European Journal of Alternative Education Studies
ISSN: 2501-5915
ISSN-L: 2501-5915
Available on-line at: www.oapub.org/edu

DOI: 10.46827/ejae.v10i1.5818 Volume 10 | Issue 1 | 2025

THE RELATIONSHIP BETWEEN THE IMPACT OF SLEEP AND PARENTAL PRACTICES ON LEARNING: A LITERATURE REVIEW

Luana Cristina Rosa Pinhel,
Vitor da Silva Loureiro,
Fabrício Bruno Cardoso[i]
Educational Innovations and Neuropsychopedagogical,
Studies Laboratory of the Faculty CENSUPEG,
Joinville, Santa Catarina,
Brazil

Abstract:
This study seeks to explore through a literature review the relationship between the impact of sleep and parenting practices on learning, highlighting the importance of interventions and parental programs to promote full cognitive development. Sleep quality is essential for children's cognitive and academic development, as sleep-related problems directly affect learning. Irregular habits and excessive use of electronic devices are factors that negatively impact children's sleep. Despite its importance, there is still a gap in educational and parental practices aimed at promoting sleep health, highlighting the urgency for greater awareness and intervention. A systematic review was conducted following the PRISMA methodology, with data collection using keywords related to children's sleep and parenting interventions. After screening, only two studies were included in the qualitative analysis. The studies confirm the connection between sleep quality and academic performance, emphasizing the effectiveness of interventions aimed at improving sleep. Methodological limitations are discussed, but the evidence highlights the importance of integrated strategies involving family, clinical context, and school. The study highlights the potential of interventions combined with parental programs to enhance learning and promote children's overall well-being. The research innovates by proposing an interdisciplinary and practical approach to addressing learning associated with sleep, with a direct impact on school performance and holistic development.

Keywords: children's sleep, learning, interventions, parenting

[i] Correspondence: email fabricio@censupeg.com.br

1. Introduction

The quality of sleep plays a crucial role in physical and mental health across all age groups, being especially important during childhood, a period of intense cognitive, emotional, and physical development. Adequate sleep is essential to optimize the learning process and minimize difficulties associated with child development (Mindell & Williamson, 2018). However, the relationship between quality sleep and learning remains underappreciated, as society, in general, lacks awareness of the essential role of sleep in promoting holistic health.

Historically, research on child development has focused on factors such as nutrition, environmental stimulation, and parenting practices, often neglecting the relevance of sleep. Only in recent decades have studies begun to highlight the connection between adequate sleep and cognitive development (Liu *et al.*, 2024). While sleep is a biological necessity, its deprivation has become a public health issue, associated with critical conditions such as obesity, cardiovascular diseases, and mental health and neurodegenerative disorders (Licata *et al.*, 2024).

Sleep-related problems often emerge during early childhood and can have lifelong repercussions. Preschool-aged children are particularly vulnerable to the effects of inadequate sleep, as healthy sleep habits established early in life tend to persist into adulthood (Lan *et al.*, 2020).

In this context, the present study aims to conduct a systematic analysis of the existing literature to demonstrate the need for interventions and a targeted parental program. These interventions aim to comprehensively and integratively address learning, considering the importance of sleep quality as an essential factor for child development.

Thus, the study seeks to establish scientific foundations that enable the creation of integrated and effective strategies to overcome challenges related to sleep deprivation and insufficient sleep quality in childhood, while also promoting the development of a structured routine and healthy habits.

2. Literature Review

It is estimated that between 20% and 40% of school-aged children face sleep problems, and up to 75% of adolescents sleep less than the recommended amount, significantly compromising sleep quality and academic performance (Liu *et al.*, 2024).

Low sleep quality has been extensively studied for its negative effects on children's cognitive and emotional functioning, being associated with attention deficits, impaired memory, and behavioral problems (Turnbull *et al.*, 2013). Moreover, sleep deprivation and disorders have varying impacts across the stages of child development. Research shows that sleep problems during early childhood are linked to adverse outcomes in neurocognitive development, affecting attention, intelligence, academic performance, and socio-emotional health (Mindell & Williamson, 2018; Liu *et al.*, 2024).

For example, children who wake more frequently at night tend to exhibit impaired cognitive development compared to those with more consolidated sleep, highlighting the negative impact of insufficient and poor-quality sleep (Liu *et al.*, 2024).

Learning is a complex process modulated by both genetic and environmental factors, involving brain plasticity (Marzola *et al.*, 2023). Learning difficulties result from a combination of intrinsic and extrinsic factors that affect the ability to acquire new knowledge. Unlike learning disorders, which originate from specific alterations in the central nervous system, learning difficulties are often associated with contextual factors, such as sleep quality (Rezende *et al.*, 2017; Siqueira & Gurgel-Giannetti, 2011).

Children with learning difficulties generally perform below expectations at school, which can lead to emotional consequences, such as low self-esteem, deficits in social skills, and behavioral problems (Mazer *et al.*, 2009). Additionally, these difficulties tend to worsen over time, affecting not only academic performance but also the child's overall development, with negative effects that may persist into adulthood (Waber *et al.*, 2019).

Recent studies highlight the importance of naps during early childhood for cognitive development and learning, as these naps promote memory consolidation and emotional self-regulation (Lokhandwala & Spencer, 2022). Daytime nap deprivation, for instance, reduces attention and compromises performance on tasks involving spatial memory (Cremone *et al.*, 2017; Liu *et al.*, 2024). Children who have the opportunity to nap perform better in terms of executive attention and self-regulation, reinforcing the importance of maintaining healthy sleep habits in early life (Cremone *et al.*, 2017). Conversely, poor nighttime sleep quality, including frequent awakenings and short duration, is associated with emotional and behavioral problems such as irritability, inattention, and hyperactivity (Chen *et al.*, 2023; Liu *et al.*, 2024).

Various factors can affect children's sleep quality, such as irregular routines, excessive use of electronic devices before bedtime, and sleep disorders like insomnia and obstructive apnea (Turnbull *et al.*, 2013). Excessive use of electronic devices, in particular, has been linked to shorter sleep duration and an increase in circadian rhythm problems due to prolonged exposure to screen-emitted light (Carter *et al.*, 2016). Studies show that children and adolescents spend an average of up to seven hours a day exposed to electronic media, negatively impacting both the quality and quantity of their sleep (Hale & Guan, 2015).

Additionally, sleep-disordered breathing, such as frequent snoring and apnea, is associated with reduced academic performance and emotional problems, as it causes daytime sleepiness and impairs cognitive functioning (Liu *et al.*, 2016).

Given this evidence, it becomes clear that sleep quality is an essential factor for child development and academic success. However, there is still a significant gap in the literature and educational practices regarding the screening and promotion of sleep health in children. Few initiatives integrate sleep health into the school context, and greater awareness is needed among parents and educators about the impact of sleep deprivation on children's cognitive and emotional development (Chen *et al.*, 2023).

3. Material and Methods

We adopted the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) methodology, widely used in systematic reviews, to ensure transparency and reproducibility in the stages of data collection, selection, and analysis of studies. This method follows a structured approach divided into four main phases: identification, screening, eligibility, and inclusion of studies.

The identification phase involved searching for articles in scientific databases using a comprehensive strategy applied to PubMed, LILACS, and SciELO. Keywords were carefully selected to capture the breadth of the topic related to sleep and learning, including terms such as: "Family-based sleep programs in childhood", "Sleep problems AND academic performance AND children AND parental education", "Parenting education AND sleep AND children" and "Child; Sleep; Education; Positive parenting practices." Additionally, we expanded the search with more specific terms like: "Parental guidance on child sleep routines", "Child sleep and learning development", and "Sleep health interventions".

To refine the results, we used Boolean operators (AND, OR) and applied filters for date, language, and study type (e.g., clinical trials and systematic reviews). As a result, 439 relevant studies were identified.

After the initial collection of articles, the screening phase was conducted to remove duplicates and exclude irrelevant studies. This process was facilitated by the reference management software Rayyan. The titles and abstracts of the articles were evaluated based on predefined inclusion and exclusion criteria:

a) Inclusion criteria: studies investigating the relationship between children's sleep routines and parental guidance; articles focusing on the influence of sleep on cognitive development and learning; and clinical trials, observational studies, and evidence-based reviews.
b) Exclusion criteria: studies not directly addressing children's sleep; articles unavailable in full text; and studies published in languages other than English or Portuguese without accessible translation.

After removing duplicates and irrelevant studies, 40 articles were selected, while 29 were excluded for not meeting the inclusion criteria. In the eligibility phase, the full texts of the 11 articles selected during screening were thoroughly evaluated. The objective of this phase was to ensure that the included studies presented relevant, high-quality data for the systematic review.

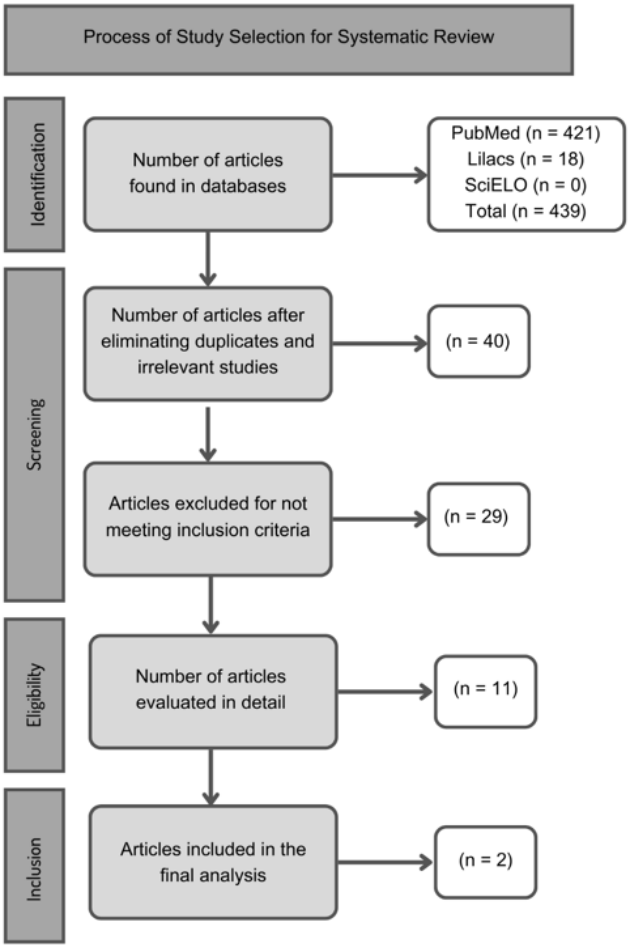
The analysis focused on three main aspects:

a) Methodological quality: verification of the use of robust methods for data collection and analysis.
b) Relevance of results: assessment of the direct connection between sleep-related interventions and their impacts on children's learning.
c) Internal and external validity: consideration of scientific rigor and the applicability of results across different contexts.

Specific quality assessment tools were used for this evaluation, such as the *Risk of Bias* (RoB) tool for clinical trials and the *Joanna Briggs Institute* (JBI) tool for observational studies. Studies that met the eligibility criteria were included in the final analysis, considering the relevance of their data to answer the research questions about the impact of sleep and parenting practices on learning. These studies were summarized based on their key characteristics:

a) Study population: children's age, sample size, and variables analyzed.
b) Interventions analyzed: types of parental interventions and strategies applied to improve sleep.
c) Main results: effects of interventions on children's sleep and learning.
d) The results were synthesized qualitatively and, where applicable, quantitatively, providing a clear overview of trends and gaps in the current literature. Only two studies were included after the screening process, as illustrated in Figure 1. Of the 11 studies evaluated in-depth, nine were excluded for not addressing the research questions related to the impact of sleep and parenting practices on learning, specifically within the 6-12 age range.

Figure 3.1: Selection process of studies for the systematic review using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) methodology



4. Results and Discussion

We evaluated 11 studies in-depth, and only 2 met the research questions related to the impact of sleep and parenting practices on learning, specifically in the 6-12 age range. Table 1 summarizes the characteristics of the 9 excluded studies and their main findings.

Table 4.1: Characteristics of studies found in the systematic review that does not address the relationship between sleep-related interventions and their impacts on children's learning (ages 6-12)

Reference and Country	**Study Objective**	**Method and Sample**	**Main Findings**	**Meets Research Questions?**
Davis *et al.* (2012) (Australia)	Develop and test a school-based sleep education program for adolescents	Pilot study with an educational program in schools, delivered by teachers, with pre- and post-questionnaires to measure sleep practices and knowledge. 64 students aged 13–14 years	Increased knowledge about sleep and healthy practices	No, the age does not correspond (6–12 years) and lacks focus on the impact of sleep and parenting practices on learning.
Turnbull *et al.* (2013) (USA)	Analyze sleep patterns and school readiness	Secondary data analysis on sleep patterns, involving direct measures of cognitive and social skills in low-income children. 351 children aged 4–5 years	Consistent sleep patterns associated with better school outcomes	No, the age does not correspond (6–12 years).
Jones *et al.* (2014) (UK)	Evaluate the impact of a brief educational intervention on parental knowledge of healthy sleep	Pilot study using sleep information leaflets, with pre- and post-intervention evaluations to measure changes in parental knowledge and children's sleep practices. 95 families with children aged 3 months to 12 years	Significant increase in parental knowledge of healthy sleep	No, the age does not correspond (6–12 years) and lacks focus on the impact of sleep and parenting practices on learning.
Wilson *et al.* (2014) (USA)	Evaluate a sleep education program for low-income preschool children	Randomized controlled study with parents and preschool children, involving a brief educational intervention and sleep habit tracking through diaries. 152 families with children aged 3–5 years	Improved parental knowledge and child sleep duration	No, the age does not correspond (6–12 years).
Tangwijitsakul *et al.* (2015) (Thailand)	Relate sleep problems to executive dysfunctions in preschoolers	Cross-sectional study based on caregiver self-reports using validated questionnaires to assess sleep problems and executive functions. 356 children aged 5 years	Association between poor sleep quality and executive dysfunctions	No, the age does not correspond (6–12 years) and lacks focus on the impact of sleep and parenting practices on learning.

Bonuck *et al.* (2016) (USA)	Promote sleep health in families with young children in Head Start programs	Randomized controlled clinical trial with an ecological approach in Head Start programs, involving educational sessions and outcome measures for children and parents regarding sleep knowledge and duration. 540 children aged 3–5 years	Improved sleep duration and parental behaviors	No, the age does not correspond (6–12 years).
Koinis-Mitchell *et al.* (2016) (Providence/ Puerto Rico)	Evaluate a culturally adapted intervention for Latino students	Pilot randomized controlled trial in two locations (Providence/Puerto Rico) with a culturally adapted intervention, including educational sessions for parents and children and behavior change assessments. 34 children aged 11–13 years	Improved sleep duration and behaviors	No, the age does not correspond (6–12 years) and lacks focus on the impact of sleep and parenting practices on learning.
Beebe *et al.* (2017) (USA)	Analyze the impact of sleep deprivation on academic performance in adolescents	Experimental study manipulating sleep conditions (short and healthy) in adolescents, assessing academic performance and behaviors in a simulated environment. 87 adolescents aged 14–17 years	Sleep deprivation negatively impacts learning and attention	No, the age does not correspond (6–12 years) and lacks focus on the impact of sleep and parenting practices on learning.
Corrêa *et al.* (2017) (Brazil)	Evaluate the impact of sleep hygiene practices in adolescents	Experimental study conducted at school fairs using pre- and post-intervention questionnaires to evaluate sleep habits and the impact of sleep hygiene practices. 98 students aged 15–17 years	Improved sleep habits after intervention	No, the age does not correspond (6–12 years).

The studies listed in Table 4.1 highlight the importance of interventions aimed at promoting sleep hygiene. Educational programs or behavioral changes showed improvements in sleep quality, reduction in daytime sleepiness, and increased sleep duration (Corrêa *et al.*, 2024; Wilson *et al.*, 2014; Davis *et al.*, 2022). In adolescents, reducing the use of electronic devices before bedtime was associated with better sleep schedule regulation and academic performance (Corrêa *et al.*, 2024).

Additionally, children with consistent sleep patterns demonstrated better skills in cognitive areas such as language, mathematics, and executive functions, as well as improved emotional and social regulation (Turnbull *et al.*, 2022; Tangwijitsakul *et al.*, 2024). Conversely, sleep deprivation can significantly impair academic performance and attention in adolescents (Beebe *et al.*, 2017).

Regarding educational interventions for parents, such as informational leaflets and workshops, there was an increase in parental knowledge about healthy sleep practices, which positively influenced children's sleep habits (Jones *et al.*, 2012; Bonuck *et al.*, 2016). However, some interventions did not maintain long-term effects, highlighting the need for continuous reinforcement (Wilson *et al.*, 2014).

Furthermore, culturally adapted interventions for specific populations, such as Latino children in urban areas, proved to be more effective by considering sociocultural and familial contexts (Koinis-Mitchell *et al.*, 2024). Similarly, school programs conducted by teachers were identified as sustainable and effective methods for disseminating sleep hygiene knowledge (Davis *et al.*, 2022).

In this context, the analyzed studies suggest that sleep hygiene interventions adapted to different audiences and contexts have significant potential to improve sleep quality and promote benefits for cognitive and emotional development. This confirms the gap identified in addressing research questions related to the impact of sleep and parenting practices on learning, specifically in the 6-12 age range. Thus, the selection consisted of two articles, both in English, that addressed the research questions. For data extraction, a spreadsheet was prepared summarizing the characteristics of the studies and their main results, presented in Table 4.2.

Table 4.2: Characteristics and results of studies addressing the relationship between sleep-related interventions and their impacts on children's learning (ages 6-12)

References and Country	**Objective**	**Methods and Sample**	**Main Results**
Gruber *et al.* (2016) (Canada)	Develop and evaluate the effectiveness of a school-based sleep education program (Sleep for Success™ - SFS) to improve sleep and academic performance	Non-randomized controlled study, divided into intervention and control groups. Six-week program with weekly sessions targeting children, parents, teachers, and the school as a whole. Objective evaluation (actigraphy) and subjective evaluation (school reports). 71 children aged 7–11 years	The intervention increased sleep duration by 18.2 minutes per night, improved sleep efficiency by 2.3%, reduced sleep latency by 2.3 minutes, and improved math and English grades in the intervention group.
Stormark *et al.* (2019) (Norway)	Examine the longitudinal relationship between difficulties in initiating and maintaining sleep and academic performance in children	Longitudinal observational study over four years, with two data collection points, using regression and mediation analysis based on parental and school reports. 3453 children aged 7–13 years	Persistent sleep problems were associated with lower academic performance, partially mediated by mental health issues.

The findings of Gruber *et al.* (2016) and Stormark *et al.* (2019) highlight the importance of addressing the relationship between sleep and academic performance. According to

Gruber *et al.* (2016), in addition to emphasizing the integrative nature of the intervention through the biopsychosocial framework of sleep structure, organization, and regulation, the study shows that a sleep education program is effective in improving sleep and academic performance, particularly in core subjects such as mathematics and English. Similarly, Stormark *et al.* (2019) underscore that persistent difficulties in initiating and maintaining sleep hinder academic performance, suggesting that early interventions targeting sleep problems may be beneficial.

The main limitations of Gruber *et al.* (2016) pertain to the non-randomized design, which could introduce bias in the allocation of participants to intervention and control groups. The sample size, compared to the other study, was also small, with only 71 children, limiting the generalizability of the results. Another critical point was the restricted focus on specific variables such as sleep duration and efficiency, overlooking broader aspects such as socioeconomic impact. Additionally, the evaluation period was short, focusing only on the immediate outcomes of the intervention without addressing potential long-term effects.

In Stormark *et al.* (2019), one limitation was the use of simple measures to assess sleep problems, relying on just one question. This approach may not capture the full complexity of the difficulties faced by children. Furthermore, the data were self-reported by parents, which may underestimate certain difficulties, especially in older children. Another limitation was the lack of control during the initial data collection, as critical information, such as academic performance and mental health, was not collected at that stage, making it harder to conduct a detailed longitudinal analysis. While the study offers strong and relevant insights, it is important to note that it did not consider significant variables such as sleep duration or chronic neurological conditions, which could impact both sleep and academic performance.

Nonetheless, both studies underscore the importance of sleep for academic performance and reinforce the need for interventions aimed at improving children's sleep.

5. Recommendations

The findings suggest several implications for both the prevention of sleep problems and the implementation of effective interventions, supporting the notion that, given the complexity of learning difficulties, it is essential to integrate interventions and parental programs with a broad and coordinated approach to promote holistic child development. Realizing this potential depends on uniting efforts among schools, families, and health and education professionals, creating a continuous support environment that benefits not only academic performance but also emotional and social well-being. By aligning educational, therapeutic, and family strategies, it is possible to enhance cognitive and behavioral skills, ensuring that children reach their full potential both in school and in everyday life.

6. Conclusion

In conclusion, the studies highlight the importance of early and coordinated interventions that recognize sleep as a central element for academic performance and the holistic development of children. Sleep, beyond being a vital component of physical health, plays an essential role in memory consolidation, emotional balance, and behavioral self-regulation, making it a fundamental pillar for learning. The implementation of strategies integrating schools, families, and health and education professionals is indispensable for creating a continuous and sustainable support environment.

In this context, parental programs, especially those targeting children aged 6 to 12, have shown great potential to address not only learning difficulties but also to foster advancements in cognitive, emotional, and social skills. Health professionals, such as psychologists, neuropsychopedagogues, pediatricians, and occupational therapists, play a crucial role in the early identification of inadequate sleep patterns and the application of evidence-based interventions to improve sleep quality and minimize its negative impacts. These professionals can guide families on sleep hygiene, relaxation practices, and the importance of consistent routines, as well as identify and treat potential sleep-related disorders.

Simultaneously, education professionals, including educators, teachers, and school administrators, should be trained to understand the impacts of sleep deprivation on students' behavior and academic performance. They can adopt pedagogical practices that consider the individual needs of children, promoting school environments that support attention, emotional regulation, and active learning. Furthermore, educators must collaborate with families to reinforce the importance of healthy habits and consistency in daily routines.

Therefore, integrated action between health and education professionals is essential to maximize the outcomes of these interventions. In practice, this alignment across different fields contributes to the development of effective strategies that strengthen both academic development and children's overall well-being. By ensuring multidisciplinary and evidence-based support, it is possible to promote lasting changes that will benefit children throughout their academic, social, and personal journeys, paving the way for a healthier and more successful future.

Conflict of Interest Statement
The authors declare no conflicts of interest.

About the Authors

Ms. Luana Cristina Rosa Pinhel is a teacher, graduated in Pedagogy and Law, Neuropsychopedagogue (CENSUPEG), specialist in Neuroscience and Applied Psychology (Mackenzie Presbyterian University), integrative educator of childhood, parenting and child and adolescent sleep (FWII) and researcher at the Laboratory of

Educational Innovations and Neuropsychopedagogical Studies (LIEENP-CENSUPEG). Her main research interests are teaching, learning, child sleep and neurodevelopment. She can be contacted at luanapinhel@hotmail.com.

Mr. Vitor da Silva Loureiro is PhD student in Education at Universidade Cidade de São Paulo (UNICID), researcher at the Laboratory of Educational Innovations and Neuropsychopedagogical Studies (LIEENP-CENSUPEG) and in the group "Social Representations and Teaching Subjectivity". Master in Education (UNICID), specialist in Educational Management (UNIFEI), Institutional Neuropsychopedagogy and Special and Inclusive Education (CENSUPEG). Bachelor in Philosophy and Bachelor in Theology. He is a professor in specialization courses in Neuropsychopedagogy (CENSUPEG), technical-professional advisor to the Brazilian Society of Neuropsychopedagogy (SBNPp) and member of the National Network of Science for Education (Rede CpE). He has over a decade of experience in school management and teacher training. He can be contacted at vitor.loureiro@censupeg.com.br.

Mr. Fabrício Bruno holds a degree in Physical Education (Castelo Branco University), a master's in Human Motor Science (Castelo Branco University), and a PhD in Biological Sciences (Biophysics) from the Federal University of Rio de Janeiro. He is the Coordinator of the Postgraduate Course in Neuropsychopedagogy at CENSUPEG College, Leader of the Laboratory of Educational Innovations and Neuropsychopedagogical Studies (LIEENP-CENSUPEG), Visiting Professor at the Federal University of Rio de Janeiro, Associate Researcher at the National Science Network for Education, and Director of Research and Innovation at the Science and Cognition Organization. He can be contacted at fabricio@censupeg.com.br.

References

Beebe, D. W., Field, J., Milller, M. M., Miller, L. E., & LeBlond, E. (2017). Impact of Multi-Night Experimentally Induced Short Sleep on Adolescent Performance in a Simulated Classroom. *Sleep*, *40*(2). https://doi.org/10.1093/sleep/zsw035

Bonuck, K. A., Blank, A., True-Felt, B., & Chervin, R. (2016). Promoting Sleep Health Among Families of Young Children in Head Start: Protocol for a Social-Ecological Approach. *Preventing chronic disease*, *13*, E121. https://doi.org/10.5888/pcd13.160144

Carter, B., Rees, P., Hale, l., Bhattacharjee, D., & Paradkar, M. S. (2016). Association Between Portable Screen-Based Media Device Access or Use and Sleep Outcomes: A Systematic Review and Meta-analysis. *JAMA Pediatrics, 170* (12), 1202-1208. https://doi.org/10.1001/jamapediatrics.2016.2341

Chen, S. J., Li, S. X., Zhang, J. H., Lam, S. P., Yu, M. W. M., Tsang, C. C., Kong, A. P. S., Chan, K. C. C., Li, A. M., Wing, Y. K., & Chan, N. Y. (2023). School-Based Sleep Education Program for Children: A Cluster Randomized Controlled Trial.

Healthcare (Basel, Switzerland), 11 (13), 1853. https://doi.org/10.3390/healthcare11131853

Corrêa, C. C., Silva, G. N. T. N., Viana, G. R., Lira, A. L. E., Macedo, G. D., & Weber, S. A. T. (2024). Sleep Hygiene Intervention Improves Sleep Time and Duration in High School Students. *Sleep science (Sao Paulo, Brazil), 17*(3), e297–e303. https://doi.org/10.1055/s-0044-1782169

Cremone, A, Mcdermott, J. M., & Spencer, R. M. C. (2017). Naps Enhance Executive Attention in Preschool-Aged Children. *J Pediatr Psychol, 42* (8), 837-845. https://doi.org/10.1093/jpepsy/jsx048

Davis, J., Blunden, S., BoydPratt, J., Corkum, P., Gebert, K., Trenorden, K., & Rigney, G. (2022). Healthy sleep for healthy schools: A pilot study of a sleep education resource to improve adolescent sleep. *Health promotion journal of Australia: official journal of Australian Association of Health Promotion Professionals, 33 Suppl 1*(Suppl 1), 379–389. https://doi.org/10.1002/hpja.594

Gruber, R., Somerville, G., Bergmame, L., Fontil, L., & Paquin, S. (2016). School-based sleep education program improves sleep and academic performance of school-age children. *Sleep medicine*, *21*, 93–100. https://doi.org/10.1016/j.sleep.2016.01.012

Hale, L., & Guan, S. (2015). Screen time and sleep among school-aged children and adolescents: a systematic literature review. *Sleep Medicine Reviews, 50*, 50-58. https://doi.org/10.1016/j.smrv.2014.07.007

Jones, C. H., Owens, J. A., & Pham, B. (2013). Can a brief educational intervention improve parents' knowledge of healthy children's sleep? A pilot-test. *Health Education Journal, 72*(5), 601-610. https://doi.org/10.1177/0017896912464606

Koinis-Mitchell, D., Boergers, J., Yeo, A. J., Molera, G., Kopel, S. J., McQuaid, E. L., Chen, K., Wolfson, A. R., Chavez, L., Jandasek, B., & Canino, G. (2024). A Pilot Randomized Control Trial Demonstrating the Efficacy of the SIESTA Sleep Hygiene Intervention. *Clinical pediatrics, 63*(8), 1062–1077. https://doi.org/10.1177/00099228231207307

Lan, Q. Y., Chan, K. C., Yu, K. N., Chan, N. Y., Wing, Y. K., Li, A. M., & Au, C. T. (2020) Sleep duration in preschool children and impact of screen time. *Sleep medicine, 76*, 48-54. https://doi.org/10.1016/j.sleep.2020.09.024

Licata, F., Maruca, R., Citrino, E. A., & Bianco, A. (2024) Insight into sleep quality and its relationship with emotional intelligence: results of a cross-sectional study among Italian university students. *Frontiers in public health, 12*. https://doi.org/10.3389/fpubh.2024.1392571

Liu, J., Liu, X., Ji, X., Wang, Y., Zhou, G., & Chen, X. (2016). Sleep-disordered breathing symptoms and daytime sleepiness are associated with emotional problems and poor school performance in children. *Psychiatry Research, 242*, 218-225. https://doi.org/10.1016/j.psychres.2016.05.017

Liu, J., Ji, X., Pitt, S., Wang, G., Rovit, E., Lipman, T., & Jiang, F. (2024). Childhood sleep: physical, cognitive, and behavioral consequences and implications. *World journal of pediatrics, 20*/2, 122-132. https://doi.org/10.1007/s12519-022-00647-w

Lokhandwala, S., & Spencer, R. M. C. (2022). Relations between sleep patterns early in life and brain development: A review. *Developmental cognitive neuroscience, 56*. https://doi.org/10.1016/j.dcn.2022.101130

Marzola, P., Melzer, T., Pavesi, E., Gil-Mohapel, J., & Brocardo, P. S. (2023). Exploring the Role of Neuroplasticity in Development, Aging, and Neurodegeneration. *Brain Sciences*, *13*(12), 1610. https://doi.org/10.3390/brainsci13121610

Mazer, S. M., Bello, A. C. D., & Bazon, M. R. (2009). Dificuldades de aprendizagem: revisão de literatura sobre os fatores de risco associados. *Psicologia da educação*, *28*, 7-21.

Mindell, J. A., & Williamson, A. A. (2018) Benefits of a bedtime routine in young children: Sleep, development, and beyond. *Sleep medicine reviews, 40*, 93-108. https://doi.org/10.1016/j.smrv.2017.10.007

Rezende, B. A., Lemos, S. M. A., & Medeiros, A. M. (2017). Qualidade de vida e autopercepção de saúde de crianças com mau desempenho escolar. *Revista Paulista de Pediatria: órgão oficial da Sociedade de Pediatria de São Paulo, 35*, 415-421. https://doi.org/10.1590/1984-0462/;2017;35;4;00009

Siqueira, C. M., & Gurgel-Giannetti, J. (2011). Mau desempenho escolar: uma visão atual. *Revista Da Associação Médica Brasileira, 57* (1), 78–87. https://doi.org/10.1590/S0104-42302011000100021

Spencer, R. M. C., & Riggins, T. (2022). Contributions of memory and brain development to the bioregulation of naps and nap transitions in early childhood. *Proc Natl Acad Sci USA, 119* (44). https://doi.org/10.1073/pnas.2123415119

Stormark, K. M., Fosse, H. E., Pallesen, S., & Hysing, M. (2019). The association between sleep problems and academic performance in primary school-aged children: Findings from a Norwegian longitudinal population-based study. *PloS one, 14* (11), e0224139. https://doi.org/10.1371/journal.pone.0224139

Tangwijitsakul, H., Likhitweerawong, N., Boonchooduang, N., Chonchaiya, W., & Louthrenoo, O. (2024). Sleep problems and executive dysfunctions in pre-school children. *Journal of paediatrics and child health, 60*(11), 703–708. https://doi.org/10.1111/jpc.16662

Turnbull, K., Reid, G.J., & Morton, J. B. (2013). Behavioral Sleep Problems and their Potential Impact on Developing Executive Function in Children. *Sleep, 36/7*, 1077-1084. https://doi.org/10.5665/sleep.2814

Turnbull, K. L. P., Cubides Mateus, D. M., LoCasale-Crouch, J., Lewin, D. S., & Williford, A. P. (2022). Sleep Patterns and School Readiness of Pre-Kindergarteners from Racially and Ethnically Diverse, Low-Income Backgrounds. *The Journal of Pediatrics, 251*, 178–186. https://doi.org/10.1016/j.jpeds.2022.07.018

Waber, D. P., Boiselle, E. C., Forbes, P. W., Girard, J. M., & Sideridis, G. D. (2019). Quality of Life in Children and Adolescents with Learning Problems: Development and Validation of the LD/QOL15 Scale. *Journal of Learning Disabilities, 52* (2), 146-157. https://doi.org/10.1177/0022219418775119

Wilson, K. E., Miller, A. L., Bonuck, K., Lumeng, J. C., & Chervin, R. D. (2014). Evaluation of a sleep education program for low-income preschool children and their families. *Sleep, 37*(6), 1117–1125. https://doi.org/10.5665/sleep.3774