

zPods Medical Mission

Interrupting Insomnia for Children suffering from Autism Spectrum Disorders and Sensory Processing Disorders

ABSTRACT

Adequate sleep patterns allow our children to fully develop at young ages and influences their behaviors as the grow.

The Autism, Sleep, and Development Cycle

Sleep plays a large role in behavioral development. Sleep problems are predictive of severity of ASD core symptoms, social deficits and repetitive behaviors, and associated behavioral issues such as tantrums and aggression³ Poor sleep is shown to have an association with more challenging behaviors of ASD children during the day and have an impact on the ability to regulate emotion.⁶ Increased aggression, hyperactivity, and social difficulties could be indicators for poor mental health outcomes that were observed due to sleep disturbance in children with ASD.⁸ In addition, not only do these sleep problems impact children's daytime functioning, but also alter parents sleep and increase stress.⁷



The Autism, Sleep, and Behavior Connection

Autism + Sleep = Behaviors

Sleep plays several roles in brain development and restoration, facilitating memory consolidation, cognitive ability, synaptic plasticity, immune function, and aiding in metabolic clearance of inflammatory proteins that accumulate throughout the day.¹

During early brain development connections are made between the thalamus and auditory cortex, and for children with ASD this connection has been linked to atypical sound processing.² As a result of this irregular auditory-thalamic connectivity, children with ASD are more likely to experience delayed habituation to auditory stimuli and sensory overresponsivity.⁴ This greater auditory-thalamic feedback circuit during sleep in children with ASD has been correlated with longer sleep latency.⁴ Additionally, children with ASD have reported decreased time in bed and total sleep time. Sleep loss has been shown to influence critical period plasticity, suggesting that abnormal sleep in early life may lead to abnormal development.⁵

zPods In-Home Performance Survey

Early Reporting as of 09/06/2024 with 6 of 27 participants. zPods In-Home Performance Survey is an event evaluation survey focused on sleep quality utilizing the Withings' Sleep Analyzer Mat and is being led by the independent researcher, Lauren Kaplita. Automated collection of sleep data and analysis was performed through the Withings' Platform and compared to the qualitative and case study research presented in peer reviewed journals.

"CHOP's Sleep Center uses a sleep efficiency of 85% and a sleep latency of greater than 30 minutes...for defining poor sleep quality."⁹ While the Children's Sleep habit questionnaire (CSHQ) reported a Mean Sleep Duration of 5.07 hours with a standard deviation of 1.32 hours.¹⁰



Left: More than 83% of zPods participants reported less than 30 minutes of Sleep Latency. Center: 5 out of 6 participants have greater Total Time Sleeping than the reported average. Right: Less than 17% of participants were below normal Sleep Efficiency ratings.

References

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