefore, according to vital role of sleep and its possible effects on several aspect of emotional and social behavior, this study aims to elucidate the prevalence of any kinds of sleep disorders in second primary school female students and to determine the relationship between these disorders and anxiety and behavioral problems.

Materials and Methods

In this descriptive correlational research, the study population consisted of all female students of second course of primary schools in 8 years old range, in Yazd city, the capital of Yazd province-Central of Iran, at 2014, that according to statistics from the Office of Education of Yazd province, their number was 14,541 students. By using Cochran formula with confidence level of 95% and probable accuracy of 5%, a sample size of 259 female students of second primary school were selected by randomized cluster sampling.

Then, 259 female students after coordination with the authorities, 259 questionnaires were distributed between the students of elected schools as follow: Multidimensional Anxiety Scale for Children (MASC) of March (1997), evaluation of Children's Sleep Habits Questionnaire of Owens (2000), Children's Behavioral Problems Questionnaire (CBQ) of Rutter (1970).



Fig.1: The location of Yazd province

Multidimensional Anxiety Scale for Children

This measure, by March et al., was built in 1997, is a self-reporting instrument has 39 item to assess symptoms of anxiety in the age group of 8 to 19 years old (12). Each item is scoring on a four-point Likert scale from zero to three (never, rarely, sometimes or always). Evarson (2006), reported that the internal consistency of this scale in Swedish children is equal to 0.86. In the study of Dehshiri et al. (2009), test-retest reliability and internal consistency of the questionnaire were 0.82 and 0.83 respectively (9). In this study, Cronbach's alpha coefficient was 0.79 that reflects a good reliability.

Child Sleep Habits Questionnaire (CSHQ)

The Children's Sleep Habits Questionnaire (CSHQ) is a retrospective parent-report questionnaire that was developed in the United States to evaluate the sleep behavior in school-aged children. This tool was build up by Owens et al. (2000) and use in made various studies. The question were multiple choice and they were asked if the behavior is repeated 5-7 times a week, select usually options (3 points), 2-4 times a week, sometimes options (2 points) and 0-1 times a week, rarely option (1 points). The higher score, the more severe sleep disorder. Validity was assessed using content validity and test-retest reliability was assessed from retest on 10 children 6-11 years old ($r^2=0.97$). In the present study, Cronbach's alpha coefficient was 0.85 that reflects a good reliability (5).

Behavioral Problems in Children

This questionnaire aims to provide a reliable and valid instrument to assess behavioral disorders in school-age children. Rutter questionnaire had two versions for parents and teachers. In this study, parent's version was used. The questionnaire consists of 31 questions with three choices about the behavioral characteristics of children and parents were asked to respond to them in accordance with the scale. The choices are "true," "somewhat true", "not true" that are correspond to zero, one and two score respectively. The total scores for each test varied between 0-62 and if a child scores equal to or higher than the cut-off point 13 was considered as an individual with disorder (10). Rutter and his colleagues reported the test-retest reliability of this questionnaire within two months and the relationship between parents and teachers equal to 0.74 and 0.76 respectively. In studies that had been done in Iran comparison with a psychiatrist evaluation,

the sensitivity, specificity and two week reliability coefficient has been reported 0.97, 0.88 and 0.95 respectively. This questionnaire by Mehryar et al. (1995), has been normalized in Shiraz. In this study, Cronbach's alpha coefficient was calculated 0.88, indicating high internal consistency of items and reliability of tool.

At baseline, the objectives of the project were explained to the students and they all willingly participated in the study. The data of this study were analyzed by SPSS version 18, in both descriptive and inferential manner. In descriptive level, the variables in samples were studied by drawing charts and tables and in inferential level the relationship between variables was evaluated by using Pearson correlation coefficient and analysis of variance. P value <0.05 was significant.

Results

First hypothesis: sleep disorders can predict students' anxiety.

Table1: Simple regression to assess the impact of sleep disorders on the anxiety of students in each grade

Primary school grade	Significancy		The coefficient of determination (R ²)	β value	Relationship
	P-value	F			
4th	0.000	14.561	0.188	0.433	directly
5th	0.008	7.430	0.101	0.318	directly
6th	0.017	5.985	0.081	0.284	directly
Total	0.000	27.375	0.120	0.346	directly

As seen in (Table.1), in all three grades, sleep disorders variable had direct and significant effect on the anxiety of students. In other words, the more sleep disorder, the person had higher anxiety. According to the results, the severity of this impact in the fourth grade is higher than the grade five and six.

As total, 12% of the variance of anxiety in children with sleep disorders can be explained. Based on these results, the first hypotheses "Sleep disorders can predict students' anxiety" is confirmed.

Second hypothesis: sleep disorders can predict students' behavioral problems.

Table 2: Simple regression to assess the impact of sleep disorders on the anxiety of students in each grade

Primary school grade	Significancy		The coefficient of determination (R ²)	β value	Relationship
	p-value	F			
4th	0.000	47.014	0.359	0.599	directly
5th	0.000	33.006	0.282	0.531	directly
6th	0.000	28.638	0.252	0.502	directly
Total	0.000	108.516	0.297	0.545	directly

As seen in (Table.2), in all three grades, sleep disorders variable had direct and significant effect on the anxiety of students. In other words, the more sleep disorder, the person had higher behavioral problems. According to the results, the severity of this impact in the fourth grade is higher than the grade five and six. As total, 29.7% of the variance of behavioral problems in children with sleep disorders can be explained. Based on these results, the second hypotheses "Sleep disorders can predict students' behavioral problems" is confirmed.

Discussion

The aim of this study was to determine the prevalence of sleep disorders and their relationship with anxiety and behavioral problems in second primary school female students in Yazd 2014 to 2015.

First hypothesis: sleep disorders can predict students' anxiety.

In this study, the results of the regression coefficients sleep disorder and anxiety among primary school students is (F=27.375, P<0.05 and β=0.436). Thus the assumption of a significant correlation between sleep problems and anxiety is confirmed. The results of this study are consistent with the results of previous studies of Cowie et al. (2014) and Halyna et al. (2011) (1, 7). The finding are also in agrees with the results of Rahimian et al. (2013) that reported anxiety had a significant role in predicting sleep disorders (11). The results of Gol Shokouh study (2010) on the relationship between

anxiety and sleep disorders among men and women is supportive of the present study (12). According to the findings of this hypothesis, it can be concluded that the sleep is from the first the phenomenon that is disrupted by changes in environmental conditions. Some environmental problems that result in anxiety or frustration disturbed his sleep and make sleep disorder. Therefore the person is not able to sleep for a long time. This happen sometimes at the beginning of sleeping or awakening, during the night or as short sleep duration. Insomnia associated with anxiety and the affected person is anxious with no external factor.

The findings of this hypothesis are in the line with views of cultural and social theorists that say anxiety disorders are seen more in those who face with social pressure and dangerous situations. Because studies have shown that people who live in threatening environments, had more feeling of widespread tension, anxiety, excitement, irritability and sleep disorders, which indicates anxiety (13). Therefore, sleep disorders must be consider in the evaluation of differential diagnosis of problems and for many cognitive and behavioral problems caused by sleep restriction, we should do something to treat sleep problems.

Second hypothesis: sleep disorders can predict students' behavioral problems

In this study, the results of the regression coefficient between sleep disorders and behavioral problems in elementary school students' is equal to 108.516 (P<0.05 F

and $\beta=0.545$). Therefore, the hypothesis of relationship between sleep disorders and behavioral problems is confirmed. The finding agrees with the results of Ward et al. (2014), Hillary et al. (2014), Susan et al. (2011), Halina et al. (2011) and Abuduhaer et al. (2007) (1, 5, 6, 14, 15).

Malekshahi et al. (2009) showed behavioral problems such as a blocked urinary incontinence, night terror, teeth chattering, banging the head against the wall, with sleep problems was higher in rural children's and the results of their study, support our findings (16).

The results of this study also are in line with Saberi (2009), Karimzadeh et al. (2002) and ghyiasi et al. (2008) (17-19).

Limitations of the study included randomized cluster sampling and data collection methods based on individual reports. Therefore, generalization and annotation of results must perform with cautious.

Conclusion

The results showed that the 74.9% of students had low and 25.1% had moderate sleep disorders. There was a significant and direct relationship between sleep disorders and anxiety and also between sleep disorders and behavioral problems. With regard to the results of this study is recommended that parents must have a special attention to the children sleep.

Conflict of interest: None.

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