Available Online: 25 August 2025 DOI: 10.54254/2753-7102/2025.26283

A review of the connection between parents' psychological well-being and sleep and behavioral concerns in children with autism spectrum disorder

Jing Zhang[1], Qi Qi[2], Lei Chen[3]*

[1]Psychological Counseling and Treatment Center, Hainan Provincial Anning Hospital, Haikou, China

[2]School of Psychology, Hainan Normal University, Haikou, China

[3]Hainan Provincial Anning Hospital, Haikou, China

*Corresponding Author. Email: jennyzj90@126.com

Abstract. Objective: Identify evidence-based interventions for sleep disorders in children with Autism Spectrum Disorder (ASD) by analyzing their sleep behaviors and influencing factors. Methods: The study included 315 children with ASD are between the ages of three and seven, as well as 237 healthy children.The Children's Sleep Habits Questionnaire (CSHQ), the Strengths and Difficulties Questionnaire (SDQ), and the 90-item Symptom Checklist (SCL-90) were administered. Results: Poor sleep quality was observed in 78.65% (218/315) of children with ASD. Furthermore, the CSHQ scores were compared between the two groups to see if there were any differences. The results indicated that children with ASD exhibited elevated levels of total and subscale scores related to sleep duration, nighttime awakenings, abnormal sleep, bedtime habits, sleep anxiety, and daytime sleepiness than the control group. A study was conducted on the ASD group using Pearson correlation analysis to examine all variables. The results showed that total emotional problems scores were positively correlated with sleep behavior; positive behavior was negatively correlated with sleep behavior; and total difficulty scores were significantly correlated with correlated with daytime sleepiness, sleep delay, and sleep duration. Parents of children with ASD and insomnia scored significantly higher on items such as obsessive-compulsive disorder, depression, and hostility compared to parents of children with ASD and normal sleep. Conclusion: Children with autism have significant sleep problems, and both parental mental health and children's problem behaviors influence sleep behavior in children.

Keywords: children with autism spectrum disorders, sleep problems, behavioral problems, parents' mental health

1. Introduction

Sleep not only helps humans maintain normal biological functions, but also has an important impact on the growth and development of children's brains. Previous studies have found that approximately 25% to 40% of normal children have sleep problems, manifested as delayed bedtimes and nighttime awakenings [1], while nearly 80% of children with autism have chronic sleep problems [2]. Insufficient sleep duration and poor sleep quality in children can severely impact their health, growth and development, attention span, learning ability, memory, and behavior. Additionally, sleep disorders in children with autism are more complex, manifesting as irregular bedtimes, delayed sleep onset, shorter nighttime sleep duration, reduced sleep efficiency, and frequent nighttime awakenings [3]. Sleep issues in children with autism typically emerge between the ages of 2 and 5, and tend to worsen with age. In contrast, sleep issues in typically developing children generally improve with age [4]. Numerous factors can contribute to sleep disorders in children with autism, including developmental level, psychological and behavioral issues, medical conditions, hypersensitivity, and anxiety, all of which may lead to excessive arousal in children with autism [5]. A study showed that when children with autism aged 4-10 were divided into groups with poor sleep and good sleep, the group with poor sleep exhibited more severe symptoms and more behavioral problems [6]. Another study involving 1,784 children with autism aged 2-18 found that younger children had more behavioral problems than older children, and children with sleep disorders exhibited more behavioral problems [7]. These studies indicate that sleep disorders in children with autism may be closely related to behavioral disorders.

Copyright: © 2025 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

The family is the cradle of a child's growth and development, influencing their physical and mental development. Research has found that family environment may influence children's sleep habits, such as noisy and crowded living conditions, poor parenting practices and attitudes, poverty, and excessive use of electronic devices, which are more likely to lead to sleep difficulties in children [8]. Families of children with autism are more likely to experience dysfunction, such as low parental marital satisfaction, decreased family cohesion, increased family conflicts, disordered family environments, and reduced parental mental health levels [9]. Some studies suggest that sleep issues in children with autism negatively impact their parents' mental health and family functioning. Parents of children with autism express concerns about their children's sleep issues and equally worry about the adverse effects these issues have on family members, leading to a significant decrease in family members' well-being [10]. This study conducted an in-depth analysis of the mutual influence between the sleep and behavior of children with autism and their family environment [11]. Through a questionnaire survey of 315 parents of children with autism aged 3 to 7, the study explored the sleep behavior of children with autism and its influencing factors, providing empirical evidence for the intervention of sleep disorders in children with autism.

2. Methods and materials

2.1. Data source and sample

ASD group: 315 children between the ages of 3 and 7 who have been diagnosed with ASD were included. There were 275 males and 40 females, with a male-to-female ratio of 6.87:1 and an average age of (5.83 ± 1.67) years. All participants were diagnosed by physicians with diagnostic qualifications and extensive clinical experience at tertiary-level hospitals according to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5). Children with neurological, psychiatric, or congenital disorders were excluded.

Control Group: 237 healthy children were randomly selected from kindergarten students, excluding those with developmental behavioral disorders, neurological or psychiatric disorders, and congenital conditions. There were 138 boys and 99 girls, with 1.39 boys for each girl. The average age was 5.52 ± 1.71 years.

The autism group and the control group were of the same age (t = -1.825, p = 0.102).

2.2. Variables and definitions

The Children's Sleep Habits Questionnaire (CSHQ) was developed by Dr. Owens, an American expert in children's sleep studies, and requires parents to assess the children's sleep patterns during the previous week. A total of 41 questions make up the questionnaire, 33 of which are scored items, divided into 8 dimensions: bedtime routines, sleep latency, sleep duration, sleep anxiety, nighttime awakenings, parasomnias, sleep-disordered breathing, and daytime sleepiness. Each item is scored using a 3-point scales, where 3 is defined as "usually" (five to seven times per week), 2 is defined as "occasional" (two to four times per week), and 1 is defined as "none/occasional" (zero to one times per week). A higher total score indicates more severe sleep problems. A CSHQ total score of ≥ 41 is used to evaluate poor sleep quality [12]. This questionnaire has good reliability and validity [13].

The Strengths and Difficulties Questionnaire (SDQ) is designed to assess behavioral and emotional issues in children. The test consists of 25 items divided into the following five categories: emotional symptoms, conduct problems, hyperactivity/inattention, peer relationships, and prosocial behavior. The total difficulty score is the sum of the first four dimensions, with a total score of ≥ 19 indicating emotional and behavioral abnormalities. A higher score on the prosocial behavior dimension indicates more positive behavior, which is an important aspect of well-being. A 3-point Likert scale is used to score the 25 items: 0 point indicates “not accurate at all”, 1 point indicates “somewhat accurate”, and 2 points indicates “completely true” [14].

The 90-item Symptom Checklist (SCL-90), translated by Wang [15]. The scale consists of 90 items, divided into 10 factors: somatization, obsessive-compulsive, hypochondria, depression, anxiety, hostility, phobia, paranoia, psychoticism, and additional items. It uses a 5-point rating scale, with higher scores indicating more severe symptoms. A score of 2-3 on any factor indicates possible mild adverse psychological reactions, while a score of ≥ 3 on any factor indicates moderate or more severe psychological problems.

Data collectors were all professionally trained personnel, and participants were required to complete the experiment according to standardized procedures. The data underwent statistical analysis using SPSS 22.0 software.

3. Results

3.1. Comparison of sleep behavior between two groups

The results showed that 78.5% (218/315) of children with autism had poor sleep. A T-test was performed on the total scores and subscale scores of the CSHQ for the two groups. The results showed that the autism group had significantly greater scores than the normal group in terms of total score, sleep duration, nighttime awakenings, abnormal sleep, bedtime habits, sleep anxiety, and daytime sleepiness (Table 1).

Table 1. Comparison of sleep behavior between autism group and normal group

	autism group (n = 315)	normal group (n = 237)	t
bedtime resistance	11.05 ± 1.93	10.32 ± 1.10	5.215***
sleep onset delay	2.11 ± 0.78	2.12 ± 1.25	-0.121
sleep duration	5.10 ± 1.94	4.77 ± 0.88	2.395**
sleep anxiety	6.56 ± 1.88	4.96 ± 0.59	12.616***
night wakings	3.68 ± 0.89	3.25 ± 0.39	6.992***
parascmmias	9.32 ± 2.00	7.51 ± 0.51	13.608***
sleep disordered breathing	3.35 ± 0.60	3.42 ± 0.40	-1.554
daytime sleepiness	11.97 ± 2.69	9.81 ± 0.59	12.187***
CSHQ	51.02 ± 6.81	41.82 ± 3.04	19.398***

note: **$p < 0.01$; ***$p < 0.001$

3.2. Correlation analysis between sleep and behavior in the autism group

The results showed that in the autism group, the total score for emotional and behavioral difficulties was positively correlated with sleep difficulties, while positive behavior was negatively correlated with sleep difficulties. Emotional and behavioral difficulties were significantly positively correlated with daytime sleepiness, delayed sleep onset, and sleep duration (Table 2).

Table 2. Correlation analysis between sleep and behavior in the autism group

	emotional symptoms	behavioral problems	hyperactivity/ attention deficit	peer relationships	prosocial behavior	total difficulty score
bedtime resistance	0.140	0.155**	0.214**	-0.070	-0.139*	0.090
sleep onset delay	0.311**	0.162**	0.160**	-0.110	-0.205**	0.089
sleep duration	0.174**	0.250**	0.231**	0.041	-0.196	0.128*
sleep anxiety	0.156**	-0.030	0.040	0.200**	0.466**	0.268**
night wakings	0.157**	-0.030	-0.072	-0.304	-0.210**	-0.064
parascmmias	0.113*	0.087	0.040	-0.100	-0.008	0.046
sleep disordered breathing	0.078	-0.009	-0.179**	0.010	-0.160**	-0.097
daytime sleepiness	0.123*	-0.138*	0.080*	0.060	0.050	0.140**
CSHQ	0.200**	0.220**	0.165**	0.089	-0.432**	0.137*

note: *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

3.3. The relationship between sleep and parental mental health in the autism group

A T-test was used to analyze the psychological well-being of parents of children with autism who experienced sleep disorders and those who did not. The results showed that parents of children with sleep disorders scored higher on factors such as compulsion, depression, and hostility than those in the normal sleep group (Table 3).

Table 3. The relationship between sleep and parental mental health in the autism group

	autism group (*n* = 315)	normal group (*n* = 237)	*t*
somatization	1.36 ± 0.49	1.27 ± 0.31	-1.354
obsessive-compulsive	1.79 ± 0.55	1.58 ± 0.47	-2.524*
interpersonal sensitivity	1.51 ± 0.48	1.38 ± 0.43	-1.859
depression	1.66 ± 0.62	1.47 ± 0.50	-2.088*
anxiety	1.51 ± 0.58	1.38 ± 0.35	-1.624
hostility	1.68 ± 0.68	1.48 ± 0.54	-2.030*
photic anxiety	1.32 ± 0.41	1.29 ± 0.38	-0.537
psychoticism	1.41 ± 0.47	1.30 ± 0.36	-1.599
others	1.63 ± 0.53	1.42 ± 0.47	-2.715**

note: *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

4. Discussion

This study examined factors affecting sleep habits in kids with autism. It compared sleep behavior between the autism and control groups. It also explored the correlation between problem behavior and sleep habits in kids with autism. Additionally, it examined differences in parental mental health levels between parents of children with autism who experienced sleep disorders and those who did not. Furthermore, it explored the correlation between sleep, problem behavior, and parents' psychological well-being levels in autistic children.

This study found that the prevalence of sleep disorders in the ASD group was 78.65%, manifested as short sleep duration, nighttime awakenings, abnormal sleep patterns, poor bedtime habits, sleep anxiety, and daytime sleepiness. Similar to this study, Malow et al. surveyed 1,518 children with the ages of 4 and 10 years who were diagnosed with autism and determined that 71% of the children had poor sleep quality [16]. Li et al. surveyed 356 children aged 3-8 years and found that 69.38% of the children had sleep disorders, primarily manifested in dimensions such as sleep latency, sleep duration, and nighttime awakenings [17]. Although the detection rate of sleep disorders in children with autism was slightly higher in this study, this may be related to the age of the sample, as younger children who were diagnosed with autism are more likely to develop sleep disorders. Combining previous research findings, the detection rate of sleep problems in children with autism is relatively high, but there may be differences in daytime sleepiness and sleep anxiety dimensions, which could be due to sampling bias.

Henriksen et al. determined that sleep disorders exacerbate problematic behavior in children with autism, manifesting as social communication difficulties and repetitive behaviors [18]. Children in the sleep-deprived group scored higher on autism-like behavior than those in the normal sleep group. Reynaud et al. found that reduced prosocial behavior in children with autism is associated with worsening sleep problems in children who were diagnosed with autism [19]. Many studies have found that sleep problems in children with autism exacerbate their emotional and problem behaviors and reduce their prosocial behavior. However, the mechanisms giving rise to the relationship between problem behaviors and sleep problems, as well as whether improving sleep problems can reduce problem behaviors in children who were diagnosed with autism, require further research.

Hoffman et al. found that sleep disorders in children with autism affect their parents' mental health [20]. They speculated that this may be because sleep problems in children who were diagnosed with autism affect their parents' sleep quality and may lead to a reduction in parents' leisure time. When parents are tired, they are more likely to adopt negative and inappropriate parenting styles, which may exacerbate their children's sleep problems and create a vicious cycle. This study, based on cross-sectional data, analyzes the connection between sleep problems in children diagnosed with autism and their parents' mental health. Future research should adopt a longitudinal observational approach to further analyze the relationship between sleep problems, behavioral issues in children with autism, and their parents' mental health, and to explore the interactive mechanisms among these variables in greater depth.

Funding project

This present study was funded by the Natural Science Foundation of Hainan (821QN419), and the project was supported by Hainan Province Clinical Medical Center.

Data availability statement

The original information that supports the findings of this text will be provided by the writers, with no unnecessary hesitation.

References

[1] AlBacker, N., & Bashir, S. (2017). Assessment of parent report and actigraphy for sleep in children with autism spectrum disorders. Pilot study. *Neurology, Psychiatry and Brain Research*, *23*, 16-19. https: //doi.org/https: //doi.org/10.1016/j.npbr.2016.11.004

[2] El-Sheikh, M., & Kelly, R. J. (2017). Family Functioning and Children's Sleep. *Child Dev Perspect*, *11*(4), 264-269. https: //doi.org/10.1111/cdep.12243

[3] El-Sheikh, M., Kelly, R. J., Bagley, E. J., & Wetter, E. K. (2012). Parental depressive symptoms and children's sleep: the role of family conflict. *J Child Psychol Psychiatry*, *53*(7), 806-814. https: //doi.org/10.1111/j.1469-7610.2012.02530.x

[4] Henriksen, C., Hansen, S., Nordgaard-Lassen, I., Anderson, J. R., & Madsen, P. (2010). Possible interactions between dietary fibres and 5-aminosalicylic acid [corrected]. *Therap Adv Gastroenterol*, *3*(1), 5-9. https: //doi.org/10.1177/1756283x09347810

[5] Hoffman, C., Sweeney, D., Gilliam, J., & Lopez-Wagner, M. (2006). Sleep Problems in Children With Autism and in Typically Developing Children. *Focus on Autism and Other Developmental Disabilities*, *21*, 146-152. https: //doi.org/10.1177/10883576060210030301

[6] Hollway, J. A., & Aman, M. G. (2011). Sleep correlates of pervasive developmental disorders: a review of the literature. *Res Dev Disabil*, *32*(5), 1399-1421. https: //doi.org/10.1016/j.ridd.2011.04.001

[7] Jing, C., Yi, L., & Yasong, D. (2018). Influencing Factors of Parental Stress and Children's Psychological Status of Preschool Children in Primary and Secondary Classes. *Chinese Journal of Child Health Care, 26*(7), 737-740. https: //link.cnki.net/urlid/61.1346.R.20180607.1022.002

[8] Jun, C. (2019). *Analysis of influencing factors of sleep habits and aggressive behavior in preschool children* [Master's thesis, Fujian Medical University]. China National Knowledge Infrastructure.

[9] Li, S., Jin, X., Yan, C., Wu, S., Jiang, F., & Shen, X. (2009). Sleep problems in chinese school-aged children with a parent-reported history of ADHD. *J Atten Disord*, *13*(1), 18-26. https: //doi.org/10.1177/1087054708322992

[10] Li, X. (2012). Reliability and validity analysis of the use of the 90-item symptom self-rating scale in middle school students in the Chinese version. *Chinese School Health, 33*(3), 346-347. https: //doi.org/10.16835/j.cnki.1000-9817.2012.03.043

[11] Malow, B. A., Katz, T., Reynolds, A. M., Shui, A., Carno, M., Connolly, H. V., ... Bennett, A. E. (2016). Sleep difficulties and medications in children with autism spectrum disorders: a registry study. *Pediatrics*, *137*(Supplement_2), S98-S104.

[12] Mayes, S. D., Calhoun, S., Bixler, E. O., & Vgontzas, A. N. (2009). Sleep Problems in Children with Autism, ADHD, Anxiety, Depression, Acquired Brain Injury, and Typical Development. *Sleep Medicine Clinics*, *4*(1), 19-25. https: //doi.org/https: //doi.org/10.1016/j.jsmc.2008.12.004

[13] Mazurek, M. O., & Sohl, K. (2016). Sleep and Behavioral Problems in Children with Autism Spectrum Disorder. *J Autism Dev Disord*, *46*(6), 1906-1915. https: //doi.org/10.1007/s10803-016-2723-7

[14] Reynolds, A. M., Soke, G. N., Sabourin, K. R., Hepburn, S., Katz, T., Wiggins, L. D., ... Levy, S. E. (2019). Sleep problems in 2-to 5-year-olds with autism spectrum disorder and other developmental delays. *Pediatrics*, *143*(3), e20180492.

[15] Richdale, A. L., & Schreck, K. A. (2019). Examining sleep hygiene factors and sleep in young children with and without autism spectrum disorder. *Research in Autism Spectrum Disorders*, *57*, 154-162. https: //doi.org/https: //doi.org/10.1016/j.rasd.2018.10.008

[16] Rosen, D. (2010). A Clinical Guide to Pediatric Sleep: Diagnosis and Management of Sleep Problems. *Jama*, *303*(14), 1427-1431. https: //doi.org/10.1001/jama.2010.419 %J JAMA

[17] Li, S., Jin, X., Sun, X., Wang, S., Jiang, F., Yan, C., & Qiu, Y. (2007). Children's Sleep Habits Questionnaire Chinese version of the formulation and measurement performance assessment. *Chinese Journal of Pediatrics*, *45*(3), 176-180.

[18] Tudor, M. E., Hoffman, C. D., & Sweeney, D. P. (2012). Children With Autism: Sleep Problems and SymptomSeverity: Sleep Problems and Symptom Severity. *Focus on Autism and Other Developmental Disabilities*, *27*(4), 254-262. https: //doi.org/10.1177/1088357612457989 (Original work published 2012)

[19] Walton, K. M. (2019). Leisure time and family functioning in families living with autism spectrum disorder. *Autism*, *23*(6), 1384-1397. https: //doi.org/10.1177/1362361318812434

[20] Li, Y., Wang, J., Yang, T., Gao, M., Zhang, J., Chen, L., & Li, T. (2019). Relationship between sleep problems and behavioral performance in children with autism spectrum disorder. *Journal of Shanghai Jiao Tong University (Health Sciences),* 39(5), 505-509.