

Sleep Habits in Children With Attention Deficit Hyperactivity Disorder and the Impact of Methylphenidate

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Abstract

Introduction: Inadequate sleep may indicate the neurocognitive deficits and sleep problems that are frequently described in children diagnosed with attention deficit hyperactivity disorder. This association is most likely bidirectional, as attention deficit hyperactivity disorder may affect the sleep pattern, and disrupted sleep may exacerbate executive dysfunction. Sleep can also be affected by methylphenidate, although the frequency and extent of this interaction are not well defined. This multicentric study aimed to characterize the sleep habits and the impact of methylphenidate on sleep in children and adolescents diagnosed with attention deficit hyperactivity disorder.

Methods: The study included 195 individuals enrolled in neurodevelopmental clinics that were assessed using a sleep questionnaire.

Results: Among other sleep problems, our study revealed that 20% of the respondents usually resist going to bed, 28.7% use screen-based technology to fall asleep on a daily basis, and 35.4% show difficulty getting out of bed in the morning. Concerning the effects of methylphenidate treatment, more than 84% of the participants did not report differences regarding the time when they felt sleepy, the time they fell asleep, or the number of nocturnal awakenings.

Discussion: The results suggest that methylphenidate does not affect the sleep pattern in most children and adolescents, even when higher dosages are used. Our findings do not support previous studies describing that methylphenidate increases insomnia and sleep problems, such as difficulty falling asleep.

Keywords: Adolescent; Attention Deficit Disorder with Hyperactivity/drug therapy; Child; Methylphenidate/therapeutic use; Portugal; Sleep/drug effects; Surveys and Questionnaires; Treatment Outcome

Introduction

Sleep problems are common in children and adolescents and many of them do not get enough sleep each night.^{1,2} It is known that poor sleep relates to neurocognitive, emotional, behavioral, and social impairments.^{1,3-5} Attention deficit hyperactivity disorder (ADHD) is one of the most common neurodevelopmental disorders and it has been frequently related to sleep disorders, affecting 55%-74% in some studies.^{5,6} This association is most likely bidirectional: ADHD may affect the sleep pattern, and disrupted sleep may exacerbate ADHD executive dysfunction.⁷

In addition, sleep seems to be affected by ADHD medication, although the frequency and extent of this interaction are still not well defined. Regarding the effect of methylphenidate on sleep difficulties in children with ADHD, several studies have taken place in the last few years. A review published in 2015 described methylphenidate leading to longer sleep latency, worse sleep efficiency, and shorter sleep duration. Overall, children seem to have worse sleep when on stimulant medication.⁷ Furthermore, another study relates the higher use of sleep medication to combined type ADHD and ADHD medication use.⁸

However, as stated before, sleep problems are common in children and adolescents, particularly in those diagnosed with ADHD, whether they are medicated or not. Moreover, research also found that methylphenidate could improve sleep patterns, reducing both sleep latency and the number of nocturnal awakenings as well as improving subjective sleep quality.⁹

A more recent study reveals a general association between an increased methylphenidate dose and increased sleep problems in children with ADHD, particularly for children of a lower weight. Nevertheless, a substantial proportion of children with pre-existing sleep difficulties no longer had sleep problems on the highest methylphenidate

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dose, which may help explain the mixed findings reported in studies examining the impact of methylphenidate on sleep functioning in children with ADHD.¹⁰

In the current study, the authors aim to characterize sleep habits as well as the influence of methylphenidate on sleep in Portuguese children and adolescents diagnosed with ADHD.

Methods

A multicentric cross-sectional study was performed in two hospitals, a private hospital in Lisbon and a public hospital in Porto. The data were collected using a sleep questionnaire adapted from the Portuguese version of the Children Sleep Habits Questionnaire (CSHQ-PT), adding questions about the medication and its potential effects on sleep. The CSHQ-PT was previously validated in children aged 2 to 10 years old in both community and ADHD clinical samples.^{11,12} The adequacy of the adapted questionnaire for older children was evaluated through the revision by a sleep specialist and pretest in a sample of 25 children aged 6 to 17 years old.

The participants were enrolled in the neurodevelopmental clinics and the inclusion criteria included a previous diagnosis of ADHD, current treatment with medication for ADHD and age between 6 and 18 years. Diagnosis of ADHD had been previously established using Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5) criteria.¹³ Adolescents were invited to answer the questionnaire by themselves, while the parents of younger children (or accompanying family member) were asked to fill it out on their behalf. The study questionnaire was divided into five areas: socio-demographic data, sleeping habits, medication and supplements, the influence of medication in sleep, and ADHD comorbidities. Socio-demographic variables included age, sex, school year, municipality of residence, household members, and the number of siblings. Participants were grouped according to their age in three different groups: 6-10, 11-14, and 15-17 years. The presence of respiratory, neurologic, and behavioral problems was also assessed through a checklist. Family history included the parents' educational level. Similar to the CSHQ-PT, sleeping habits frequencies were evaluated using an ordinal scale with three options: rarely (once a week or never occurs), sometimes (two to four times a week), and usually (five to seven times a week) as well as bedtime and awakening time (both on weekdays and weekends), number of nocturnal awakenings and average time (minutes) to fall back to sleep. Concerning medication, the items asked were the name, dosage,

duration of treatment, and the potential effect felt on the time when the child/adolescent felt sleepy, time to fall asleep, and number of nocturnal awakenings.

In order to characterize the potential effects of methylphenidate on sleep, we performed a stratified analysis, considering three dosage groups: under 0.5 mg/kg/day, over 1 mg/kg/day, and in between 0.5 and 1 mg/kg/day. Three individuals were excluded from this analysis because they were exclusively medicated with atomoxetine. The data were analyzed using IBM SPSS® statistical software, version 25. Descriptive statistics are presented as mean ± standard deviation or median (interquartile range), when appropriate, or absolute and relative frequencies (percentages). The Chi-square/Fisher's exact tests were used to compare proportions between groups (age and dose of methylphenidate), concerning the sleep habits and medication effect on sleep. For all associations, a result was considered significant if the *p* value was lower than 0.05 for a two-sided test.

Results

This study included 195 children and adolescents with ADHD. The average age was 11.3 years old, with a standard deviation (SD) 2.7, range 6-17 years; 75.4% (*n* = 147) were male (Table 1). When questioned about comorbidities, 53.8% (*n* = 105) described the presence of another diagnosis besides ADHD, most frequently, 35.2% (*n* = 37), a specific learning disorder with impairment in reading.

Regarding sleeping habits, the mean bedtime hour on weekdays was 9:30 PM for children aged 10 or under and 10:30 PM for children over 10 years and adolescents, and one hour or one and a half hour later, respectively, on weekend days. Still concerning bedtime, 52.8% (*n* = 103) took more than 30 minutes to fall asleep (Table 2). In addition, 20% (*n* = 39) usually resisted going to bed, 18.5% (*n* = 36) usually needed another person in the room to fall asleep and 28.7% (*n* = 56) usually fell asleep watching television or using other electronic devices, such as tablets and cell phones. The mean waking up hour was 7:15 AM on weekdays and, on average, two hours later, on the weekend. In the morning, 35.4% (*n* = 69) usually revealed difficulty getting out of the bed and 15.5% (*n* = 30) usually looked or felt tired.

Most of children (97.9%, *n* = 185) were medicated with methylphenidate, while the others were currently medicated with atomoxetine or the current medication was not specified. As regards the methylphenidate dosage, 13.5% (*n* = 25) were medicated with less than 0.5 mg/kg/day, 72.4% (*n* = 134) between 0.5 and 1 mg/kg/day and 14.1% (*n* = 26) over 1 mg/kg/day (Table

3). In addition, the methylphenidate formulation was considered, with the results revealing no significant differences among them (Table 4). The vast majority (85.6%, n = 166) did not take medication on weekends. Comparing the days with and without medication, most of the children reported no differences concerning the time when they felt sleepy at night (85.0%), the time they actually fell asleep (84.4%) nor in the number of nocturnal awakenings (90.7%), regardless of whether they are regularly taking medication for ADHD on weekends or not.

Discussion

This multicentric cross-section prospective study, involving 195 Portuguese children and adolescents with ADHD, revealed several sleep problems in this group.

Among the most frequent, we would like to emphasize behavioral sleep problems, including resistance to going to bed, difficulty in falling asleep by themselves, and the use of electronic screen devices right before sleep. An adverse association between digital media consumption and sleep health has been reported in the literature around the world, mostly due to delayed bedtime and reduced sleep duration in school-aged children as well as teenagers.^{3,14,15}

It is important to point out that 8.7% of the respondents reported to regularly snore loudly and 1.5% seem to have apnea events during sleep, which fits the estimated prevalence of obstructive sleep apnea in children (1%-4%). These children and adolescents belong to the spectrum of sleep-related breathing disorders, which have also been correlated with sleep disruption as well with ADHD-like behavioral and attention problems.¹⁶

Table 1. Characterization of the study sample

Variable	n (%)	Variable	n (%)
Total participants	195	Number of years of school completed – Mother	194 (99.5)
Sex	195 (100)	≤ 4 years	12 (6.2)
Male	147 (75.4)	6 years	29 (14.9)
Female	48 (24.6)	9 years	42 (21.6)
Age (years) (mean ± standard deviation)	11.3 ± 2.7	12 years	53 (27.3)
Age (years)	189 (96.9)	> 12 years (higher education)	58 (29.9)
6-10 years	83 (43.9)	Number of years of school completed – Father	179 (91.8)
11-14 years	77 (40.7)	≤ 4 years	17 (9.5)
15-17 years	29 (15.3)	6 years	46 (25.7)
The child/adolescent lives with:	195 (100)	9 years	37 (20.7)
Parents and siblings	80 (41.0)	12 years	45 (25.1)
Both parents	54 (27.7)	> 12 years (higher education)	34 (19.0)
Mother	15 (7.7)	Presence of other conditions	195 (100)
Parents and grandparents	14 (7.2)	Yes	105 (53.8)
Mother and siblings	11 (5.6)	No	90 (46.2)
Father/mother and companion	11 (5.6)	Other health conditions*	105 (53.8)
Other	8 (4.1)	Specific learning disabilities	37 (35.2)
Grandparents	2 (1.0)	Allergic conditions (rhinitis, asthma, eczema)	26 (24.8)
Number of siblings	195 (100)	Hypertrophy of tonsils or adenoids	19 (18.1)
None	55 (28.2)	Language impairment	9 (8.6)
One or two	125 (64.1)	Oppositional defiant disorder	7 (6.7)
Three or more	15 (7.7)	Autism spectrum disorder	3 (2.9)
School stage	193 (99.0)	Epilepsy	2 (1.9)
Basic Education	175 (90.7)	Other diseases/conditions	20 (19.0)
Completed 4 years	70 (36.3)		
Completed 6 years	52 (26.9)		
Completed 9 years	53 (27.5)		
Secondary Education	18 (9.3)		

* Individuals may present more than one condition.

Table 2. Children and adolescents sleep behavior

Sleeping habits	Total n (%)	6-10 years Median (IQR)	11-14 years Median (IQR)	15-17 years Median (IQR)	p value
Goes to bed at the same time	195 (100)	83 (43.9)	77 (40.7)	29 (15.3)	
Rarely	6 (3.1)	3 (3.6)	2 (2.6)	1 (3.4)	0.948*
Sometimes	45 (21.5)	16 (19.3)	17 (22.1)	7 (24.1)	
Usually	147 (75.4)	64 (77.1)	58 (75.3)	21 (72.4)	
After going to bed, takes less than 30 minutes to fall asleep	195 (100)	83 (43.9)	77 (40.7)	29 (15.3)	
Rarely	51 (26.2)	19 (22.9)	25 (32.5)	7 (24.1)	0.673 [†]
Sometimes	41 (21.0)	17 (20.5)	16 (20.8)	7 (24.1)	
Usually	103 (52.8)	47 (56.6)	36 (46.8)	15 (51.7)	
Falls asleep alone, on their own bed	194 (99.5)	82 (43.6)	77 (41.0)	29 (15.4)	
Rarely	28 (14.4)	14 (17.1)	10 (13.0)	3 (10.3)	0.375*
Sometimes	13 (6.7)	8 (9.8)	5 (6.5)	0 (0.0)	
Usually	153 (78.9)	60 (73.2)	62 (80.5)	26 (89.7)	
Needs the company of another person in the room to fall asleep	195 (100)	83 (43.9)	77 (40.7)	29 (15.3)	
Rarely	140 (71.8)	44 (53.0)	63 (81.8)	28 (96.6)	< 0.001 [†]
Sometimes	19 (9.7)	14 (16.9)	5 (6.5)	0 (0.0)	
Usually	36 (18.5)	25 (30.1)	9 (11.7)	1 (3.4)	
Resists bedtime (e.g. cries, tries to put it off, refuses to go to bed)	195 (100)	83 (43.9)	77 (40.7)	29 (15.3)	
Rarely	119 (61.0)	46 (55.4)	46 (59.7)	23 (79.3)	0.269 [†]
Sometimes	37 (19.0)	18 (21.7)	15 (19.5)	3 (10.3)	
Usually	39 (20.0)	19 (22.9)	16 (20.8)	3 (10.3)	
Falls asleep watching television/using a tablet or computer	195 (100)	83 (43.9)	77 (40.7)	29 (15.3)	
Rarely	113 (57.9)	52 (62.7)	42 (54.5)	15 (51.7)	0.776 [†]
Sometimes	26 (13.3)	9 (10.8)	11 (14.3)	5 (17.2)	
Usually	56 (28.7)	22 (26.5)	24 (31.2)	9 (31.0)	
Sleep during the night					
Number of nocturnal awakenings	195 (100)	83 (43.9)	77 (40.7)	29 (15.3)	
None	121 (62.1)	53 (63.9)	47 (61.0)	19 (65.5)	0.561*
One	50 (25.6)	20 (24.1)	20 (26.0)	6 (20.7)	
Two	16 (8.2)	5 (6.0)	9 (11.7)	2 (6.9)	
Three or more	8 (4.1)	5 (6.0)	1 (1.3)	2 (6.9)	
Average time to fall back to sleep	74 (37.9)	30 (42.9)	31 (44.3)	9 (12.9)	
≤ 2 minutes	24 (32.4)	8 (26.7)	11 (35.5)	3 (33.3)	0.863*
3-5 minutes	26 (35.1)	11 (36.7)	12 (38.7)	2 (22.2)	
6-15 minutes	13 (17.6)	7 (23.3)	4 (12.9)	2 (22.2)	
≥ 16 minutes	11 (14.9)	4 (13.3)	4 (12.9)	2 (22.2)	
Talks during sleep	194 (99.5)	82 (43.6)	77 (41.0)	29 (15.4)	
Rarely	119 (61.3)	53 (64.6)	45 (58.4)	15 (51.7)	0.285 [†]
Sometimes	50 (25.8)	17 (20.7)	25 (32.5)	8 (27.6)	
Usually	25 (12.9)	12 (14.6)	7 (9.1)	6 (20.7)	
Has a restless sleep, moves a lot during the sleep	195 (100)	83 (43.9)	77 (40.7)	29 (15.3)	
Rarely	57 (29.2)	26 (31.3)	23 (29.9)	6 (20.7)	0.095 [†]
Sometimes	48 (24.6)	18 (21.7)	25 (32.5)	4 (13.8)	
Usually	90 (46.2)	39 (47.0)	29 (37.7)	19 (65.5)	
Sleepwalks	195 (100)	83 (43.9)	77 (40.7)	29 (15.3)	
Rarely	179 (91.8)	76 (91.6)	72 (93.5)	26 (89.7)	0.851* [§]
Sometimes	14 (7.2)	6 (7.2)	4 (5.2)	3 (10.3)	
Usually	2 (1.0)	1 (1.2)	1 (1.3)	0 (0.0)	
Grinds teeth during sleep	193 (99.0)	83 (44.4)	76 (40.6)	28 (15.0)	
Rarely	145 (75.1)	57 (68.7)	64 (84.2)	22 (78.6)	0.181*
Sometimes	23 (11.9)	13 (15.7)	4 (5.3)	3 (10.7)	
Usually	25 (13.0)	13 (15.7)	8 (10.5)	3 (10.7)	
Snores loudly	195 (100)	83 (43.9)	77 (40.7)	29 (15.3)	
Rarely	132 (67.7)	50 (60.2)	54 (70.1)	23 (79.3)	0.265 [†]
Sometimes	46 (23.6)	25 (30.1)	17 (22.1)	3 (10.3)	
Usually	17 (8.7)	8 (9.6)	6 (7.8)	3 (10.3)	
Seems to stop breathing during sleeping	195 (100)	83 (43.9)	77 (40.7)	29 (15.3)	
Rarely	182 (93.3)	78 (94.0)	70 (90.9)	29 (100)	0.680*
Sometimes	10 (5.1)	4 (4.8)	5 (6.5)	0 (0.0)	
Usually	3 (1.5)	1 (1.2)	2 (2.6)	0 (0.0)	

Table 2. (cont.)

Wets the bed or sleeps with a diaper	195 (100)	83 (43.9)	77 (40.7)	29 (15.3)	
Rarely	181 (92.8)	72 (86.7)	75 (97.4)	29 (100)	0.053*
Sometimes	9 (4.6)	8 (9.6)	1 (1.3)	0 (0.0)	
Usually	5 (2.6)	3 (3.6)	1 (1.3)	0 (0.0)	
The child/adolescent...	Total n (%)	6-10 years n (%)	11-14 years n (%)	15-17 years n (%)	p value
In the morning, wakes up by themselves	195 (100)	83 (43.9)	77 (40.7)	29 (15.3)	
Rarely	79 (40.5)	34 (41.0)	31 (40.3)	12 (41.4)	0.972†
Sometimes	51 (26.2)	20 (24.1)	22 (28.6)	7 (24.1)	
Usually	65 (33.3)	29 (34.9)	24 (31.2)	10 (34.5)	
Has difficulty getting out of bed in the morning	195 (100)	83 (43.9)	77 (40.7)	29 (15.3)	
Rarely	71 (36.4)	32 (38.6)	23 (29.9)	13 (44.8)	0.126†
Sometimes	55 (28.2)	26 (31.3)	19 (24.7)	10 (34.5)	
Usually	69 (35.4)	25 (30.1)	35 (45.5)	6 (20.7)	
Looks or feels tired	194 (99.5)	83 (44.1)	76 (40.4)	29 (15.4)	
Rarely	115 (59.3)	54 (65.1)	40 (52.6)	18 (62.1)	0.427†
Sometimes	49 (25.3)	20 (24.1)	20 (26.3)	7 (24.1)	
Usually	30 (15.5)	9 (10.8)	16 (21.1)	4 (13.8)	

IQR - interquartile range.

* Fisher's exact test.

† Chi-square test.

Table 3. Medication effects on sleep: total and per methylphenidate dose

	Total n (%)	< 0.5 mg/kg/day n (%)	0.5-1 mg/kg/day n (%)	> 1 mg/kg/day n (%)	p value
Medication effect on sleep					
At what time does the child/adolescent feel sleepy on the days they take the medication?	193 (99.0)	25 (13.4)	134 (72.0)	27 (14.5)	
Sooner	15 (7.8)	1 (4.0)	12 (9.0)	2 (7.4)	0.949*
At the same time	164 (85.0)	22 (88.0)	111 (82.8)	24 (88.9)	
Later	14 (7.3)	2 (8.0)	11 (8.2)	1 (3.7)	
How long do they take to fall asleep on the days they take the medication?	192 (98.5)	25 (13.5)	134 (72.4)	26 (14.1)	
Less	15 (7.8)	1 (4.0)	12 (9.0)	2 (7.4)	0.824*
The same	162 (84.4)	21 (84.0)	110 (82.7)	24 (88.9)	
Longer	15 (7.8)	3 (12.0)	11 (8.3)	1 (3.7)	
How many times do they wake up during the night on the days they take the medication?	193 (99.0)	25 (13.5)	134 (72.4)	26 (14.1)	
Less	13 (6.7)	2 (8.0)	6 (4.5)	5 (18.5)	0.018*
The same	175 (90.7)	21 (84.0)	126 (94.0)	21 (77.8)	
More	5 (2.6)	2 (8.0)	2 (1.1)	1 (3.7)	

IQR - interquartile range.

* Fisher's exact test.

Likewise, sleep disorders should be considered in the differential diagnosis of ADHD or as a possible comorbidity and an aggravating factor.

Concerning medication, our study suggests that methylphenidate does not affect the sleep pattern in most children and adolescents. These results contrast with previous reports describing the association between methylphenidate and insomnia as well as increased sleep problems, such as difficulty falling asleep, especially methylphenidate dosage related.^{10,17} A recent investigation in rodents clearly states that methylphenidate affects the circadian rhythm. It suggests that methylphenidate alters behavior due to

sleep disturbances and that sleep modulation could give new insights into treating ADHD.¹⁷ In addition, these studies reinforce the need to adjust dosage and combine short- and long-acting methylphenidate therapy.^{17,18}

On the other hand, other contemporary studies reveal improvement in some aspects of sleep in children on medication with methylphenidate, either combined or not with behavioral therapy, on the ADHD combined type.^{19,20} In fact, other research concluded that there is no significant impact on sleep with the psychostimulant therapy currently used for ADHD. This report acknowledges the bidirectional association between ADHD and sleep disturbances but is unable to support

Table 4. Medication effects on sleep according to methylphenidate formulation

	Total n (%)	Short- acting n (%)	Intermediate- acting n (%)	Long- acting n (%)	Combination of short- and long- acting therapy n (%)	p value
Medication effects on sleep						
At what time does the child/adolescent feel sleepy on the days they take the medication?	191 (97.9)	45 (23.6)	32 (16.8)	98 (51.3)	16 (8.4)	
Sooner	15 (7.9)	5 (11.1)	1 (3.1)	6 (6.1)	3 (18.8)	0.289*
At the same time	162 (84.8)	35 (77.8)	30 (93.8)	84 (85.7)	13 (81.3)	
Later	14 (7.3)	5 (11.1)	1 (3.1)	8 (8.2)	0 (0.0)	
How long do they take to fall asleep on the days they take the medication?	190 (97.4)	44 (23.2)	32 (16.8)	98 (51.6)	16 (8.4)	
Less	15 (7.9)	3 (6.8)	2 (6.3)	7 (7.1)	3 (18.8)	0.638*
The same	160 (84.2)	36 (81.8)	27 (84.4)	85 (86.7)	12 (75.0)	
Longer	15 (7.9)	5 (11.4)	3 (9.4)	6 (6.1)	1 (6.3)	
How many times do they wake up during the night on the days they take the medication?	191 (97.9)	45 (23.6)	32 (16.8)	98 (51.3)	16 (8.4)	
Less	13 (6.8)	2 (4.4)	2 (6.3)	9 (9.2)	0 (0.0)	0.803*
The same	173 (90.6)	41 (91.1)	30 (93.8)	86 (87.8)	16 (100)	
More	5 (2.6)	2 (4.4)	0 (0.0)	3 (3.1)	0 (0.0)	

* Fisher's exact test.

the results of methylphenidate long-term impact on sleep dysfunction.^{21,22}

Furthermore, the literature suggests an association between the methylphenidate dose and increased sleep problems, mainly in children with lower weight. It suggests that a considerable proportion of children with preexisting sleep problems resolve them when treated with the highest methylphenidate dose, suggesting that methylphenidate dose titration should not be avoided solely on the basis of a child's premorbid sleep problems.¹⁸ However, in our study, we found no association between sleep habits modification and different methylphenidate dosages.

We do recognize some limitations in our study. The sleep pattern and the effect of medication were evaluated through a self or carer's report, which is a subjective measure. It will be useful to validate this evaluation with more objective sleep data such as actigraphy. Furthermore, we were not able to control the potential influence of ADHD type and treatment duration. Still, the high prevalence of behavioral sleep problems in children and adolescents with ADHD reinforces the need to continually address these issues in follow-up appointments.

WHAT THIS STUDY ADDS

- Behavioral sleep problems and parasomnias in children with attention deficit hyperactivity disorder were similar between age groups.
- This study suggests that methylphenidate does not affect the sleep pattern in most children and adolescents.
- Considering different methylphenidate dosage intervals, there were no significant effects on the sleep pattern.

Conflicts of Interest

The authors declare that there were no conflicts of interest in conducting this work.

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Protection of human and animal subjects

The authors declare that the procedures followed were in accordance with the regulations of the relevant clinical research ethics committee and with those of the Code of Ethics of the World Medical Association (Declaration of Helsinki).

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Confidentiality of data

The authors declare that they have followed the protocols of their work centre on the publication of patient data.

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Hábitos de Sono em Crianças Com Hiperatividade e Déficit de Atenção e Impacto do Metilfenidato

Resumo:

Introdução: Um sono inadequado pode determinar défices neurocognitivos e os problemas de sono são frequentemente descritos em crianças com o diagnóstico de perturbação de hiperatividade e déficit de atenção. Esta associação é provavelmente bidirecional, já que a perturbação de hiperatividade e déficit de atenção pode afetar o padrão de sono e uma alteração do sono pode exacerbar a disfunção executiva. O sono pode também ser afetado pelo metilfenidato, apesar da frequência e extensão desta interação não estarem bem definidos. Este estudo multicêntrico teve como objetivo caracterizar os hábitos de sono e o impacto do metilfenidato no sono de crianças e adolescentes diagnosticados com perturbação de hiperatividade e déficit de atenção.

Métodos: O estudo incluiu 195 indivíduos seguidos em consulta de neurodesenvolvimento, avaliados através de um questionário de sono.

Resultados: Entre vários problemas do sono, o nosso estudo

mostrou que 20% geralmente apresentam resistência em se ir deitar, 28,7% usam diariamente tecnologia com ecrãs para adormecer e 35,4% têm dificuldade em levantar-se pela manhã. Em relação aos efeitos do tratamento com metilfenidato, mais de 84% dos participantes não relataram diferenças em relação à hora a que sentiram sono, à hora em que adormeceram e ao número de despertares noturnos.

Discussão: Os resultados sugerem que o metilfenidato não afeta o padrão de sono na maioria das crianças e adolescentes, mesmo quando são utilizadas doses mais altas. As nossas conclusões não corroboram estudos prévios que descrevem aumento da insónia ou de outros problemas do sono, associado ao uso de metilfenidato.

Palavras-Chave: Adolescente; Criança; Inquéritos e Questionários; Metilfenidato/uso terapêutico; Portugal; Resultado do Tratamento; Sono/efeitos dos fármacos; Transtorno do Déficit de Atenção com Hiperatividade/tratamento farmacológico