Original Article

The Sleep Habits of Children Aged 9 to 11 Years Old in Northwestern Turkey: A comparison of the Parents' and Children's Views

Deniz Kocoglu, PhD
Assistant Professor, Public Health Nursing Department, Health Science Faculty, Selcuk University, Konya, Turkey

Makbule Tokur – Kesgin, PhD
Assistant Professor, Nursing School, Abant Izzet Baysal University, Bolu, Turkey

Correspondence: Deniz Kocoglu, Selcuk University, Health Science Faculty Alaeddin Keykubat Campus 42030 Selcuklu, Konya, Turkey E-mail: deniizkocoglu@gmail.com

Abstract

Aim: The purpose of this study was to evaluate whether there was a difference between the reports of parents and primary school children in the age group of 9-10 and 11 years in terms of sleep characteristics or not.
Methods: This research was a descriptive-cross sectional study. Total 615 students and their families constituted study group of research. In the evaluation of data, spearman correlation and wilcoxon, chi-square analysis and Phi coefficient calculation was utilized.
Results:The difference between the statements of students and their parents regarding the sleeping and wakeup times and leep problems / characteristics was found to be significant and the consistency between the statements was low in this study
Conclusion: It could be recommended for school nurses to be more careful and questioning while evaluating the sleep characteristics of especially younger students.

Key Words: children, sleep, comparasion, school nurse

Introduction

National Association of School Nurses (NASN) of the United States defines the school nursing as *"school nursing is a specialized practice of professional nursing that advances the well-being, academic success and life-long achievement and health of students."* (NASN, 2010). School nurse has various responsibilities in the school environment in order to attain these goals. Being described as the early recognition of physical, behavioral, social and academic problems by students, case finding is an important area of responsibility for the school nurse to succeed (Modrcın-Talbott, 2002; Igoe, 1996). School nurse constantly uses activities such as observation, health screenings, evaluation of absenteeism in order to control the problems that might affect the academic development of students. The current literature emphasizes the importance of sleep problems in problems affecting the academic development of students negatively. It is indicated that sleep and respiratory problems have a negative effect upon the academic success, attention, memory and intelligence, and they increase behavioral problems (Perez-Chada et al., 2007; Blunden, Lushington, & Kennedy, 2001). A relation was detected between the daytime sleepiness and getting lower grades, being late, having a decrease in the rate of participating in activities outside of school and missing social or sportive activities (Gibson et al., 2006). Similarly, another study indicated that while daytime sleepiness

affected the school performance negatively, the increase of both sleep quality and duration made a positive contribution (Dewald et al., 2010). Regarding the preschool children, IQ scores of those having difficulty in sustaining their sleep, talking in sleep, resisting against sleeping or having nightmares were 2-3 scores lower compared to those without sleep problems (Liu et al., 2012). Gradisar, Gardner, & Dohnt's study (2011) determined that while sufficient sleep affected cognitive processes positively, insufficient duration of sleep affected negatively memory processes related with coding, storing and revealing the knowledge. Another condition that makes sleep important in terms of student health is the fact that short duration of sleep (Valent, Brusaferro, & Barbone, 2001) and daytime sleepiness (Li et al., 2008) are defined as risk factors for students to get injured. Besides, childhood sleep pattern is very important since it also affects the sleep structure during adulthood (Dregan &Armstrong, 2010).

Because of all these reasons, the school nurse is required to evaluate the students' sleep in detail. Relevant studies determined that the data of sleep regarding students were received not only from students, but also from their parents and teachers (Spruyt et al., 2005; McLaughlin, 2005; Canet 2010; Liu et al., 2012). Regarding the sleep, it is thought that information received from the parents would not be sufficient alone. Because the data obtained from the diaries or questionnaires kept by parents regarding the duration of sleep are subjective (Nixon et al. 2008) and the children are not aware of everything about the sleep process unless they call their parents or make noise, since parents do not share the same room with their children (Aldridge Antal, LeBourgeois, & Harsh, 2002).

In addition, parents occasionally accept sleep problems as a part of the normal development period and do not perceive sleep problems as impairment (Carvalho et al., 2004). Data collection through objective data such as actigraphy and polysomnography that are used in the evaluation of sleep might give more accurate results.

In the studies, it is observed that actigraphy evaluates cohesion of the statements of parents or students in terms of the sleeping – waking time and total duration of sleep (Wolfson et al., 2003;Sadeh 2011; Holey et al., 2010; Nixon et al.,2008) however, assessments aimed at other sleep problems/characteristics (such as daytime sleepiness, having difficulty in waking up in the morning) are not conducted commonly. Besides, the measurement methods presenting objective data about sleep for school nurses are not common in practice and always accessible.

Thus, the data received from school children and parents are still important for school nurses. It is thought that knowing the consistency of the statements of school children and parents with one another regarding the sleep process will contribute to school nurses to plan their interventions.

Method

Study population

This is a descriptive-cross sectional study. The aim of this study was to evaluate whether there was a difference between the reports of parents and primary school children in the age group of 9-10 and 11 years in terms of sleep characteristics or not. The reason behind why this age group was selected in the study was possible changes on the regular sleep pattern of children in the adolescence and the decrease in parents' sensitivity to follow the sleep pattern of their children.

Considering the quality of the questionnaire prepared; the age groups of 9-10-11 years were involved in the study. The study was conducted in randomly selected schools in the province of Bolu between May,1 2012 and May, 29 2012.

The population of the study consisted of 698 students receiving education in grades 3., 4., and 5. in these schools. No sample group was selected in the study and 615 students and their parents were reached as a result of the repeated visits of researchers.

Measures

The data of study were generated as two forms required to be filled out by students and their parents. These forms involved questions for both students and their parents about sleeping/wakeup time, having problems with falling into sleep, taking naps in the daytime, waking up at night,

having problems with waking up in the morning and daytime sleepiness.

The Parents Form Involves

Bedtime: Considering the last week of your child, write her/his general bedtime.

Wakeup time: Considering the last week of your child, write her/his general wakeup time.

Having problems with falling into sleep: How much time does it take for your child to fall into sleep after going to bed?

Taking naps in the daytime: Does your child have the habit of taking naps in the daytime? (Yes / Sometimes / No)

Waking up at night: Does your child wake up once in his sleep after falling into sleep? (Generally / Often / Sometimes / Rarely / Never)

Does she/he wake up in her/his sleep for more than once? (Generally / Often / Sometimes / Rarely / Never)

Having problems with waking up in the morning: Does your child have the problems of being restless when she/he wakes up in the morning and does it take a long time for her/him to get out of bed and become sober? (Generally / Often / Sometimes / Rarely / Never)

Daytime sleepiness*:* Does your child fall into sleep while doing homework, watching the television, going on a visit or spending time with friends? *(except when* you are excessive fatigue) (Generally / Often / Sometimes / Rarely / Never)

The Child Form Involves; (Considering the last week)

Bedtime: : At what time did you go to bed in the evening on school days?

Wakeup time: At what time did you at what time do you wake up in the morning on school days?

Having problems with falling into sleep: How much time does it take for you to fall into sleep after going to bed?

Taking naps in the daytime: Do you generally take naps in the daytime? (Yes / Sometimes / No)

Waking up at night: Do you wake up once in your sleep after falling into sleep at night? (Generally / Often / Sometimes / Rarely / Never)

Do you wake up in your sleep for more than once? (Generally / Often / Sometimes / Rarely / Never)

Having problems with waking up in the morning: Do you have the problems of being restless when you wake up in the morning and does it take a long time for you to get out of bed and become sober? (Generally / Often / Sometimes / Rarely / Never)

Daytime sleepiness: Do you fall into sleep while doing homework, watching the television, going on a visit or spending time with your friends (except when you are excessive fatigue)? (Generally / Often / Sometimes / Rarely / Never)

In this two questionnaire, students and their families evaluated the student's sleep characteristics within the past week. If the student has experienced any situation (e.g., infection, moving, a change in the house, etc.) that may have influenced his/her sleeping process within the past week, the questions were to be answered in consideration of the last week lived under normal circumstances**.**

Questions in the child and parent forms obtained from previously publications and several questionnaires in this field. The validity of this forms was examined with the content validity. This forms were evaluated by 12 experts including nurses, teachers and acedemic staff. Expert opinions evaluated by Kendall W analysis.

There wasn't statistically significant difference and the views of experts found to be compatible with each other (Kendall W = 13.230 p = 0.211). Later, prior to the start of the study, a pre-application of the questionnaire was conducted on 10 students and their parents. With that pre-application, the duration of data collection process, clarity of the questions in data collection tools, and the sufficiency of the data collected for desired results were evaluated and the final version was created.

Ethical Dimension

We received the permission from Provincial Directorate of National Education of Bolu for the study. Questionnaires and informed consent forms were sent to parents by students within

closed envelopes to collect the data and children of parents, who accepted to participate in the study and also approved the participation of their children, were applied with the questionnaire at school. Children were informed about the study before the application of the questionnaire.

Statistical Analyses

In the study; while spearman correlation and wilcoxon analysis were used for the similarity of bedtime and wakeup time indicated by parents and students, chi-square analysis and Phi coefficient calculation were used for the comparison of the statements of parents and students in terms of having problems with falling into sleep, waking up at night, taking naps in the daytime, daytime sleepiness, and having problems with waking up in the morning. According to the data;

Bedtime and wakeup times were used as continuous variables and it was accepted that;

Cases that required more than 20-30 mn to fall into sleep at night had problems,

Cases that answered yes for taking naps in the daytime had habit of taking naps in the daytime,

Cases that answered generally/often for waking up at night for once and more than once, having problems with waking up in the morning and daytime sleepiness had problems.

Results

In the study, 27.6% of students were 9 age, 27.2% were 10 age and 45.2% were 11 age. 51.5% were grils and 48.5% were boys. Students reported the bedtime as 21.78±0.90 and wakeup time as 7.27±0.51; parents reported the bedtime of the student as 21.90±0.74 and wakeup time as 7.35±0.55. It was observed that the bedtime ($r=0.561$) and wakeup times ($r=0.506$) reported by students and their parents showed a moderate correlation ($p<0.001$) and the difference in the statement is significant ($z=4.826$, $p<0.001$). According to the statements of students, 21.6% took naps in the daytime, 36.5% had problems with falling into sleep, 38.0% woke up at night for once and 25.7% for more than once, 36.0% had problems with waking up in the morning and 14.1% felt daytime sleepiness. According to the statements of parents regarding students, 14.5% took naps in the daytime, 30.2% had problems with falling into sleep, 40.2% woke up at night for once and 17.7% for more than once, 34.4% had problems with waking up in the morning and 20.4% felt daytime sleepiness. According to the chi-square analysis, it was determined that the difference between the statements of students and parents was significant ($p<0.001$) and the relation (Phi coefficient) between statements were as follows; 0.43 in taking naps in the daytime, 0.30 in waking up at night for more than once, 0.23 in waking up in the morning, 0.17 in waking up at night for once, 0.11 in daytime sleepiness and 0.08 in having problems with falling into sleep (Table 1).

Figures 1 and 2 illustrate the change in bedtime and wakeup times of students according to ages. It is observed that as the age increases, the bedtime gets later according to the statements of both parents and students (Figure 1). Wakeup time is at a later hour in the age group of 10 compared to the age groups of 9 and 11 (Figure 2). According to the statements of parents; the state of waking up at night for more than once, having problems with waking up in the morning and falling into sleep is greater in the age group of 11 compared to other groups. The rate of taking naps in the daytime is similar in all age groups, but the state of daytime sleepiness decreases as the age increases. Evaluating the statements of students; it is observed that students in the age group of 10 have less problems with waking up at night for more than once, waking up in the morning and falling into sleep. The states of taking naps in the daytime and waking up at night for once are observed to decrease as the age increases.

Evaluating the relation between the statements of parents and students according to age groups; it is observed that the correlation between the sleeping and wakeup times increases as the age increases and parents and students give more consistent information. Evaluating in terms of sleep problems, the relation between the statements of parents and students regarding the states of taking naps in the daytime and waking up at night for more than once increases as the age increases. Regarding the states of waking up at night for once, having problems with waking up in the morning and falling into sleep, the

relation between the statements of parents and students is the highest in the age group of 10 and the lowest in the age group of 9. Regarding the state of daytime sleepiness, the relation is the highest in the age group of 10 and the lowest in the age group of 11 (Table 2).

Table 1. Comparison of Parents' and Children' Reports About The Bedtime and Wakeup time

	Parents x±sd	**Student x±sd**	**Test and p values***	**Test and p values****
Bedtime	21.90±0.74	21.78±0.79	*z=4.826*	*r=0.619*
			p=0.000	***p=0.000***
Wakeup time	7.35±0.55	7.27±0.51	*z=3.540*	*r=0.576*
			p=0.000	***p=0.000***
Taking naps in the daytime	**Parents**			**Test and p values*****
Student	Yes	No	***Total***	
Yes	58	75	133 (21.6)	*X=1.164*
No	31	451	482 (78.4)	*Phi=0.435*
Total	89(14.5)	526(85.5)	615 (100.0)	***p=0.000***
Wake up at night (once)	**Parents**			
Student	Yes	No	***Total***	
Yes	119	115	234(38.0)	*X=17.968*
No	128	253	381 (62.0)	*Phi=0.171*
Total	247(40,2)	368(59.8)	615(100.0)	***p=0.000***
Wake up at night (more than once)	**Parents**			
Student	Yes	No	***Total***	
Yes	59	99	158(25,7)	*X=56,119*
No	50	407	457(74.3)	*Phi=0.302*
Total	109(17.7)	506(82.3)	615(100.0)	***p=0.000***
Having problems with waking up in the morning	**Parents**			
Student	Yes	No	***Total***	
Yes	112	110	222 (36.0)	*X=34.175*
No	94	272	393 (64,0)	*Phi =0.236*
Total	189 (34.4)	361(65.6)	615(100.0)	***p=0.000***
Daytime sleepiness	**Parents**			
Student	Yes	No	***Total***	
Yes	28	59	87(14,1)	*X=7.950*
No	100	428	528(85,9)	*Phi=0.114*
Total	128(20.8)	487(79.2)	615(100.0)	***p=0.005***
Having problems with falling into sleep	**Parents**			
Student	Yes	No	***Total***	
Yes	56	169	225(36,5)	*X=4.823*
No	130	260	390 (63.5)	*Phi=-0.089*
Total	186(30,2)	429(69.8)	615(100.0)	***p=0.028***

*Wilcoxon test
**Corelation analyze
*** Chi-square analysis and Phi coefficient

Table 2. Comparison of Parents' and Children' Reports About Sleep Characteristics

	9 age (n=170)				10 age (n=167)				11 age (n=278)			
Bedtime	21.6±0.59	21.5±0.79	***Z=2.313 p=0.021***	*r=0.425* ***p=0.000***	21.8±0.69	21.66±0.66	***Z=3.081 p=0.000***	*r=0.683* ***p=0.000***	22.0±0.79	21.9±0.82	***Z=2.578 p=0.010***	*r=0.654* ***p=0.000***
Wakeup time	7.30±0.43	7.28±0.54	***Z=0.811 p=0.414***	*r=0.504* ***p=0.000***	7.41±0.58	7.29±0.51	***Z=2.542 p=0.011***	*r=0.597* ***p=0.000***	7.33±0.59	7.24±0.49	***Z=2.763 p=0.006***	*r=0.606* ***p=0.000***
Taking naps in daytime		**Parents**				**Parents**				**Parents**		
Student	Yes	No	***Total***		Yes	No	***Total***		Yes	No	***Total***	
Yes	13	25	38(22,4)	*X=17,892*	16	21	37(22.2)	*X=27,693*	29	29	58 (20.9)	*X=75.454*
No	10	122	132 (77.6)	*Phi=0.324*	10	120	130 (77.8)	*Phi=0.407*	11	209	220 (79.1)	*Phi=0.521*
Total	23 (13,5)	147(86.5)	170(100.0)	*p=0.000*	26 (15,6)	141(84.4)	167(100.0)	*p=0.000*	40(14.4)	238(85.6)	278(100.0)	***p=0.000***
Wake up at night (once)		**Parents**				**Parents**				**Parents**		
Student	Yes	No	***Total***		Yes	No	***Total***		Yes	No	***Total***	
Yes	31	38	69(40.6)	*X=0.675*	39	29	68 (40.7)	*X=12.165*	49	48	97(34.9)	*X=8,536*
No	39	62	101 (59.4)	*Phi=0.063*	30	69	99 (59.3)	*Phi=0.270*	59	122	181 (65.1)	*Phi=0.175*
Total	70 (41.2)	100(58.8)	170(100.0)	*p=0.414*	69 (41,3)	98(58,7)	167(100.0)	*p=0.000*	108(38,8)	170(61,2)	278(100.0)	***p=0.003***
Wake up at night (more than once)		**Parents**				**Parents**				**Parents**		
Student	Yes	No	***Total***		Yes	No	***Total***		Yes	No	***Total***	
Yes	13	34	47(27.6)	*X=5,911*	15	25	40(24.0)	*X=17,660*	31	40	71(25.5)	*X=35.790*
No	15	108	123 (72.4)	*Phi=0.186*	12	115	127(76.0)	*Phi=0.325*	23	184	207(74.5)	*Phi=0.359*
Total	28(16.5)	142(83.5)	170(100)	*p=0.015*	27(16,2)	140(83,8)	167(100.0)	*p=0.000*	54(19.4)	224(80,6)	278(100.0)	***p=0.000***
Having problems with waking up in the morning		**Parents**				**Parents**				**Parents**		
Student	Yes	No	***Total***		Yes	No	***Total***		Yes	No	***Total***	
Yes	29	32	61 (35.8)	*X=6,916*	30	26	56 (33.5)	*X=13,194*	53	52	105 (37.7)	*X=14,595*
No	30	79	109 (64.2)	*Ph =0.202*	28	83	111 (66.5)	*Phi=0.281*	48	125	173(62.3)	*Phi=0.229*
Total	59(34.7)	111(65.3)	170(100.0)	*p=0.009*	58 (34,7)	109(65,3)	167(100.0)	*p=0.000*	101(36,3)	177(63.7)	278 100.0)	***p=0.000***

Daytime sleepiness	**Parents**					**Parents**				**Parents**			
Student	Yes	No	***Total***		Yes	No	***Total***		Yes	No	***Total***	
Yes	9	16	25 (14.7)	*X=2.533*	8	15	23(13,7)	*X=1.927*	11	28	39(14.1)	*X=2,692*
No	31	114	145 (85.3)	*Phi=0.122*	28	116	144(86.3)	*Phi=0.129*	41	198	239(85,9)	*Phi=0.098*
Total	40(23.5)	130(76.5)	170 (100.0)	*p=0.111*	36(21,6)	131(78,4)	167(100.0)	*p=0.165*	52(18,7)	487(81,3)	278(100.0)	***p=0.101***
Having problems with falling into sleep						**Parents**				**Parents**		
Student	Yes	No	***Total***		Evet	Hayır	***Toplam***		Yes	No	***Total***	
Yes	12	49	61 (35.9)	*X=0.575*	10	44	54(32,3)	*X=4,509*	34	76	110(39.6)	*X=1,504*
No	27	87	114 (64.1)	*Phi=-0.058*	39	74	113 (67.6)	*Phi =-0.164*	64	104	168 (60.4)	*Phi=-0.074*
Total	39(22,9)	131(77.1)	170(100.0)	*p=0.448*	49(29,3)	118(70,7)	167(100.0)	*p=0.034*	98(35.3)	180(64,7)	278(100.0)	***p=0.220***

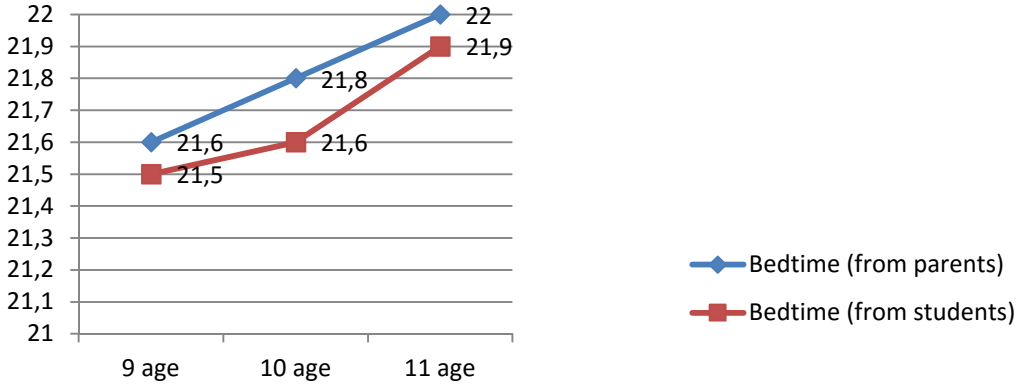

Figure 1. Change of bedtime (according to age group)

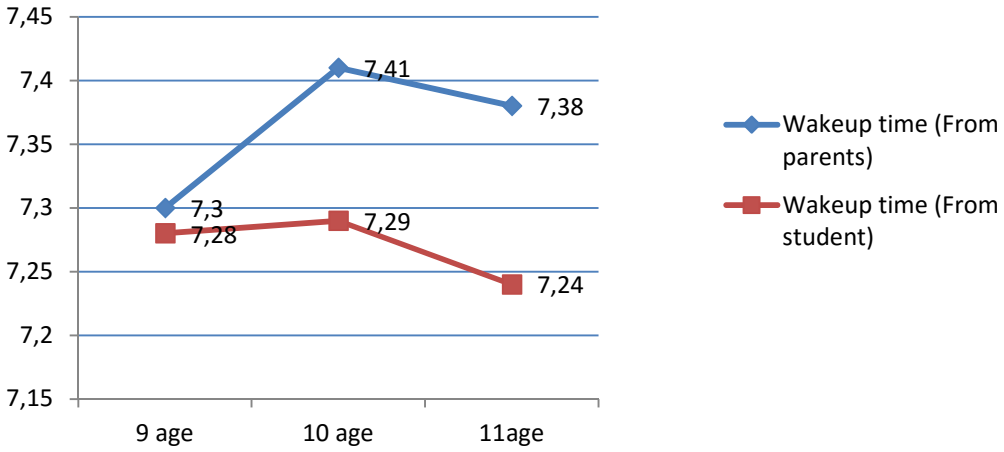

Figure 2. Change of wakeup time(according to age group)

Discussion

This study defined the sleep characteristics of children and compared the consistency of information given by children and their parents regarding the sleep. As well as the personal reports of children, the reports of parents and teachers are important in the evaluation of sleep (Aronen et al., 2000). Among studies being examined within the meta-analysis study that was conducted by Dewald et al., (2010) regarding the sleep quality and school performance, only one study discussed evaluations of both students and parents regarding sleep and other studies generally examined the evaluations of students. In addition, it is known that there have been studies that involved the information of only parents (Palmstierna, Sepa, & Ludvigsson, 2008) or only students (Hoedlmoser et al., 2000).

In the study, the parents stated the bedtime of the student as 21.90±0.74 and wakeup time as 7.35±0.55; the students stated their bedtime as 21.78±0.90 and wakeup time as 7.27±0.51. Parents stated the bedtime and wakeup times as later compared to students. A moderate relation was determined between these statements. Examining the literature; it is observed that regarding students in the similar age group in the United States, their bedtime is 20.27, wakeup time 6.55, average duration of sleep 10.64; and regarding students in China, the bedtime is 21.06, wakeup time 6.24 and average duration of sleep 9.13 (Liu et al., 2005). The study group has later sleeping and wakeup times compared to their peers. Children have a common problem of sleeping late in Turkey (Bülbül et al., 2010) and this problem is so important that it is approached by the media nationally. The existence of a moderate-level correlation between the statements of parents and students regarding the sleeping and wakeup times makes us think whether it is safe to receive information only from parents or students or not. The researchers indicate that the determination of waking up at night through the reports of parents will not give as accurate results as actigraphy (Galland et al., 2012). Considering these results and the literature view, it is required to evaluate the consistency of the data related to the duration of sleep received from parents and students, with actigraphy, as well. Comparing the statements of parents regarding the sleep duration of their children and results obtained from actigraphy; it was determined that actigraphy results showed a duration of sleep that was 14-50 minutes less (Nixon et al., 2008). In their study that evaluated the information obtained from students, as well as sleep diaries and actigraphy results, Wolfson et al., (2003) indicated that the results were similar in total duration of sleep and wakeup time in the morning. However, they stated in the survey that the bedtime was earlier compared to the diary and actigraphy. In the same study, there was a moderate-level correlation in total duration of sleep and a good-level correlation in the sleeping and wakeup time between information obtained via the survey and sleep diary. In the study of Dewald et al. (2010); no difference was determined between the statements of students and parents regarding the duration of sleep and sleepiness. Dewald et al. thought that this was associated with the insufficiency of studies involving the reports of parents. The literature states that the duration of sleep is closely related with academic competence and success (Wagner et al., 2004; Ng, Ng, & Chan, 2009) and short duration of sleep might cause unwanted injuries (Lam et al., 2007) and obesity (Meng et al., 2012). An experimental study conducted by Sadeh et al., (2003) demonstrated that changes in the duration of sleep are effective on the neuropsychological states of students. It could be asserted that it is important to evaluate the school nurse accurately due to the effects of the duration of sleep upon the physical, mental, social health and academic development. Thus, it is required to receive information both from parents and students separately and evaluating its accuracy with sleep diaries and information received is important. It is especially required to carefully evaluate the sleep characteristics of students having problems with physical, mental and academic development and behavioral problems with the help of actigraphy.

It is observed that students in the study have sleep problems at a considerable rate. According to parents, the extent of the determined problems are respectively as follows; waking up at night for once (40.2%), having problems with waking up in the morning (34.4%) and falling into sleep (30.2%), daytime sleepiness (20.8%) and waking up at night for more than once (17.7%).

According to students, the extent of the determined problems are respectively as follows; waking up at night for once (38.0%), having problems with falling into sleep (36.5%) and waking up in the morning (36.0%), waking up at night for more than once (25.7%) and daytime sleepiness (14.1%). It is observed that the difference between the statements of parents and students is significant and there is a low level of cohesion between the statements. A similar condition is also observed on the data of taking naps in the daytime, which could be evaluated as a sleep habit. While parents stated the rate of students with the habit of taking naps in the daytime as 14.5%, students stated this rate as 21.6%. Evaluating the cohesion between the statements of parents and students in general; it is observed that the cohesion is lower and also a bit higher in taking naps in the daytime, waking up at night for more than once and having problems with waking up in the morning; however, it is very low in waking up at night, taking naps in the daytime and having problems with falling into sleep. In their study, Holley et al., (2010) reported a low correlation between the statements of parents and actigraphy statements regarding the state of waking up at night. This condition supports the interpretation of Aldridge - Antal, LeBourgeois, & Harsh (2002), which asserts that parents would not be able to know everything about the sleep process of their children since they do not share the same room.

Considering how the problems experienced by school children are defined in literature, similar results are observed. In their study that was conducted based on the statements of students, Hoedlmoser et al., (2010) indicated that students had problems with waking up in the morning and took naps in the daytime (33.4%) and also had problems with getting out of bed (28.5%). Similar results such as resistance against going to bed, parasomnia and sleep anxiety were also revealed in a study that was conducted based on the statements of parents (Cortesi et al., 2004). It is known that a major part of sleep problems in school children causes behavioral problems and daytime sleepiness (Hoeldlmoser et al., 2010). According to the result of another study; when children wake up after sleep onset, this causes daytime sleepiness. Daytime sleepiness was considered among the important reasons for children to have social problems (Velten-Schurian, 2010).

Comparing according to age groups, on the other hand, it is observed that bedtime becomes later as the age increases and wakeup time becomes later in the age group of 10 compared to the age group of 9 and 11. This situation shows a similarity with the statements of both parents and students. The literature supports the finding that the duration of sleep decreases and bedtime becomes later as the age increases (Crowley, Acebo, & Carskadon, 2007; Moore et al., 2011). Parents stated that there was an increase in other sleep problems except for daytime sleepiness in the age group of 11; however, there was a decrease in daytime sleepiness. They indicated that the rate of students taking naps in the daytime was similar according to age groups. Students in the age group of 10 stated that they experienced the problems of waking up at night for more than once, waking up in the morning and falling into sleep less. It is observed that the states of taking naps in the daytime and waking up at night for once decrease as the age increases. This situation could basically be explained with the fact that students in the age group of 10 wake up later in the morning. It is indicated that delaying the school onset and extending the sleep hour of students make a positive contribution to some sleep characteristics/qualities, as well as the mood and behaviors (Owens, Belon, &Moss, 2010).

Evaluating the relation between the statements of parents and school children according to age groups, it is observed that the correlation between the sleeping and wakeup times increases as the age increases and parents and school children give more consistent information. Evaluating in terms of sleep problems, it is observed that the relation amount between the statements of parents and school children increases as the age increases in the state of taking naps in the daytime and waking up at night for more than once. The increase in the age might also increase the possibility for parents to perceive sleep problems as real problems. This situation could be explained with the increase of sharings of parents and school children in terms of sleep characteristics and definition of the problems by both groups similarly. Carvalho et al., (2004)

indicated that parents might occasionally be unable to perceive sleep problems as real problems and accept them as a part of the normal development period. In this study, the relation between the statements of parents and students is the highest in the age group of 10 regarding the states of waking up at night for once, having problems with waking up in the morning and falling into sleep and the lowest in the age group of 9. The relation regarding daytime sleepiness is the highest in the age group of 10 and the lowest in the age group of 11. According to the study result of Nixon et al., (2009); 16% of parents indicated that they delayed the sleep as their school children had problems with falling into sleep. Since children wake up early in the morning to go to school on time, they are unable to complete their deficient sleep and their duration of sleep gets shorter.

This study has showed the necessity for school nurses to evaluate the reliability of information while receiving information from students regarding sleep. School nurses should especially receive information from parents while examining the sleep characteristics of students who have lower academic success, display negative behaviors in the class, suffer from mood disorders and obesity or have frequent accidents and injuries, and compare the sleep diaries and information received. Besides, school nurses should also inform parents about sleep problems, teach them how to follow sleep patterns of their children and emphasize the importance of this follow-up.

Conclusion

As a consequence, the difference between the statements of students and their parents regarding the sleeping and wakeup times and sleep problems / characteristics was found to be significant and the consistency between the statements was low in this study. It was determined that the correlation between the statements of parents and students increased at a low rate as the age increased. Thus, it could be recommended for school nurses to be more careful and questioning while evaluating the sleep characteristics of especially younger students.

Limitation

This study is limited with the answers of 3., 4. and 5. grade primary school students and their parents in the province of Bolu, Turkey. As the answers reflect the own statements of individuals, they are subjective. It is important to repeat similar studies with actigraphy and polysomnography to obtain more objective results regarding sleep.

Conflicts of Interest

The authors declare that they have no conflict of interest. This research was not supported by any grant

References

Aldridge Antal, H.M., LeBourgeois, M.K., & Harsh, J. (2002) The relationship between parental involvement and behavioral sleep quality in preschool aged children. *Sleep,* 25, A313.

Aronen, E.T., Paavonen, E.J., Fjällberg, M., Soininen, M., & Törrönen, J. Sleep and psychiatric symptoms in school-age children. *J Am Acad Child Adolesc Psychiatry*, 39(4), 502–8

Blunden, S., Lushington, K., & Kennedy, D. (2001) Cognitive and behavioral performance in children with sleep related obstructive breathing disorders. *Sleep Medicine Reviews*, 5(6), 447-461.

Bülbül, S., Kurt, G., Ünlü, E., & Kırlı, E. (2010) Adölesanlarda uyku sorunları ve etkileyen faktörler. Çocuk Sağlığı ve Hastalıkları Dergisi, 53,204-210.

Canet, T. (2010). Sleep-wake habits in Spanish primary school children. *Sleep Medicine*, 11(9), 917-21.

Carvalho, L.B., Prado, L.B., Silva, L., Almeida, M.M., Silva, T.A., Vieira, C.M., Atallah, A.N., & Prado, G.F. (2004) Cognitive dysfunction in children with sleep disorders. *Arq Neuropsiquiatr*. 62(2A), 212-6.

Cortesi, F., Giannotti, F., Sebastiani, T., & Vagnoni, C. (2004). Cosleeping and sleep behavior in Italian school-aged children. *Journal of Developmental and Behavioral Pediatrics*. 25(1), 28-33.

Crowley, S.J., Acebo, C., & Carskadon, M.A. (2007) Sleep, circadian rhythms, and delayed phase in adolescence, *Sleep Medicine,* 8, 602–612

Dewald, J.F., Meijer, A.M., Oort, F.J., Kerkhof, G.A., Bögels, S.M.(2010). The influence of sleep quality, sleep duration and sleepiness on school performance in children and adolescents: A meta-analytic review. *Sleep Medicine Reviews,* 14(3),179-89

Dregan, A., & Armstrong, D. (2010) Adolescence sleep disturbances as predictors of adulthood sleep disturbances--a cohort study. *J Adolesc Health,* 46, 482-7

Galland, B.C., Taylor, B.J., Elder, D.E., & Herbison, P. (2012). Normal sleep patterns in infants and children: a systematic review of observational studies. *Sleep Medicine Reviews,* 16(3), 213-22.

Gibson, E., Powles, A., Thabane, L., O'Brien, S., Molnar, D., Trajanovic, N., et al. (2006) "Sleepiness" is serious in adolescence: Two surveys of 3235 Canadian students. *BMC Public Health*, 6 (1),116-124.

Gradisar, M., Gardner, G., & Dohnt, H. (2011). Recent worldwide sleep patterns and problems during adolescence: a review and meta-analysis of age, region, and sleep. *Sleep Medicine,* 12,110-8

Hoedlmoser, K., Kloesch, G., Wiater, A., & Schabus, M. (2010). Self-reported sleep patterns, sleep problems, and behavioral problems among school children aged 8-11 years. *Somnologie (Berl)*,14(1),23-31.

Holley, S., Hill, C.M., & Stevenson, J. (2010). A comparison of actigraphy and parental report of sleep habits in typically developing children aged 6 to 11 years. *Behav Sleep Med*, 8,16-27.

Igoe, J. (1996). Community Health Nurse in the School. M. Stanhope, J. Lancaster. (Ed.). *Community Health Nursing Promoting Health of Aggregates, Parents and Individuals* (Fourth bs.). United State: Mosby.

Lam, L.T., & Yamg, L. (2007). Short duration of sleep and unintentional injuries among adolescents in China. *American Journal of Epidemiology* , 166 (9),1053-1058.

Li, Y., Jin, H., Owens, J.A., & Hu, C. (2008). The association between sleep and injury among school-aged children in rural China: A case–control study. *Sleep Medicine*, 9,142–148

Liu, J., Zhou, G., Wang, Y., Ai, Y., Pinto-Martin, J., Liu, X. (2012). Sleep problems, fatigue, and cognitive performance in chinese kindergarten children. *J Pediatr.*161(3), 520-525

Liu, X., Liu, L., Owens, J.A., & Kaplan, D.L. (2005). Sleep Patterns and Sleep Problems Among Schoolchildren in the United States and China. *Pediatrics,* 115, 241-9

McLaughlin Crabtree, V., Beal Korhonen, J., Montgomery-Downs, H.E., Faye Jones, V., O'Brien, L.M., & Gozal, D. (2005). Cultural influences on the bedtime behaviors of young children. *Sleep Medicine,* 6(4),319-24.

Meng, L.P., Liu, A.L., Hu, X., Zhang, Q., Du, S.M., Fang, H.Y., Ma, J., Xu, G.F., Li, Y., Guo. H.W., Du, L.,& Mn, G.S. (2012). Report on childhood obesity in China (10): association of sleep duration with obesity. *Biomedical and Environmental Sciences.*25(2), 133-40.

Modrcın-Talbott, M. (2002). School Health Nursing. S. Clemen-Stone, SL. McGuire, DG Eigsti (Ed.). *Comprehensive Community Health Nursing, Parents, Aggregate& Community Practice* (s. 686-705). London: Mosby Company

Moore, M., Kirchner, H.L., Drotar, D., Johnson, N., Rosen, C., & Redline, S. (2011). Correlates of adolescent sleep time and variability in sleep time: The role of individual and health related characteristics. *Sleep Medicine,*12,239-245.

NASN. (2010). The *Definition of School Nursing:* National Association of School Nurses Retrived: October 19,2013 from: http://www.nasn.org/RoleCareer

Ng, E.P., Ng, D.K., & Chan, C.H. (2009). Sleep duration, wake/sleep symptoms, and academic performance in Hong Kong secondary school children. *Sleep and Breathing,* 13(4), 357-67

Nixon, G.M., Thompson, J.M., Han, D.Y., Becroft, D.M., Clark, P.M., Robinson, E., Waldie, K.E., Wild, C.J., Black, P.N., & Mitchell, E.A. (2009). Falling asleep: the determinants of sleep latency.Archives of Disease in Childhood, 94,686-9.

Nixon, G.M., Thompson, J.M.D., Han, D.Y., Becroft, D.M., Clark, P.M., Robinson, E., Waldie, K.E., Wild, C.J., Black, P.N., & Mitchell, E.A.(2008). Short sleep duration in middle childhood: risk factors and consequences. *Sleep*, 31,71-8

Owens, J.A., Belon, K., &Moss, P. (2010). Impact of delaying school start time on adolescent sleep, mood, and behavior. *Archives of Pediatrics and Adolescent Medicine,* 164(7),608-614

Palmstierna, P., Sepa, A., & Ludvigsson, J.(2008). Parent perceptions of child sleep: a study of 10 000 Swedish children. *Acta Paediatr*, 97, 1631-9

Perez-Chada, D., Perez-Lloret, S., Videla, A., Cardinali, D., Bergna, M., Fernández-Acquier, M., et al. (2007). Sleep disordered breathing and daytime sleepiness are associated with poor academic performance in teenagers. A study using the pediatric daytime sleepiness scale (PDSS). *Sleep*, 30(12), 1698-1703.

Sadeh , A. (2011) The role and validity of actigraphy in sleep medicine: An update. *Sleep Medicine Reviews,* 15, 259-267

Sadeh, A., Gruber, R., & Raviv, A. (2003). The effects of sleep restriction and extension on school-age children: what a difference an hour makes. *Child Development,* 74(2),444-55

Spruyt, K., O'Brien, L.M., Cluydts, R., Verleye, G.B., & Ferri, R. Odds, prevalence and predictors of sleep problems

in school-age normal children. *Journal Of Sleep Research,* 14(2),163-76.

Valent, F., Brusaferro, S., & Barbone, F. (2001). A case-crossover study of sleep and childhood injury. *Pediatrics*, 107(2),E23-29.

Velten-Schurian, K., Hautzinger, M., Poets, C.F., & Schlarb, A.A. (2010). Association between sleep patterns and daytime functioning in children with insomnia: the contribution of parent-reported frequency of night waking and wake time after sleep onset. *Sleep Medicine,* 11(3),281-8.

Wagner, U., Gais, S., Haider, H., Verleger, R., & Born, J. (2004). Sleep inspires insight. *Nature,* 427(6972), 352-355.

Wolfson, A.R., Carskadon, M.A., Acebo, C., Seife, R., Fallone, G., Labyak, S.E., & Martin, J.L. (2003). Evidence for the validity of a sleep habits survey for adolescents. *Sleep*, 26:213-6.