

Prevalence of Sleep Disorders Among Children in Elementary Schools in Kirkuk City

انتشار اضطرابات النوم بين الأطفال في المدارس الابتدائية في مدينة كركوك

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الخلاصة

الهدف: هدفت الدراسة الحالية إلى التعرف على نسب انتشار عدة أعراض اضطرابات النوم عند الأطفال الصغار ، والعلاقة بين أعراض اضطرابات النوم عند الأطفال ومشاكل الطفولة الأخرى.

المنهجية: دراسة وصفية لعينة من التلاميذ بواقع (600) تلميذ ، تتكون من (336) ذكراً و(264) أنثى وأعمارهم تتراوح بين (6 - 12) سنة، وقد جمعت البيانات من 20 مدرسة من المدارس الابتدائية في محافظة كركوك خلال خمسة أشهر بين (الأول من كانون الأول 2011) و (الأول من أيار 2012) لتحقيق أهداف الدراسة الحالية . وقد جمعت البيانات من خلال استمارة الاستبيان التي وزعت بين الآباء والتقييم الأكاديمي. وتم تحديد صدق وثبات الاستبيان من خلال الدراسة الأولية ، ثم تحليل البيانات من خلال تطبيق الإحصاء الوصفي (التكرارات، النسب المئوية، والوسط الحسابي) والإحصاء الاستنتاجي (طريقة مربع كاي). وقد أظهرت هذه الدراسة أن الأطفال الذين صنفوا كخطورة عالية من اضطراب النوم لديهم كثير من المشاكل الداخلية والخارجية ، وتكون المهارات الأكاديمية لديهم أقل تقدماً وتطوراً، وكذلك النتائج كانت أوطأ على مقياس المهارات الأكاديمية ، بالمقارنة مع الأطفال الذين نومهم ضمن المعدل الطبيعي. **النتائج:** أظهرت نتائج مقياس اضطرابات النوم عند الأطفال أن (25 %) من الأطفال الذين هم ضمن الخطورة العالية مصابون على الأقل بنوع واحد من أنواع اضطرابات النوم .

الاستنتاجات: كشفت النتائج أن المعدلات العالية لأعراض اضطرابات النوم عند الأطفال لوحظت من خلال كل أصناف الاضطرابات ، لاسيما في غفوات نهائية مفرطة ومتلازمة الاختناق أثناء النوم . وهذا يشير إلى أن أعراض اضطرابات النوم تكون ظاهرة حتى في هذا العمر الصغير (6 - 12) سنة

التوصيات: التعرف والتدخل المبكر يساعد الأطفال الذين يعانون من هذا النوع من الاضطراب ، وفي البحوث المستقبلية يجب التركيز على استعمال العينات الأكبر للحصول على صورة أكثر دقة من نسب انتشار اضطرابات النوم في هذه الشريحة من المجتمع. بالإضافة إلى أن العينات الأكبر تكون أكثر دقة لمعرفة الاختلافات التي تبين الفرق بين الأصناف الثلاثة من اضطرابات النوم ذات الخطورة المتنوعة مثل : خطورة طبيعية ، خطورة معتدلة والخطورة العالية .

Abstract

Aim: The purpose of this study was to examine the prevalence rates of several symptoms of sleep disorders in young children, and the relationship between symptoms of pediatric sleep disorders and other childhood problems.

Methodology: A descriptive study design , subjects consist of (600) pupils divided in to 336 male and 264 female, aged 6 to 12 years, The data were collected from 20 Kirkuk elementary schools during a period of five months extending from December, 1st, 2011 to May, 1st, 2012. Were selected through parent report and academic assessment. Reliability and validity of questionnaire were determined by performance of a pilot study. Data were analyzed through the application of descriptive statistics (Frequency , percentage and mean) and inferential statistic analysis (correlation coefficient and chi-Square test). Children who rated as high risk for having sleep disorder displayed more externalizing and internalizing problems, less developed academic skills, and lower scores on a measure of academic skills, as compared to children whose sleep was rated within the normal range.

Results: It was found that 25% of children were at high risk for having at least one type of sleep disorder.

Conclusions: High rates of sleep disorder symptoms were observed across all disorder categories, particularly in Excessive daytime sleepiness and Obstructive Sleep Apnea Syndrome . This indicates that the symptoms of sleep disorders are already apparent even at sample (6 – 12) years old.

Recommendation: Early identification and intervention were crucial in order to assist children suffering from sleep disorders. Future research should focus on using larger samples in order to gain a more accurate picture of prevalence rates in this population. In addition, larger samples would more precisely determine the differences that exist between the 3 categories of risk for a sleep disorder : normal risk, moderate risk, and high risk .

Key word: prevalence , children, sleep disorder.

INTRODUCTION:

Sleep disturbance can have serious effects on those of all ages. The impact on both physical health and mental health are widespread, and have become a nationwide problem. Sleep problems can impact cognitive and academic performance, mood and behavior, and physical development of several bodily systems such as the nervous, cardiovascular, and endocrine systems ⁽¹⁾. In Libya, a study reported a prevalence of sleep disorder is (28.9%) ⁽²⁾. A survey sent to physicians specializing in a variety of different fields revealed that the prevalence of sleep disorders in the pediatric population was generally higher than the rate of sleep disorders in adult populations⁽³⁾. The combination of high prevalence rates and proven negative effects of sleep disorders highlight the need for further research and education in this area. There is evidence suggesting that up to 43% of children aged 2 through 14 years may suffer from significant sleep disturbance ⁽⁴⁾. Research shows that it is important for schools and mental health professionals to be proactive in focusing on preventative interventions ⁽⁵⁾. An effective prevention and early intervention program should not wait until children begin school, but should focus on preschool programs such as Head Start ⁽⁶⁾. The primary purpose of this study were (1) To assess the prevalence of school children who display indicative symptoms of sleep disorders, using the Sleep Disorders Inventory for Students (SDIS). (2) To determine whether there is a relationship between children who are at risk for sleep disorders as measured by the Sleep Disorders Inventory for Students (SDIS), Children's Sleep Habits Questionnaire (CSHQ), and Academic Skills

METHODOLOGY:

A descriptive design was carried out from September, 19th, 2011 to August, 1st, 2012 in order to achieve the objectives of the present study. The whole study population consisted of 104183 pupils who were distributed among 312 schools. A probability sample (random) consisted of 600 pupils were chosen from (20) schools, The sample age ranges between (6 -12) years. The Demographic Form was developed by the researcher in order to collect additional information about the participants in this study. This form includes three questions which ask the rater to indicate their relationship to the child, the child's sex, age, and grade (class). The Sleep Disorders Inventory for Students SDIS⁽⁷⁾ was developed in order to respond to the need for a school-based screening instrument to recognize the sleep disorders of Obstructive Sleep Apnea Syndrome (OSAS), Narcolepsy (NARC), Periodic Limb Movement Disorder (PLMD), Restless Leg Syndrome (RLS), and Delayed Sleep Phase Syndrome (DSPS). The SDIS-C is available in both English and Spanish and is translated to Arabic. It takes approximately 8 -15 minutes to complete. There are 25 behavioral questions (e.g. child rolls or moves around the bed when sleeping) answered on a likert scale of 1-7, and 11 questions which required a (Yes or No) response (e.g. Is your child overweight now?). Parents were asked to complete the SDIS-C to the best of their abilities, based on their child's sleep behavior during the past 6 to 12 months. If parents are unsure how to answer any of the questions, they are instructed to observe their child sleep on 2 different nights for 2 hours, a few hours after the onset of sleep and then again at 4:00 to 5:00 in the morning, preferably on a night during which the child is not taking any medication. This tool was chosen because of its specific design for children of this age and its technical properties. The responses of the SDIS-C were evaluated through a computerized scoring program which provides a range of (normal,

cautionary, or high risk) on each of the sleep disorders for which this tool screens. In addition, Excessive Daytime Sleepiness (the primary predictor of narcolepsy in this tool), and a Total Sleep Disturbance Index were provided. This study used the Children's Sleep Habits Questionnaire (CSHQ) is a 45 item parent questionnaire that has been used in a number of studies to examine sleep behavior in young children. The CSHQ includes items relating to a number of key sleep domains that encompass the major presenting clinical sleep complaints in this age group: bedtime behavior and sleep onset; sleep duration; anxiety around sleep; behavior occurring during sleep and night wakings; sleep-disordered breathing; parasomnias; and morning waking/daytime sleepiness. Parents are asked to recall sleep behaviors occurring over a "typical" recent week. Items are rated on a three-point scale: "usually" if the sleep behavior occurred five to seven times/week; "sometimes" for two to four times/week; and "rarely" for zero to one time/week. Some items were reversed in order to consistently make a higher score indicative of more disturbed sleep. A letter was mailed to the parents of children in order to explain the study. Parents who were able to observe their child's sleep and behavior for at least the past six and three months, respectively, were eligible for participation in this study. Parental consent forms and a demographic information sheet were given to the parents upon arrival to the screening meeting, and the researcher was present as well to answer any additional questions. In addition, the researcher explained to the parent specifically what the SDIS-C and CSHQ measure and how to complete this instrument. The researcher was available to answer questions from the parents. After the parent finished completing these forms, the forms were returned to the researcher at the arrival desk and given to the researcher. The researcher completed the scoring of the SDIS-C and generated a computerized print-out of the results. If parents are concerned with their child's sleep, they are provided with the SDIS-C to complete. If the SDIS-C reveals significant sleep problems, they are given contact information of sleep specialists if they wish to have their child further. Data was collected through the use of the constructed questionnaire and the interview technique with the parents of pupils in the school as a means of data collection process. Each parent spends approximately (10-15min) to respond to the interview .

RESULTS:

Table (1) SDIS-C Descriptive Statistics :

subscale	X	SD	Skewness	Kurtosis
OSAS	53.6	8.5	0.6	-0.18
PLMD	52.94	8.6	0.6	0.68
DSPS	54.55	12.15	0.9	0.09
EDS	52.8	7.9	0.3	-0.43
SDI Index	55.3	8.7	0.5	-0.20

The table shows that the mean for all of the sleep disorders subscales were in the low to mid 50s, with standard deviations ranging from 7.9 to 12.15 points .

Table (2) Children Sleep Habits Questionnaire(CSHQ Descriptive Statistics :

Sub-scale	X	SD	Skewness	Kurtosis
Cooperation	91.9	17.82	-1.07	1.22
Independence	101.01	12.81	-0.89	1.17
Interaction	99.06	13.77	-0.75	-0.07
Total academic skills	95.08	15.40	-0.86	1.22
Internalizing behavior	106.98	19.95	-0.43	-0.37
Externalizing behavior	103.76	16.52	0.76	0.41

This table shows that the means and standard deviations were as follows : 95.08 and 15.40 for the total academic skills scale, 106.98 and 19.95 for the internalizing problems subscale, and 103.76 and 16.52 for the externalizing problems subscale .

Table (3) Academic Skills Scale Descriptive Statistics :

	X	SD	Skewness	Kurtosis
Academic Skills	-0.02	0.75	-0.64	-0.33

This table shows that the children's academic skills scores, the mean on the academic skills was -0.02 and the standard deviation was 0.75 .

Table (4) Prevalence of Sleep Disorders as Measured by the SDIS-C .

<i>SDIS-C</i>	Normal	Caution	High risk	Total
	%	%	%	
Overall	75	12	13	100%
OSAS	81.40	6.98	11.62	100%
PLMD	83.70	8.15	8.15	100%
DSPS	82.58	6.93	10.49	100%
EDS	70.97	8.25	20.78	100%
$X^2 = 342.895$ DF = 6 P-Value = 0.000				

This table shows that (75 %) of children scored in the normal range of sleep. However, (12%) of children received sleep scores in the cautionary range, and (13 %) scored in the high-risk range. (11.62%) of them had high risk for obstructive sleep apnea syndrome, (8.15%) had periodic limb movement disorders, (10.49%) had delayed sleep phase syndrome, and (20.78%) had excessive daytime sleepiness.

DISCUSSION:

Results of this study indicated that (25%) of children in this sample received a score of high risk in at least one category of sleep disorders. This finding supports previous research studies that have found high rates of pediatric sleep disorders, especially in populations of children who are considered to be at-risk ^(4,8) In this sample, particularly high rates of sleep disorders were found in the areas of Excessive Daytime Sleepiness/narcolepsy (29.03%), Obstructive Sleep Apnea Syndrome (18.6%) , Delayed Sleep Phase Syndrome (17.42%), and Periodic Limb Movement Disorder was not quite as prevalent as the other types of sleep disorders, but still occurred in a relatively high percentage of the sample (16.3%) . While the majority of children had normal sleep overall (75%).

Previous research has been relatively vague in determining prevalence rates in young children, and overall rates vary widely based on the age of the children. In addition, much of the previous research has grouped wide age ranges together instead of examining rates in narrow age ranges of children. Overall, the prevalence rates of sleep disorders in this sample were higher than the rates expected based on previous research. For example, (19%) of this sample demonstrated some risk for OSAS, while previous research has estimated that the rate of OSAS in children populations is between 1% and 3% ⁽⁹⁾. Higher rates of sleep disorders in this population may be due to the fact that the sample is at-risk, and not reflective of the typical preschool population. It is critical that school psychologists are aware of the high rates of pediatric sleep disorders. The job responsibilities of typical school psychologists require them to interact with children and adolescents who are reflective of the sample used in this study in that they have a higher risk for school failure or some other type of social, emotional, or language delay. The results of this study suggest that at-risk populations of children commonly suffer from a sleep disorder in addition to having other problems. Therefore, consistent and even universal screening of sleep disorders in children experiencing a wide range of difficulties should be considered best practice in order to improve the problem identification stage of the provision of psychological services.

Appropriate behavior is often considered to be a prerequisite to learning in young children, and previous research has made the link between behavior and educational outcomes clear at all ages ⁽¹⁰⁾. The results of this study show a significant relationship between behavior and sleep; those children who were at high-risk for a sleep disorder had more parent-reported behavior problems as compared to those children whose sleep was rated normal. Specifically, a relationship was shown between sleep and internalizing behavior, externalizing behavior, and academic skills. Therefore, it is clear that in this sample, impaired sleep was related to a wide variety of behavior problems and even poorly developed academic skills. Although it is evident that a difference exists between children who have normal sleep and those who have sleep that is disturbed enough to be at high-risk for having a sleep disorder, no difference was found between the caution range of sleep and either of the other two categories. This indicates that the behavioral problems seen in the high risk group were not apparent for those in the moderate risk category. However, it is important to remember that children who score in the cautionary range are less likely to have a medically diagnosable sleep disorder. Therefore, the lack of a difference found in this category may be due to the possibility that these children do not have a diagnosable sleep problem. It may be because negative behavioral effects are only apparent with severe sleep problems. This study is unique because it compared types of behavior between children in 3 different categories of risk for a sleep disorders. The results of this study are aligned with previous research that determined a relationship between sleep disorders and behavior problems, particularly ADHD ⁽¹¹⁾, and between sleep disorders and internalizing problems ⁽¹²⁾. In addition, this study expands the research by examining multiple problem areas within a narrow school age range of 6 - 12 years old. This study also found a significant relationship between symptoms of sleep disorders and academic skills. Although it is clear that sleep problems are common in children who have disorders related to academic skills such as mental retardation ⁽¹³⁾ and autism ⁽¹⁴⁾,

There was a significant negative relationship between sleep and academic skills; children who were rated as having increased levels of sleep problems displayed

progressively worse academic performance. Analyses comparing all 3 levels of sleep disorders risk (normal, caution, and high risk) revealed significant differences between the normal sleep category and both the caution and high risk categories. In other words, in this sample, even for children whose sleep problems were rated as less severe, academic problems were present when compared with children whose parents rated their child's sleep as normal. Comparably, the academic problems become more severe as children score in the high risk classification. When individual components of the academic assessment were analyzed (motor, concepts, and language), all domains were individually found to significantly relate to the child's risk for sleep disorders. Thus, differences within each domain contributed to the difference that was apparent when the overall score was examined. Although research exists indicating a relationship between academic performance and pediatric sleep disorders^(15,16), there is little research available that looks at the nature of this potential association to school-age.

CONCLUSION:

1. The results of this study show that a very high percentage of the sample (25%), are at high risk for having at least one type of sleep disorder.
2. High rates of sleep disorders symptoms were observed across all disorder categories, particularly in Excessive Daytime Syndrome and Obstructive Sleep Apnea Syndrome. This indicates that the symptoms of sleep disorders are already apparent even at this young age of (6 - 12) years old.
3. A significant relationship was found between sleep disorders symptoms and multiple problem areas including behavior and academic skill development.

RECOMMENDATION:

1. Future research should focus on using larger samples in order to gain a more accurate picture of prevalence rates in this population.
2. In addition to using larger samples, additional research should be conducted in order to learn more about the prevalence rates in the general population.
3. Children with sleep disorders must receive interventions through sleep specialists, school psychologists can intervene through appropriate identification of the problem in the problem-solving process, educating students and educators about the prevalence and negative effects associated with sleep disorders, and even advocating for altering the school day so that children are educated during the times in which they are most alert.

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