

## Original article

### Sleep duration, bedtime routines, and autonomy in preschool children attending a paediatric outpatient clinic in Valencia, Spain: An exploratory cross-sectional study

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## Abstract

**Background:** Sleep in early childhood is a critical determinant of physical, neurological, and emotional development. However, many preschool-aged children do not achieve recommended sleep durations, often due to modifiable environmental and behavioural factors. This study aimed to explore the association between family routines, pre-sleep habits, sleep environment, and sleep quality in children aged 3 to 5 years.

**Methods:** An exploratory cross-sectional study was conducted using an ad hoc questionnaire administered to parents of children aged 3 to 5 years attending a paediatric outpatient clinic. Descriptive statistics were used to summarise the data. Associations between categorical variables were analysed using Pearson's chi-square test, likelihood ratio, odds ratios, and Somers' D coefficients. For group comparisons, either a one-way ANOVA or the Kruskal–Wallis test was used. Statistical significance was set at  $P < .05$ .

**Results:** A total of 91 questionnaires were analysed. Only 23% of children met the recommended night-time sleep duration on weekdays. Sleeping in an individual or sibling-shared bedroom was more common than sleeping in the parents' room. A total of 73.3% of children required parental presence to fall asleep, and 29% experienced two or more night-time awakenings. Early bedtime (before 21:00) was associated with longer sleep duration. Regarding pre-sleep habits, 86.8% of children never or only occasionally used electronic devices after dinner, while 70.3% of caregivers reported bedtime reading as usually or always.

**Citation :** Díaz L. R., Roca E. C., Vivas R. F., Nieto A. D., Sleep duration, bedtime routines, and autonomy in preschool children attending a paediatric outpatient clinic in Valencia, Spain: an exploratory cross-sectional study. *Ethiop J Pediatr Child Health*. 2026;21(1): 19-33 **Submission date:** 28 July 2025 **Accepted:** 3 December 2025 **Published:** 1 January 2026

**Conclusion:** Family routines, the physical environment, and parental involvement strongly influence sleep hygiene in preschool children. Early and structured interventions are recommended to promote sleep autonomy and healthier sleep patterns.

**Keywords:** Sleep hygiene, child behaviour, sleep initiation and maintenance disorders, preschool children.

## Introduction

Sleep during childhood is crucial for children's holistic development, as it directly influences their physical growth, neurological maturation, emotional regulation, and cognitive performance (1). Beyond being an essential physiological process, childhood sleep is regarded as a key indicator of overall well-being and health.

Various factors can affect both the duration and quality of sleep at this stage of development. Protective factors include consistent sleep-wake routines, an appropriate physical environment — characterised by darkness, quietness, and a comfortable temperature — and the adoption of healthy habits such as avoiding screen use before bedtime or encouraging relaxing activities (2).

From a neurophysiological perspective, sleep in early childhood is associated with critical functions, such as memory consolidation (3), hormonal regulation—particularly growth hormone—and immune system strengthening (4). However, sleep quality can be compromised by factors such as exposure to artificial blue light, irregular sleep schedules (5), family stress, or medical conditions, including childhood insomnia or sleep-related breathing disorders. In ad-

dition, cultural influences, parenting patterns, and family dynamics play a fundamental role in shaping either healthy or dysfunctional sleep habits (6).

In this context, practices such as breastfeeding have been the subject of debate regarding their impact on sleep hygiene and quality (7). While its bioactive components — such as L-tryptophan and melatonin — have been reported to support the maturation of circadian rhythms and facilitate sleep onset through breast sucking (8,9), increased frequency of night-time awakenings and greater dependency on the maternal figure to initiate and maintain sleep have also been documented (10).

Available evidence suggests that the development of sleep autonomy and the consolidation of healthy routines are closely linked to the sleep environment, the presence of caregivers, and pre-sleep habits (11). However, significant gaps remain in knowledge regarding how these factors interact in preschool-aged children within the European sociocultural context.

This study aims to analyse children's sleep routines and pre-bedtime habits such as the use of electronic devices, bedtime reading, or dummy use and their potential association

with the need for parental presence to fall asleep. It also examines the characteristics of the sleeping environment — including the type of bedroom, co-sleeping practices, and the places where children used to sleep at earlier stages — and identifies their relationship with indicators of autonomy and the frequency of night-time visits to the parents' bed. Finally, the study evaluates both the duration and quality of night-time sleep on weekdays and weekends, paying particular attention to the frequency of awakenings, and explores possible correlations between these variables and family routines.

## Materials and methods

### Study type and setting

This is an exploratory cross-sectional study conducted using an ad hoc questionnaire comprising 70 items, divided into five dimensions: general characteristics, family cohabitation, sleep routines, pre-sleep habits, and sleep duration and quality. The questionnaire was administered between February 1 and March 30, 2024, to parents or legal guardians attending the Paediatric Outpatient Clinic at Hospital La Salud in Valencia, Spain.

### Study population

The inclusion criteria comprised children aged 3 to 5 years (inclusive) attending the paediatric outpatient clinic for routine medical check-ups or non-chronic, non-sleep-related consultations. The exclusion criteria included a history of prematurity, neurodevelopmental disorders, diagnosed sleep disorders, respiratory, cardiac, or other chronic conditions that could influence

sleep patterns, as well as the use of medications that interfere with normal sleep maturation.

### Sample size and selection

A total of 91 questionnaires were collected. The sampling method employed was non-probabilistic (convenience sampling), based on the availability of parents or legal guardians who attended the clinic during the specified period and agreed to participate in the survey.

### Variables

For the analysis, general sociodemographic variables were considered, including the child's sex assigned at birth and age, as well as family-environmental characteristics related to cohabitation. Within this latter dimension, data were collected on household composition, sibling position (only child, first-born, middle child, or youngest), infant feeding type, and parents' age.

Variables related to sleep routines were used to characterise the physical and relational context of children's sleep. The following indicators were included: current bedroom arrangement (individual room, shared with a sibling, or shared with parents), need for caregiver presence to fall asleep (never, occasionally defined as less than half of bedtime routines, usually defined as more than half of routines, or always), frequency with which the child sleeps in the parents' bed during the night, sleeping arrangements during the breastfeeding period (separate cot, co-sleeping cot, parents' bed, or a combination),

and the age up to which the child slept in the parental bedroom.

Pre-sleep habits were assessed through variables reflecting everyday practices before bedtime, such as the use of electronic devices after dinner, bedtime story reading, or dummy use.

To assess sleep duration and quality, the following indicators were recorded: bedtime on weekdays and weekends, total night-time sleep duration on both types of days, average frequency of awakenings over the past month, and whether the child took daytime naps.

### Statistical analysis

Categorical variables were described using absolute (N) and relative (%) frequency distributions, while quantitative variables were summarised using measures of central tendency and dispersion. For variables following a normal distribution, the arithmetic mean ( $\bar{X}$ ) and standard deviation (s) were used; otherwise, the median (Me) and interquartile range (IQR) were reported. The Shapiro–Wilk test was applied to assess the normality of data distribution.

Bivariate analysis of categorical variables was performed using Pearson's chi-square test ( $\chi^2$ ), or, when appropriate, the likelihood ratio statistic ( $G^2$ ). Odds ratios (OR) with confidence intervals were calculated to estimate the strength of associations. Somers' D coefficient (D) was used to identify correlations between ordinal variables. For comparing quantitative variables between independent groups, one-way analysis of variance (ANOVA, F) was applied when the

data were normally distributed, and the Kruskal–Wallis test (H) was used otherwise.

Given the non-probabilistic nature of the sample and its exploratory scope, all statistical tests were applied to identify within-sample associations rather than to infer population-level effects. Accordingly, the results are interpreted as descriptive–exploratory and not intended for generalisation.

All hypothesis tests were two-tailed, with a 95% confidence level. The null hypothesis ( $H_0$ ) was rejected when the p-value was less than .05. Data analysis was conducted using IBM SPSS Statistics, version 28, for the Windows environment.

### Limitations

Because the study relied on a small, non-probabilistic sample, the associations identified should be interpreted as exploratory. The statistical tests used allow the detection of patterns within the sample but do not support population-level inference. Additionally, an internal inconsistency was identified between the responses referring to the "current type of bedroom" and the "age until sleeping in the parents' bedroom". Specifically, of the 23 children who reportedly still sleep with their parents, two were indicated as currently having their own bedroom, and five as sharing a bedroom with a sibling. This discrepancy may be due to a misinterpretation of the item on "current bedroom type", whereby participants may have reported the room assigned to the child rather than the one in which the child sleeps.

## Results

### General characteristics and family environment

Of the 91 valid questionnaires collected, 49.5% (N=45) referred to boys and 50.5% (N=46) to girls, based on sex assigned at birth. Regarding age, 40.7% (N=37) of the children were 3 years old, 28.6% (N=26) were 4 years old, and 30.8% (N=28) were 5 years old. Most mothers (81.4%, N=74) and fathers (76.4%, N=68) were aged 35-44 years.

Regarding family structure, 27.5% (N=25) of the children were the only children. Among the remaining 72.5% (N=66), 40.9% (N=27) were first-born, and 50.0% (N=33) were the youngest in the birth order.

Concerning the type of feeding received during the first months of life, 44.0% (N=40) were exclusively breastfed, 31.9% (N=29) were formula-fed solely, and 24.2% (N=22) received mixed feeding. At the time of the survey, only 5.5% (N=5) were still being breastfed. In terms

of duration, 42.9% (N=27) were breastfed up to 6 months of age, 20.6% (N=13) between 6 and 12 months, and 36.5% (N=23) beyond their first year of life.

### Sleep routines and pre-sleep habits

Table 1 summarises the distribution of sleep routines and pre-sleep behaviours in the sample. Most children slept in either an individual bedroom (40.6%) or a room shared with a sibling (39.6%), while 19.8% slept in their parents' room. More than half of the children (53.8%) always required a caregiver's presence to fall asleep, and 39.5% occasionally visited their parents' bed during the night. Regarding earlier sleeping arrangements, 35.1% had slept in a separate cot, 22.0% in a co-sleeping cot, and 24.2% in the parents' bed. Regarding pre-sleep habits, 86.8% of children never or only occasionally used electronic devices after dinner, whereas 70.3% of caregivers reported bedtime reading as usually or always.

Table 1. Sleep routines and pre-sleep habits. Frequency distribution

Dimension	Indicators	Categories	N	%
Sleep routine	Current bedroom type	Individual bedroom	37	40.6
		Shared with sibling	36	39.6
		Shared with parent(s)	18	19.8
	The need for parental presence to fall asleep	Never	10	11.0
		Occasionally	14	15.4
		Usually	18	19.8
		Always	49	53.8
	Child sleeps in parents' bed during the night	Never	28	30.8
		Occasionally	36	39.5
		Usually	12	13.2
		Always	15	16.5
	Sleeping place while in the parents' room	Separate cot	32	35.1
		Co-sleeping cot	20	22.0
		Parents' bed	22	24.2
		Cot and parents' bed	17	18.7
Age until sleeping in parents' room	Up to 6 months (0–6 m)	22	24.1	
	Up to 1 year (7–12 m)	23	25.3	
	Up to 2 years (13–24m)	17	18.7	
	Up to 3 years (25–36 m)	6	6.6	
	Still sleeps in parents' room	23	25.3	
Pre-sleep habits	Use of electronic devices after dinner	Never	52	57.1
		Occasionally	27	29.7
		Usually	9	9.9
		Always	3	3.3
	Bedtime story reading habit	Never	4	4.4
		Occasionally	23	25.3
		Usually	28	30.8
		Always	36	39.5
	Dummy used to fall asleep	No	63	69.2
		Yes	28	30.8

Source: Own elaboration.

Comparative analyses are presented in Table 2. A significant association was found between early sleeping arrangements and the current need for caregiver presence to fall asleep ( $G^2(9)=17.42$ ;  $p=.042$ ): children who had slept in a separate cot showed a more even distribution across levels of caregiver presence, whereas those who had slept in a co-sleeping cot (87.5%), in the parents' bed (73.3%), or in both settings (72.7%) more frequently required parental presence at bedtime. Early sleeping arrangements were also associated with the frequency of night-time visits to the parents' bed ( $\chi^2(3)=17.89$ ;  $p<.001$ ), with 56.3% of children

who had slept in a separate cot reporting no night-time visits, compared with 40.7% among those who had slept using alternative arrangements. Additionally, an inverse correlation was observed between bedtime reading and electronic device use after dinner ( $D_{sym}=-0.23$ ;  $p=.014$ ), indicating that higher reading frequency was associated with lower screen use during the pre-sleep period. A positive correlation was also found between the need for parental presence at bedtime and the frequency of these night-time visits ( $D_{sym}=0.32$ ;  $p=.001$ ).

Table 2. Comparative analyses of sleep routines and pre-sleep habits in preschool children

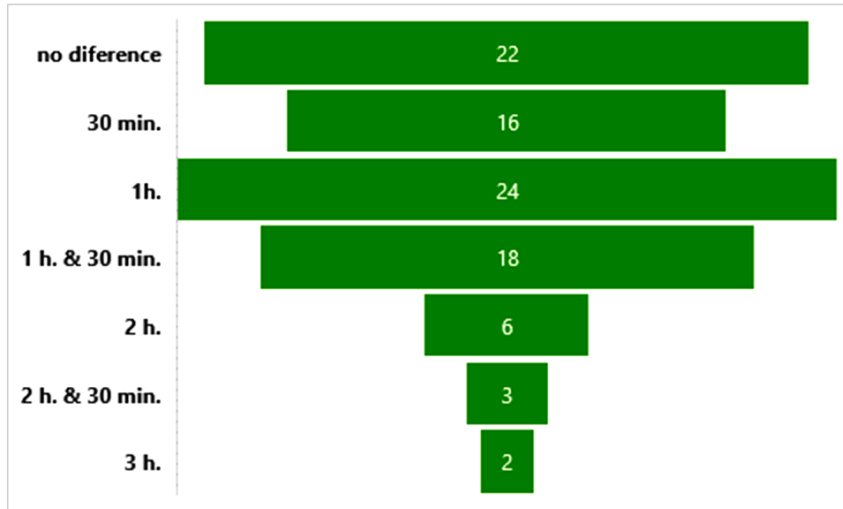
Comparison	Variables	Test used	Statistic	p-value
Early sleeping arrangement × Need for caregiver presence to fall asleep	Sleeping place in parents' room (separate cot / co-sleeping cot / parents' bed / cot and parents' bed) × caregiver presence (never / occasionally / usually / always)	Likelihood ratio ( $G^2$ )	$G^2(9)=17.42$	$p=.042$
Early sleeping arrangement × Night-time visits to parents' bed	Sleeping place in parents' room × frequency of night-time visits	Chi-square ( $\chi^2$ )	$\chi^2(3)=17.89$	$p<.001$
Need for caregiver presence × Night-time visits to parents' bed	Caregiver presence to fall asleep × night-time visits	Somers' D	$D_{sym}=0.32$	$p=.001$
Bedtime reading × Use of electronic devices after dinner	Bedtime story reading × device use after dinner	Somers' D	$D_{sym}=-0.23$	$p=.014$

Source: Own elaboration.

### Sleep duration

On weekdays, 49% of children went to bed between 21:00 and 21:30, while on non-working

days, the same proportion went to bed between 21:30 and 22:00, reflecting an average delay of 55 minutes at weekends (Figure 1).

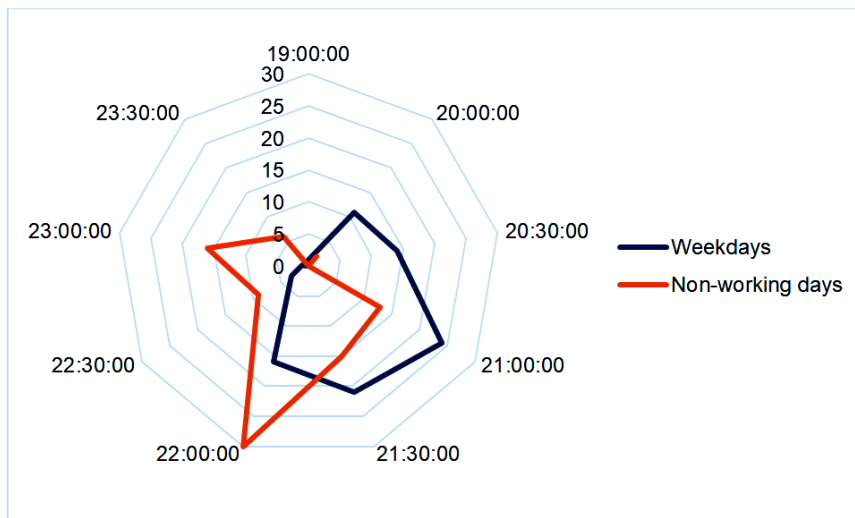


Source: Own elaboration.

Figure 1. Distribution of time differences between bedtime on weekdays and non-working days (in hours and minutes).

Regarding changes in bedtime between weekdays and weekends, 46.2% (N=12) of those who usually go to bed between 19:00 and 20:59 on weekdays do so between 21:00 and 21:59 on non-working days, while 53.8%

(N=14) go to bed later than 22:00. Similarly, 62.0% (N=27) of children who go to bed between 21:00 and 21:59 on weekdays go to bed after 22:00 on weekends and holidays (Figure 2).



Source: Own elaboration.

Figure 2. Comparison of bedtime distributions between weekdays and non-working days.

Concerning night-time sleep duration, 17.6% of children slept fewer than 9 hours on weekdays, 59.3% slept between 9 and 10 hours, and 23.1% slept more than 10 hours. On non-working days, 17.6% slept fewer than 9 hours, 52.7% between 9 and 10 hours, and 29.7% more than 10 hours. Concerning night-time awakenings, 34.1% reported no awakenings, 37.3% had one awakening, 17.6% had two, and 11.0% experienced three or more. Finally, 34.1% of children took daytime naps, while 65.9% did not (Table 3).

Table 3. Night-time sleep duration and quality. Frequency distribution.

Dimension	Indicators	Categories	N	%
Night-time sleep duration and quality	Night-time sleep duration (weekday)	<9 hours	16	17.6
		9–10 hours	54	59.3
		>10 hours	21	23.1
	Night-time sleep duration (non-working day)	<9 hours	16	17.6
		9–10 hours	48	52.7
		>10 hours	27	29.7
Number of awakenings during sleep (monthly average)		0 awakenings	31	34.1
		1 awakening	34	37.3
		2 awakenings	16	17.6
		3 or more awakenings	10	11.0
Takes naps		No	60	65.9
		Yes	31	34.1

Source: Own elaboration.

Comparative analyses are summarised in Table 4. A significant difference in weekday bedtime was identified according to birth order: middle children went to bed later (Me=1:30; IQR=1:07) than first-borns (Me=0:45; IQR=1:30; H=-21.80, p=.010) and youngest children (Me=0:52; IQR=1:00; H=17.65, p=.034). A negative association was observed between age and the frequency of night-time awakenings (DYX=-0.227; p=.009). The number of awakenings showed an inverse correlation with night-time sleep duration on both

weekdays (Dsym=-0.203; p=.040) and non-working days (Dsym=-0.208; p=.026). Children who experienced at least one awakening had higher odds of sleeping fewer than 10 hours compared with those with no awakenings ( $\chi^2(1)=9.42$ ; p=.002; OR=4.69; 95% CI=[1.67–13.16]). Additionally, a significant difference in night-time sleep duration on non-working days was found, depending on the need for caregiver presence to fall asleep (F(3,79)=3.28; p=.016).

Table 4. Comparative analyses of night-time sleep duration and sleep quality indicators

Comparison	Variables	Test used	Statistic	p-value
Age × Number of night-time awakenings	Child's age × average number of awakenings	Somers' D	$D_{YX}=-0.227$	p=.009
Number of awakenings × Weekday sleep duration	Night-time awakenings × weekday sleep duration	Somers' D	$D_{sym}=-0.203$	p=.040
Number of awakenings × Non-working day sleep duration	Night-time awakenings × non-working day sleep duration	Somers' D	$D_{sym}=-0.208$	p=.026
Night-time awakenings × Meeting 10h threshold	At least one awakening vs none × <10h vs ≥10h sleep	Chi-square ( $\chi^2$ ); OR	$\chi^2(1)=9.42$ ; OR=4.69; 95% CI=[1.67–13.16]	p=.002
Need for caregiver presence × non-working day sleep duration	Caregiver presence categories × non-working day sleep duration (mean hours)	ANOVA (F)	$F(3,79)=3.28$	p=.016

Source: Own elaboration.

## Discussion

The findings of this study highlight that family, environmental, and behavioural factors play a central role in the quality and hygiene of sleep during the preschool years. A considerable proportion of participants did not meet the sleep recommendations established by the American Academy of Sleep Medicine (AASM), which advises 10 to 13 hours of sleep over 24 hours for this age group (12). In our sample, only 23% of children met this threshold on weekdays, indicating a marked reduction in night-time sleep during the school week. Although the present study did not collect data on school attendance schedules or family routine structure, previous research has

suggested that transitions to more structured daily rhythms and variability in evening routines may contribute to reduced sleep duration in preschool-aged children (13).

The physical sleep environment proved to be a relevant factor. Sleeping in a bedroom shared with a sibling was associated with longer sleep duration, in contrast to co-sleeping or sharing a bedroom with parents, which are practices associated with more frequent night-time awakenings and reduced autonomy. These findings are consistent with previous research showing that co-sleeping in preschool-aged children is linked to greater sleep fragmentation and reduced sleep consolidation (14)

Regarding the lack of autonomy in falling asleep, children who required a parent or caregiver's presence to initiate sleep exhibited shorter sleep durations—especially on weekends—and more frequent night-time visits to their parents' bedrooms. This pattern of emotional dependency has already been described as an obstacle to establishing autonomous sleep routines (15,16). Although the use of the parents' bed (whether occasional or habitual) was reported by only a minority of families, this behaviour was still observable in part of the sample. Importantly, both reduced sleep duration and increased night-time awakenings observed in these children are consistent with previous findings (14,15).

In line with findings reported in the literature (16–18), this study confirms that the frequency of night-time awakenings constitutes a sensitive indicator of sleep quality. Only 29% of children experienced two or more awakenings per night, with this level of sleep fragmentation being more common among those who slept with a sibling or required parental presence to fall asleep. The latter need was observed in over 70% of the children, reflecting patterns of emotional dependency during sleep and showing an inverse relationship with total sleep duration, particularly at weekends ( $F, p=.016$ ). As the study did not examine the potential interaction between parental presence at bedtime and bedtime reading habits, these findings should be interpreted as associations rather than causal mechanisms.

A notable finding was that the bedtime story habit, which is commonly recommended to foster healthy sleep routines (19), was associated with a higher frequency of awakenings in our study. This apparent contradiction may be interpreted as an intervention effect: caregivers may adopt bedtime reading as part of a more elaborate strategy to promote calmness, bonding, and predictability when children show greater bedtime resistance or more fragmented – but still within the normal range – sleep patterns. Studies, such as that by Ricci et al. (20), suggest that replacing screens with reading improves sleep; however, these effects may be mediated by the caregiver's initial motivation to address the child's difficulties.

This study also highlighted the role of daytime naps as an indicator of the maturation of the sleep–wake cycle. As noted by Sheldon (21), the progressive cessation of biphasic sleep is a sign of neurological maturity. In our sample, two-thirds of the children no longer napped, as expected at this developmental stage. Among the 34.1% who continued to take naps, no specific patterns regarding caregiving context could be identified.

Furthermore, going to bed before 21:00 was associated with longer sleep duration, particularly on weekdays. This relationship, also highlighted by Dutil et al. (22) and Ricci et al. (20), reinforces the notion that an early start to night-time rest is crucial for achieving restorative sleep. In our sample, however, only 31%

adhered to this bedtime during the week, and just 2% maintained it at weekends, revealing a disruption in routine that may hinder the consolidation of stable sleep patterns.

Finally, although the use of electronic devices before bedtime was infrequent in our sample, this practice showed a statistically significant inverse association with the frequency of bedtime reading. Given the limited prevalence of screen use, no direct relationship with sleep duration was observed in this study. Therefore, the relevance of this finding lies in the potential displacement effect: children who engaged more consistently in bedtime reading—a habit associated with structured routines—were less likely to use electronic devices before sleep. This pattern aligns with international literature indicating that replacing screen exposure with calmer pre-sleep activities supports healthier sleep patterns (23–26), even though the mechanisms underlying these associations could not be explored within the scope of this study.

### **Conclusions**

This study contributes to the growing body of evidence highlighting the multifactorial nature of sleep quality and hygiene in early childhood. The results point to the critical influence of family dynamics, bedtime routines, physical sleep environments, and caregiver involvement on both the duration and fragmentation of sleep in preschool-aged children. These findings have clear implications for clinical and educational practice, particularly for developing targeted interventions to promote sleep autonomy,

reduce reliance on parental presence, and establish consistent pre-sleep habits. Given the limitations inherent in exploratory and non-probabilistic designs, future research should adopt longitudinal designs with representative samples to better understand causal relationships and developmental trajectories. It is also recommended that future studies further examine the role of socioeconomic status, emotional regulation, and cultural parenting practices in shaping children's sleep behaviours. Promoting sleep hygiene from an early age remains a public health priority with significant potential benefits for cognitive, emotional, and physical development.

### **Declarations**

### **Ethical considerations**

The privacy and confidentiality of the data were protected by the current legislation on personal data protection, as published in the Official Spanish State Bulletin (Organic Law 15/1999). All participants were treated in accordance with the ethical principles outlined in the Declaration of Helsinki (1964) and the International Conference on Harmonisation Good Clinical Practice guidelines. The study was also approved by the Research Ethics Committee of the Universidad Católica de Valencia San Vicente Mártir.

### **Authors contribution**

LR contributed to the design of the data collection tool, led the analysis and interpretation of the data, and drafted and revised the manuscript. EC conceived and designed the study,

oversaw the clinical aspects of the project, and performed critical reviews of the manuscript. RF coordinated participant recruitment in the paediatric outpatient setting, contributed to data acquisition, and reviewed the final version. AD conducted the fieldwork, assisted in the literature review, participated in data interpretation, and contributed to the writing and editing of the manuscript. All authors approved the final version of the manuscript and agree to be accountable for all aspects of the work.

### Competing interests

The authors declared that they have no conflict of interest.

### Funding

We received no external funds.

### References

1. Black MM, Walker SP, Fernald LCH, Andersen CT, DiGirolamo AM, Lu C, et al. Early childhood development coming of age: science through the life course. *Lancet*. 2017;389(10064):77–90. doi:10.1016/S0140-6736(16)31389-7
2. Owens J, Droblich D, Baylor A, Lewin D. School start time change: an in-depth examination of school districts in the United States. *Mind Brain Educ*. 2014;8(4):182–213. doi:10.1111/mbe.12059
3. Kurdziel L, Duclos K, Spencer RMC. Sleep spindles in midday naps enhance learning in preschool children. *Proc Natl Acad Sci U S A*. 2013;110(43):17267–72. doi:10.1073/pnas.1306418110
4. Besedovsky L, Lange T, Born J. Sleep and immune function. *Pflugers Arch*. 2012;463(1):121–37. doi:10.1007/s00424-011-1044-0
5. Hale L, Guan S. Screen time and sleep among school-aged children and adolescents: a systematic literature review. *Sleep Med Rev*. 2015;21:50–8. doi:10.1016/j.smrv.2014.07.007
6. Mindell JA, Sadeh A, Wiegand B, How TH, Goh DYT. Cross-cultural differences in infant and toddler sleep. *Sleep Med Rev*. 2010;11(3):274–80. doi:10.1016/j.sleep.2009.04.012
7. Astbury L, Bennett C, Pinnington DM, Bei B. Does breastfeeding influence sleep? A longitudinal study across the first two postpartum years. *Birth*. 2022;49(3):540-548. doi:10.1111/birt.12625
8. Madrid Pérez JA, Rol de Lama Á, editors. *Cronobiología básica y clínica*. Madrid: Editec @red; 2006. 860 p.
9. Sancho EE, Doménech CE, Miró NR, Isern FS, Tendero JA, Doménech MP. Hábitos adecuados de sueño compatibles con lactancia materna a demanda. *Pediatr Aten Primaria*. 2008;10(38):15–24.
10. Adams EL, Master L, Buxton OM, Savage JS. Sleep parenting practices are associated with infant self-soothing behaviors when measured using actigraphy. *Sleep Med Rev*. 2022;95:29-36. doi:10.1016/j.sleep.2022.04.018

11. Mindell JA, Williamson AA. Benefits of a bedtime routine in young children: Sleep, development, and beyond. *Sleep Med Rev.* 2018;40:93-108. doi:10.1016/j.smrv.2017.10.007
12. Paruthi S, Brooks LJ, D'Ambrosio C, Hall WA, Kotagal S, Lloyd RM, et al. Recommended amount of sleep for paediatric populations: a consensus statement of the American Academy of Sleep Medicine. *J Clin Sleep Med.* 2016;12(6):785–6. doi:10.5664/jcsm.5866
13. Jackson DB, Testa A, Semenza DC. Sleep Duration, Bedtime Consistency, and School Readiness: Findings from the 2016 to 2018 National Survey of Children's Health. *J Dev Behav Pediatr.* 2021;42(7):561-568. doi:10.1097/DBP.0000000000000937.
14. Hoyniak CP, Bates JE, Camacho MC, McQuillan ME, Whalen DJ, Staples AD, et al. The physical home environment and sleep: what matters most for sleep in early childhood. *J Fam Psychol.* 2022;36(5):757–69. doi:10.1037/fam0000977
15. Bhargava S. Diagnosis and management of common sleep problems in children. *Pediatr Rev.* 2011;32(3):91–8; quiz 99. doi:10.1542/pir.32-3-91
16. El-Sheikh M, Philbrook LE, Kelly RJ, Hinant JB, Buckhalt JA. What does a good night's sleep mean? Nonlinear relations between sleep and children's cognitive functioning and mental health. *Sleep.* 2019;42(6):zsz078. doi:10.1093/sleep/zsz078
17. Newton AT, Honaker SM, Reid GJ. Risk and protective factors and processes for behavioural sleep problems among pre-school and early school-aged children: a systematic review. *Sleep Med Rev.* 2020;52:101303. doi:10.1016/j.smrv.2020.101303
18. Owens JA, Mindell JA. Pediatric insomnia. *Pediatr Clin North Am.* 2011;58(3):555–69. doi: 10.1016/j.pcl.2011.03.011
19. Albakri U, Drotos E, Meertens R. Sleep health promotion interventions and their effectiveness: an umbrella review. *Int J Environ Res Public Health.* 2021;18(11):5533. doi:10.3390/ijerph18115533
20. Ricci C, Ordnung M, Rothenbacher D, Genuneit J. Substituting book reading for screen time benefits preschoolers' sleep health: results from the Ulm SPATZ Health Study. *Nat Sci Sleep.* 2024;16:315–24. doi:10.2147/NSS.S448736
21. Sheldon SH. Development of sleep in infants and children. In: *Principles and practice of pediatric sleep medicine* [Internet]. Elsevier Inc; 2014. p. 17–23. Available from: <http://www.scopus.com/inward/record.url?scp=84902060532&partnerID=8YFLogxK>
22. Dutil C, Podinic I, Sadler CM, da Costa BG, Janssen I, Ross-White A, et al. Sleep timing and health indicators in children and adolescents: a systematic review.

- Health Promot Chronic Dis Prev Can. 2022;42(4):150–69. doi:10.24095/hpcdp.42.4.04
23. Hiltunen P, Leppänen MH, Ray C, Määttä S, Vepsäläinen H, Koivusilta L, et al. Relationship between screen time and sleep among Finnish preschool children: results from the DAGIS study. *Sleep Med Rev.* 2021;77:75–81. doi:10.1016/j.sleep.2020.11.008
24. Torres P, Pablos A, Elvira L, Ceca D, Chia M, Huertas F. Associations between screen time, physical activity, and sleep patterns in children aged 3–7 years—a multicentric cohort study in urban environment. *Sports.* 2025;13(4):91. doi:10.3390/sports13040091
25. Uddin H, Hasan MK. Family resilience and neighborhood factors affect the association between digital media use and mental health among children: does sleep mediate the association? *Eur J Pediatr.* 2023;182(6):2521–34. doi:10.1007/s00431-023-04898-1
26. Hale L, Kirschen GW, LeBourgeois MK, Gradisar M, Garrison MM, Montgomery-Downs H, et al. Youth screen media habits and sleep: sleep-friendly screen behaviour recommendations for clinicians, educators, and parents. *Child Adolesc Psychiatr Clin N Am.* 2018;27(2):229–45. doi:10.1016/j.chc.2017.11.014